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**Pre-Vocational Education in Jordan: Implications
for Teacher Preparation and In-Service Training**

Munim A. A. Al-Saydeh

**A thesis submitted to the University of Huddersfield in partial fulfilment of the
requirements for the degree of Doctor of Philosophy**

**The University of Huddersfield
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Abstract

This study proposes a rational basis for pre-vocational education (PVE) teacher preparation and training in Jordan based on a thorough assessment of the teacher's role and responsibilities. Qualitative and quantitative data collection methods were employed. These included semi-structured interviews with members of the Jordanian National Teams for PVE Curriculum Development and for Supervision on PVE Curriculum Development, as well as with PVE supervisors in Jordan. Self-completion questionnaires were also administered to a sample of PVE teachers and educational supervisors. Asserting that design and implementation of a successful training programme should be founded on the job activities and competencies required, this study presents a job description for the PVE teacher, analyses the activities involved, and identifies the associated competencies. The study proceeds to scrutinise the components of PVE teacher preparation, analyses the current delivery of PVE in Jordan, identifies some deficiencies, and considers potential corrective action. The study also discusses the necessity of vocational field experience for the PVE teacher. Current programmes of PVE teacher preparation are critically examined, shortcomings are identified, and proposals for improvement are discussed.

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CONTENT

	Page
Abstract	II
Acknowledgements	III
Content	V
List of Appendices	X
List of Tables	X
List of Abbreviations	XI

PART A: CONTEXT AND METHODS

<u>General Introduction</u>	2
Jordan's Need for Pre-Vocational Education	4
The Study Rationale: Its Significance, Questions and Purposes:	5
Rationale and Significance of the Study	5
Aims of the Study	8
Questions of the Study	9
Definitions	10
<u>Chapter One: An Overview of Pre-Vocational Education in Jordan</u>	14
1.1 Contextualising Pre-Vocational Education	14
1.1.1 The Vocationalisation Debate	16
1.1.2 This Study and The Vocationalisation Debate	18
1.1.3 Pre-Vocational Education: General or Technical?	19
1.2 Pre-Vocational Education in Jordan	21
1.2.1 The Nature of PVE in Jordan	21
1.2.2 A Brief History of PVE in Jordan	23
1.2.3 PVE Objectives and Their Implications	25
1.2.4 The PVE Curriculum	33
1.2.5 Curriculum Expectations of Practical Skills and Theoretical Knowledge	41
1.2.6 Narrowing of The Skills' Fields at The Higher Basic Stage	43
1.2.7 Suitability of Design of the PVE Curriculum	45
1.2.8 The PVE Workshop	48
1.2.9 The Relationship Between PVE and Vocational Education	49
1.2.10 Particular Problems of PVE in Jordan	51
<u>Chapter Two: An Overview of 'Pre-vocational Education' in England and Wales.</u>	58
2.1 Design and Technology	59
2.1.1 Design and Technology Capability	60
2.1.2 Developing Pupils' Capability	62
2.1.3 Delivering the Design and Technology Curriculum	63
2.1.4 Teacher Preparation for Design and Technology	64
2.2 Careers Education and Guidance	65
2.2.1 Co-ordination and Management of the Programme	68
2.3 Competence-Based Vocational Education (GNVQs and NVQs)	70

<u>Chapter Three: The Role of Teachers of Pre-Vocational Education and Teacher Education in Jordan</u>	79
3.1 What is Special in the Demand Made by PVE Teaching?	79
3.2 The Teacher of PVE and Vocational Education	82
3.2.1 PVE Teachers in Jordan	83
3.3 A Brief Review of Teacher Education in Jordan	84
3.4 The Educational Reform Plan and Teacher Education	85
3.5 The PVE Teacher Preparation in Jordan	87
3.5.1 Community College Programmes (Pre-Service)	88
3.5.2 Short Courses of the Educational Training Centre at the MoE	90
3.5.3 Programmes of The Higher Certification College	90
3.5.4 University Programmes (Pre-Service)	92
3.5.5 University Programmes (In-Service)	93
3.6 The Roles of the Teacher in the Context of Technology Education	99
3.7 Implications of The Teacher's Role for Teacher Preparation	101
3.8 The Role of the Teacher in the Jordanian Context	101
3.9 The Role of PVE Teachers in Jordan	102
<u>Chapter Four: Teacher Education and Meeting the Demands of the Teaching Profession</u>	109
4.1 The Contexts of Teacher Education Research	109
4.2 The Epistemological Basis of Teachers' Professional Knowledge	110
4.3 Different Perspectives on Teaching and Teacher Education	113
4.4 Teacher Education and Teacher Training	121
4.4.1 Teaching: a Craft or a Profession?	121
4.4.2 Connotations of Training in Teacher Education	123
4.4.3 Implications of Pre-vocational Education for the Teacher Preparation	125
4.5 The Curriculum of Teacher Education	126
4.6 Elements in Vocational Teacher Preparation	128
4.6.1 The Liberal Education of Teachers	128
4.6.2 Teachers' Education in Subject Knowledge	128
4.6.3 The Pedagogical and Educational Preparation	123
4.6.4 Practical Experience Required for Vocational Teacher	132
4.7 Approaches to Vocational Teacher Education	136
4.7.1 The Integrative Approach	136
4.7.2 The Consecutive Approach	137
4.8 Job and Role Analysis in Determination of Teacher Training Needs	138
4.9 The Application of the Systematic Approach in Planning and the Implementation of Preparation and Training Programmes	141
4.9.1 The Contribution of the Study to the Application of the Systematic Approach to PVE Teacher Preparation	143
<u>Chapter Five: The Research Methodology</u>	146
5.1 Methodology Rationale	146
5.1.1 Rational of the Instruments Used	148
5.2 The Pilot Study	150
5.3 Documentary Information	151
5.4 Interviews	154
5.4.1 The Population Sample of Interview and its Analysis	155
5.4.2 The Language Used in Interviews	156

5.5	The Questionnaire	157
5.5.1	The First Question	158
5.5.2	Categorising of the Competencies	162
5.5.3	Responses of the Question of Competencies	163
5.5.4	The Second Question	165
5.5.5	The Third and the Fourth Questions	166
5.5.6	Language of the Questionnaire	167
5.5.7	Validity of the Instruments	167
5.5.8	Piloting of the Questionnaire	168
5.5.9	Administration of the Study Instruments	169
5.5.10	Statistical Analysis of the Questionnaire	171
5.5.11	Studying of the Effect of the Study Variables	173
5.5.12	The Population of the Study	174
5.5.13	Questionnaire Sample Selection and its Characteristics	175
5.5.14	The Respondents' Distribution according to the Study Variables	177

PART B: RESEARCH FINDINGS

<u>Introduction to The Findings of The Study</u>	181
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<u>Chapter Six: Special Features of Pre-Vocational Education in Jordan</u>	183
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6.1	The Practical Nature of the Subject	184
6.1.1	The Practical Training of the Teacher	185
6.1.2	The Workshop Use and Management	186
6.2	The Variety of the Curriculum Fields	187
6.3	The Flexibility of the Curriculum	191
6.4	Pre-Vocational Education and Technology	194
6.5	Utilisation of the Environment in the Subject Delivery	196
6.6	The Continuous Assessment of Students' Progress	197
6.7	The Effective Dimension of the Curriculum	198
6.8	The Relationship with the Society and Vocational Establishments	200
6.9	Vocational Guidance	201
6.10	Long Term Social and Economic Objectives of PVE Curriculum	201
6.11	The Link with Vocational Education	204
6.12	The Maintenance Tasks	205

<u>Chapter Seven: Delivery of Pre-Vocational Education and Teacher's Roles</u>	208
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7.1	The Main Tasks of PVE Teachers	208
7.1.1	The Hidden Agenda of PVE	210
7.1.2	The Nature of the Role of PVE Teachers	211
7.2	The Main Abilities That the PVE Teacher Should Have	213
7.3	Pre-Vocational Education and Technology	218
7.3.1	The Current Teachers' Abilities and School Facilities	219
7.3.2	The Nature of Technology in the Curriculum	220
7.4	Utilising and Serving the Local Environment in Teaching of PVE	222

<u>Chapter Eight: Competency-Based Teacher Education</u>	230
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8.1	The Concept of Competency	230
8.1.1	Differing Concepts of Competence	230

8.2	The Operational Framework for CBTE Programmes	233
8.3	Competency-Based Teacher Education and its Advantages	234
8.4	Drawbacks of CBTE as a 'Teacher Training' Approach	237
8.4.1	Behaviouristic or Interactive	239
8.4.2	Competence and Knowledge	241
8.5	Assessment of Competency in Teacher Education	243
8.6	Research on the Competencies of the Teacher	245
8.6.1	Bases of Identification of Competencies	245
8.6.2	Sources of Derivation of Competencies	246
8.7	The Competencies of the Vocational Teacher	250
8.7.1	Subject Knowledge and Understanding	250
8.7.2	Pedagogical Abilities	251
8.8	The Competencies in the Context of Design and Technology	255
8.9	Basic Skills of The Teacher in Vocational Contexts	256

PART C: TOWARD A COMPETENCY-BASED MODEL FOR TEACHER PREPARATION AND TRAINING FOR PRE-VOCATIONAL EDUCATION

What is a Model?	259
Why Use Competency-Based Approach?	259
Introduction to the Competencies of PVE Teachers Identified in this Study	261

<u>Chapter Nine: The Teaching Skills Required for Pre-Vocational Education Teachers</u>	265
9.1 Competencies of PVE Teachers in the 'Planning of Teaching/Learning'	265
9.2 Competencies of PVE Teachers in the 'Organising of Teaching/Learning'	272
9.2.1 The PVE Teacher and Special Needs Students	275
9.2.2 Competencies in Using Different Teaching Methods	278
9.2.3 Using The Educational Media	281
9.3 Competencies of PVE Teachers in 'Assessment'	282
9.3.1 General Competencies in Assessment	282
9.3.2 Particular Competencies in Assessment	286

<u>Chapter Ten: Subject Matter Competencies Required for Teachers of Pre-Vocational Education</u>	292
10.1 The Subject Matter Competencies in 'Agriculture'	293
10.2 The Subject Matter Competencies in 'Industrial Education'	295
10.3 The Subject Matter Competencies in 'Business Education'	297
10.4 The Subject Matter Competencies in 'Home Economics'	299
10.5 The Subject Matter Competencies in 'Health and Safety'	301

<u>Chapter Eleven: Competencies of Pre-Vocational Education Teachers in 'Organising and Using the Workshop'.</u>	307
11.1 The Importance of the Workshop Activities for Teaching Of PVE	307
11.2 The Competencies Required of Teachers to Use the Workshop	311
11.2.1 Training Abilities	311
11.3 Applying the safety Rules in the Workshop	319

11.4	Maintenance of the Workshop Facilities	320
11.4.1	How Teachers and Supervisors Perceive the Maintenance of the Workshop	322
11.5	Management of the Workshop	323
11.6	PVE Teacher's Role in Purchasing of Workshop Requirements	326
11.7	The PVE Teacher Contributions to the Maintenance of School Facilities	327

Chapter Twelve: The Competencies of Pre-Vocational Education

<u>Teachers in 'Subject Application'</u>		332
12.1	Competencies of PVE Teachers in 'Enrichment of the Curriculum'	332
12.2	The 'Personal Abilities' Required for PVE Teachers	341
12.3	Vocational Guidance and Counselling	347
12.3.1	Teachers' Roles in Vocational Guidance	349
12.3.2	The Required Teacher Abilities in Vocational Guidance	351
12.3.3	Competencies of PVE Teachers in 'Vocational Guidance'	352
12.4	Teachers' Overall Perceptions of Their Role: Implications for Preparation and Training	361
12.5	The Priorities of Teachers' Competencies as Perceived By Teachers	365

Chapter Thirteen: Issues Relating to Teacher Preparation and Training of Pre-Vocational Education

		368
13.1	Shortcomings of Current Programmes of PVE Teacher Preparation and Training	368
13.1.1	The Lack of Practical Training	368
13.1.2	The Lack of Comprehensive Coverage of PVE Subject Knowledge	370
13.1.3	The Philosophy of PVE and the Implied Roles of The Teacher	371
13.1.4	PVE Administrative Issues	372
13.2	The Main Components of PVE Teacher Preparation	372
13.2.1	The Academic Component	373
13.2.2	The Practical Vocational Component	376
13.2.3	The Pedagogical Component	378
13.2.4	Practical Field Vocational Experience	381
13.3	The Requirements of PVE Teacher Preparation and Training	385
13.3.1	Human Resources	385
13.3.2	Facilities	386

Chapter Fourteen: Conclusions and Recommendations

14.1	What are the Outcomes of the Study?	388
14.2	Recommendations	401
14.3	Areas of Future Research	406
References		408
Appendices		428

List of Appendices

	<u>Page</u>
Appendix 1	The competencies of the PVE curriculum 429
Appendix 2	The standard list of the PVE workshop facilities in schools that have grades 5-7 435
Appendix 3	The syllabus of the PVE teacher preparation Programme at Jordanian Community Colleges 439
Appendix 4	The syllabus of the BA degree in PVE in the University of Jordan 440
Appendix 5	Responses of the PVE teachers to the pilot study ranked according to the frequencies 442
Appendix 6	The interview schedule 443
Appendix 7	An English translation of the questionnaire 445
Appendix 8	The competencies of PVE teachers as perceived by teachers ranked according to their perceived degrees of importance 457

List of Tables

	<u>Page</u>
3.1	Distribution of PVE Teachers by the Academic Qualifications for Year 1999. 83
5.1	The Numbers of the Schools That Have the Desired Grades in the Selected Directorates. 176
5.2	The Selected Number of Teachers in the Sample in Each Educational Directorate. 177
5.3	The Respondents' Distribution According to the Study Variables. 178

List of Abbreviations

- ANOVA:** Analysis of Variance
- CBTE:** Competency-Based Teacher Education
- CBVE:** Competency-Based Vocational Education
- CDT:** Craft Design and Technology
- DATA:** Design and Technology Association
- DES:** Department of Education and Science
- DFE:** Department for Education
- ERP:** The Educational Reform Plan
- GCSE:** The General Certificate of Secondary Education
- GNVQ:** General National Vocational Qualification
- HMI:** Her Majesty Inspectors
- LEAs:** Local Education Authorities
- MoE:** The Ministry of Education in Jordan
- NFER:** National Foundation for Educational Research
- NVQ:** National Vocational Qualification
- PBTE:** Performance-Based Teacher Education, which is another name of CBTE.
- PVE:** Pre-vocational Education
- QCA:** Qualifications and Curriculum Authority
- SCAA:** School Curriculum and Assessment Authority
- TVET:** Technical Vocational Education and Training
- VE:** Vocational Education
- WO:** Welsh Office

The first part of the study was a literature review. It examined the existing research on the topic of [illegible]. The review identified a gap in the literature regarding [illegible]. This gap was the focus of the current study. The study was conducted in a [illegible] setting. The participants were [illegible]. The data was collected through [illegible]. The results of the study are presented in the following sections. The first section discusses the context of the study. The second section describes the methods used. The third section presents the results. The fourth section discusses the implications of the findings. The fifth section concludes the study.

Part A: Context and Methods

The study was conducted in a [illegible] setting. The participants were [illegible]. The data was collected through [illegible]. The results of the study are presented in the following sections. The first section discusses the context of the study. The second section describes the methods used. The third section presents the results. The fourth section discusses the implications of the findings. The fifth section concludes the study.

General Introduction

Pre-vocational education (PVE) in Jordan is a practically based provision that aims to expose students to real life skills and to introduce them to the world of work. There is, it is suggested, a gap between the demands of PVE and the current abilities of teachers employed to deliver it. An educational reform plan that does not involve the teacher is unlikely to succeed. The Educational Reform Plan on which Jordan embarked in 1987 placed emphasis on improving the professional abilities and educational qualifications of the teachers. Within this general intention, research on PVE indicates that there is a huge gap between what is desired as outcomes and what is achieved (see for example Tweisat, 1998; Al-Jawarneh; 1999; Al-Hadidi, 1994; Salamah, 1994). Part of this problem lies in the inconsistency between teacher education programmes and teachers' job requirements. Teacher education programmes should ideally be based on the demands of the teacher's job, and training programmes should fulfil the trainees' needs. This has not been done for PVE in Jordan. Based on that situation, this study aims to identify and analyse demands on the Jordanian PVE teacher, and to determine the required competencies of the teacher to meet these demands. Special attention will be paid to those aspects that demand approaches different from those followed in the preparation of teachers of other subjects in basic education.

To achieve the aims of the study, activities of curriculum delivery, the role of the teacher within the curriculum, and the supportive and subsidiary functions of the teacher were identified through semi-structured interviews. These interviews were held in Jordan with individuals in key positions: members of teams responsible for PVE curriculum development which designed the curriculum and approved its philosophy,

and supervisors (who present a link between what decision makers intend to achieve and what is actually done).

To analyse teacher abilities, the research developed a list of competencies. The perceived relevance of each competency to the teacher's work was investigated as well as its importance, by measuring the views of the teachers themselves and of PVE supervisors. To identify an appropriate base for teacher preparation and training, the study investigated the aspects that make PVE different from other subjects, and identified the most suitable approach that could be followed in this preparation in addition to the main components that should be included. An important issue is that of vocational field experience which is often considered an essential component of vocational teacher preparation. The study discusses the problem of how this experience can be achieved in the context of PVE in Jordan. To enable this study to suggest improvements, the shortcomings of current preparation and training for PVE teachers in Jordan are critically examined.

The thesis is organised in three parts and fourteen chapters. The first part includes the contexts and methods. This part is presented in five chapters. The first chapter is an overview of the subject; this also includes the rationale of the study, its importance, aims, and questions. The second chapter examines the experience of England and Wales with respect to Pre-vocational education. The third chapter examines the relationship between teacher education (and training) and the demand of teaching in terms of teachers' abilities. This chapter also provides a theoretical background to the approach

of the study, and its contribution to the planning of teacher preparation for PVE. Chapter 5 explains the methods and procedures followed in the study.

The second part presents some of the study findings. This includes the special features of PVE in Jordan (Chapter 6), and the activities of delivery of PVE and teachers' role (Chapter 7). The third part is mainly relating to the competency-based teacher education. Background to this approach is discussed in Chapter 8. This includes the definition of the competency and its different constructs, the operational framework of the approach, and its advantages and drawbacks, in addition to the sources of derivation of competencies. Literature on the competencies of the teacher is also reviewed in this chapter. The study findings with respect to the PVE teacher competencies identified in the fieldwork are analysed in Chapters 9-12. Chapter 13 relates these competencies to PVE teacher preparation and training. This latter chapter also discusses shortcomings in current training programmes and methods which might be adopted to overcome them. Finally, conclusions and recommendations are presented in Chapter 14 of this study.

It is important to recognise that findings in this study reflect the context in Jordan. Though given the same name, PVE in other countries may have a very different context in terms of philosophy, objectives, curriculum structure and in teacher education models.

Jordan's Need for Pre-Vocational Education

Jordan has a long-standing policy of human resources development. This policy is maintained through quality education (Tuffaha, 1990). One of the aims of the

educational system in Jordan is to produce effective and productive citizens who are able to deal with continuous technological development and changes in life style and its requirements. Therefore, the main rationale for introducing pre-vocational education in the basic education is to expose students to real life skills in order to improve their daily life and home environment and to enable them to better appreciate manual work (MoE, 1988; Murad et al, 1995).

Jordanian society generally has negative attitudes towards vocational careers and vocational education due to its social traditions that do not value this area. Jordan therefore has a shortage of labour in associated areas of employment (Rihani et al, 1997). The Ministry of Education aimed to provide the students with an appropriate orientation to work. This orientation is hoped to change perceptions and attitudes towards manual work favourably, and to lay a foundation for secondary vocational education by linking practical work to education through introducing students to the world of work. The exposure of students to pre-vocational subjects may motivate them to study technical subjects in the future (Tuffaha, 1990). This explains the need for pre-vocational education dimension in the national curriculum of primary and secondary schools.

The Study Rationale: Its Significance, Questions and Purposes

Rationale and Significance of the Study

The teacher is the main element in the educational system, and any improvement must recognise this. From this point of view, Coombs (cited in Sungor, 1989) concluded that

unless a comprehensive review of teacher preparation and training takes place, it will not be possible to improve current educational systems. To provide a teacher who is well equipped for his/her career is the main challenge facing training establishments. Upgrading a teachers' 'level' demands the enhancement of their personal abilities, improvement of their subject and professional skills through adopting better approaches to teacher preparation (Al-Jabban, 1997).

It was recommended by Meabrahtu (1994) that future educational decisions in Jordan should be based on more empirically grounded studies of how teachers are selected, trained, deployed and utilised. Taking into consideration the unique aspects of PVE in terms of its subject variety, workshop requirements and vocational guidance demands, the PVE teacher should be prepared accordingly. In short, a considerable gap exists between what PVE teachers have to teach at school, and the way they are being prepared. Up to the present there is no pre-service programme in Jordanian universities for PVE teachers. Two of the public universities (Yarmouk and Jordan) intend to introduce a pre-service programme.

Designing suitable training programmes should start with an accurate investigation of the skills required of the prospective teacher and the abilities (competencies) that the teacher should have. When these requirements are known the curriculum designer can select the content relevant. This study is intended to provide results which will help to build a rational basis for a teacher training programme able to address to present and future needs of PVE in Jordan.

Taking into account the problems of PVE implementation in Jordan that include the lack of qualified teachers, supervisors and teacher educators, the unsatisfactory nature of in-service teacher training programmes and the negative attitudes of the teachers and administrators (Tweisat, 1998; Al-Jawarneh, 1999), this study will contribute to designing training programmes that can produce teachers with appropriate competencies.

The curriculum guidelines are very ambitious in the objectives identified for PVE. The skills of teachers that enable them to achieve these objectives need to be identified. Through the interviews and questionnaires used in this study the tasks of the teacher will be identified by the teachers themselves and the other involved observers and experts. Determination of the academic and training requirements of a certain job provides a basis through which to identify the syllabus and the contents necessary for the preparation of the job holders (Salamah, 1994; Masri, 1990).

The results of this study will, it is intended, shed light on the appropriate approach for PVE teacher preparation with the result that implementation of the recommendations would assist such teachers to be competent to meet the objectives of PVE implementation.

Pre-vocational education in Jordan is divided into three educational stages according to student age. This study is mainly concerned with grades 5-7, nevertheless the results would facilitate the design of training courses for the teachers of the other stages.

The ultimate aim of most research is to contribute to knowledge and to development. The results of this study are intended to contribute to an understanding of the whole educational system in Jordan by suggesting a rational approach to teacher preparation, specifically for PVE, but having a more general affiliation to other school subjects. This might also encourage an improved approach to teacher education, since at present most decisions in Jordan currently depend on the experiences of individuals, rather than on research findings. It is intended that the results of this study will assist Jordanian universities in implementing PVE teacher education programmes. The findings will, it is hoped, help programme designers to identify key elements of both content and delivery strategy.

Aims of the Study

The current international trend with regard to teacher training emphasises the necessity of directing programmes towards equipping teachers with the required abilities for effective performance in schools (Avolas, 1991; Norton, 1987; Brady, 1995). More details and theory relating to this aspect are in Section 8.2 (pp. 233-234) and 4.1 (pp. 114-116). Al-Jabban (1997) emphasised that determination of the roles of teachers and their desired performance is one of the main planning requirements for teacher education and training (see Section 4.9, pp. 141-144). Among other planning activities for teacher education, Al-Jabban mentioned the analysis of the current situation in teaching, analysis of the general characteristics of the subject for which the programme is designed and identification of the outcomes required.

Based on the demands of planning for teacher education mentioned above, this study aims to construct a rational base for the PVE teacher preparation and training in Jordan.

This aim subsumes other subsidiary and contributory aims:

1. identifying the special features of PVE as a provision that may require different approaches in its delivery and therefore different components in teacher preparation.
2. analysing the role of the PVE teacher, the tasks associated with the role, and the factors affecting perceptions of the role.
3. identifying teacher competencies required to carry out the role and thus to achieve the curriculum objectives. Additionally the study will examine the availability in and practice of these competencies by PVE teachers.
4. analysing the implications of the above for teacher preparation and training so as to enable teachers to function effectively within the different dimensions of PVE.

Questions of the Study

To achieve its aims, this study will address the following questions:

1. What are the special features of PVE that make it different from other school subjects delivered at the same educational stage?
2. What are the roles of PVE teacher in Jordan, the associated activities and tasks required for those roles?
3. What are the competencies that PVE teachers must acquire to fulfil their roles effectively?
4. What are the implications of the competencies for in-service teacher training?
5. What are the programme-design issues for PVE teacher preparation and training?

This will include the following:

- What is the most suitable approach to the preparation of PVE teachers?
- What should be the main components of PVE teacher education programmes?
- Is practical vocational experience necessary for PVE teachers? (If so in what ways?)
- What are the shortcomings of the current provisions?
- What corrective action could be taken in the light of the results of this study?

Definitions

a) Teacher Education and Training

These two terms represent two poles of ideology concerning the ways in which teachers are prepared. Teacher education is deemed to be concerned with the intellectual development of teachers, whereas teacher training is more concerned with the development of particular areas of knowledge and skill that are instrumental to the task of teaching (Thorough analysis of this issue is in Section 4.4, pp. 121-126). For the purpose of this study, the demands of PVE teaching in terms of teacher abilities were termed 'teacher preparation'. However, PVE teaching requires some practical 'training' with concern to the practical skills, and may be some work placement. The term 'teacher training' was also used to indicate that a certain competency should be taken into account in 'in-service' programmes to fill the gap in the teachers' abilities when a competency was found not to be practised.

b) Basic Education in Jordan

After finishing an elective (that is voluntary) pre-schooling period at the age of 6, children are compulsorily and legally required to attend school for 10 years (grades 1-10). Schools follow a common scheme of study. Pupils learn a common

curriculum in the following subjects: Arabic Language; Islamic Education; Mathematics; Sciences; Social Education; English Language; Pre-vocational Education (PVE); Physical Education and Music Education. Government schools, which are the majority of schools in Jordan (70 per cent), are mixed at the first four grades (1-4), but single sex at grades of five and after. Male schools are managed by male staff and female schools are managed by female staff. Students are assessed yearly. They are evaluated at the end of basic education according to their academic achievement through grades 8-10, with a cumulative score comprising of 20 per cent, 30 per cent and 50 per cent respectively of their total marks in these grades. This system was designed for the purpose of rationalising students' classification and determining entrance to the two possible streams of secondary education (academic or vocational).

c) The Educational Supervisor

Each subject taught at school has its own supervisor who helps teachers and provides them with advice. The supervisor is an experienced and qualified former teacher. The educational supervisor has the following responsibilities (MOE, 1981, p. 45)

- Enhancing the teaching/learning process through providing advice to teachers regarding the subjects they teach, teaching methods, teaching approaches and educational media they use. This advice and guidance is offered to the teachers through supervisor's visits to schools, attendance at some lessons, and auditing lesson and term plans. The supervisor also nominates teachers for professional development training based on needs determined through visits.
- Helping to cover the shortage of facilities, equipment, and textbooks for the subjects they supervise.

- Auditing the timetable of the school to ensure its technical soundness and the distribution conformity with general study plans and the available posts in the school.
- Auditing the documents of students' acceptance in schools and their transfer, and assuring its organisation according to rules and working instructions.
- Contributing to the assessment of the teacher's performance, and deciding 30 per cent of the total mark of the teacher's annual performance report (the other 70 per cent is determined by the head teacher). In this regard, the teacher's performance is assessed annually (through a standard report) by the head teacher based on the activities he/she performs in the school, the absence/attendance rate and the teaching performance. Based on the reports prepared by the head teacher and the supervisor, the teacher's promotion and other actions are decided. Contributing to the assessment of teachers' general performance based on one or at most two visits throughout the year is not completely valid and usually produces unfair assessment. This results in frustration for those teachers who feel that their performance was not fairly assessed.

d) Curriculum Development Teams

The action plan of the Educational Reform Plan (ERP 1987) introduced new curricula for all subjects of school education in Jordan as one of the main methods through which to achieve its objectives. To shoulder the responsibility for new curriculum development in each school subject, two teams were formed. The first of these, the Team for PVE Curriculum Development, has responsibility for the development of curriculum components in terms of general objectives, subject content, guidelines, and

teacher and student books. This team includes members with educational experience such as subject supervisors and specialists in each subject field. The work of this team is supervised by the Team for Supervision on PVE Curriculum Development. Members of this committee have much the same qualifications as in the former team, but have official positions in the Ministry of Education. The responsibility of this team is to revise and approve the revised curriculum before its submission to be approved by the Council of Education (in the Ministry of Education) (Jaradat, 1989).

Chapter One

An Overview of Pre-Vocational Education

Introduction

Without background knowledge of pre-vocational education (PVE) in Jordan and the purposes it serves, the reader will find it difficult to recognise the key issues of this study. This essential background is the intention of this chapter. It examines the theory and context of pre-vocational education and components associated with it in Jordan, in addition to problems of effective provision, particularly those related to teacher performance.

1.1 Contextualising Pre-Vocational Education

The movement from the liberal humanist to a functionalist approach to education, with education being seen increasingly as preparation for the world of work to meet the needs of an economy, has led to a growing body of critical literature (Chitty, 1987; Dale, 1985; Gleeson, 1989; Shilling, 1989; Young, 1992). However, closer examination of the history of pre-vocational education demonstrates that the concern for a more 'utilitarian' approach, that is to prepare youngsters for the world of work, is a recurring debate which goes back many centuries (Marshall, 1990).

The connection between education and work was recognised very early in the Eighteenth Century (Lawson, 1993; Gang, 1989). With the evolution of industrialisation, several countries, especially European, introduced vocational training into their elementary and secondary schools (Compton, 1997). It was argued that there was a need to teach youngsters the basic skills needed by industry (Lawson, 1993).

In 1974 PVE received a big impetus when UNESCO perceived general education as incomplete without an introduction to vocational aspects and to technology. This was expressed in the eighteenth session of the general conference of UNESCO as follows:

'An initiation to technology and to the world of work should be an essential component of general education without which this education is incomplete. An understanding of the technological facet of modern culture in both positive and negative attributes, and an appreciation of work requiring practical skills should thereby be acquired. This initiation should further be a major concern in educational reform and change with a view to greater democratisation of education. It should be a required element in the curriculum, beginning in primary education and continuing through the early years of secondary education...The technical and vocational initiation in the general education of youth should fulfil the educational requirements of all ranges of interest and ability' (UNESCO, 1974, p. 7).

The introduction of vocational education to students at this early stage (primary and early secondary) does not aim to prepare them for employment, but is rather intended to improve their general abilities and explore their interests through offering them a wide variety of experiences. It was intended that this introduction to vocational education should perform three functions:

- a) to enlarge educational horizons by serving as an introduction to the world of work and the world of technology and its products, through the exploration of materials, tools, techniques and the process of production, distribution and management as a whole, and to broaden learning through practical experience;
- b) To direct those with interest and ability towards technical and vocational education as a preparation for an occupational field, or towards training outside the formal education system.
- c) To promote in those who would leave formal education, at whatever level, but with no specific occupational aims or skills, attitudes of mind likely to enhance their

potential, and to help their choice of occupation and access to a first job, and to permit them to continue their vocational training and personal education.

Regarding the content and structure of such introductory programmes, it was recommended that they should have a balance between theoretical and practical work (UNESCO, 1974, p. 7). It was also recommended that such programmes should:

- a) be based on problem-solving and experimental approach and involve experience in planning methods and decision making;
- b) introduce the learner to a broad spectrum of technological fields and, at the same time, to the productive work situation;
- c) develop a certain command of valuable practical skills such as tool use, repair and maintenance and safety procedures, whether applicable to future education, training and employment or to leisure time, and a respect for their value;
- d) develop an appreciation of good design and craftsmanship and the ability to select goods on the basis of their quality;
- e) develop the ability to communicate including the use of graphical means;
- f) develop the ability to measure and calculate accurately;
- g) be closely related to the local environment without, however, being limited to it' (UNESCO, 1974, p. 7).

Pre-vocational education is an approach designed to ensure the acquisition of skills, attitudes and behaviour that enable students to continue to learn and to equip them for change in life (Kanu, 1986; Gilliard, 1995). Therefore, no sharp distinction can be prescribed between theoretical and practical content, but from the above listed outcomes identified by (UNESCO, 1974), it is inevitable that the content of these programmes should be more practical than theoretical

1.1.1 The 'Vocationalisation Debate'

The 'Vocationalisation Debate' is a controversy that has developed internationally since the 1960s, mainly concerning the provision of vocational education at secondary school level. Different issues are related to this debate. These include cultural issues relating to

the status of vocational education as seen by the students, the teachers and the wider community including the students' parents. Other issues are economic, regarding the cost of the programmes in comparison with that of academic education; and some functional issues concerning purely vocational schooling versus purely academic schooling or the provision of diversified curriculum.

Increasing evidence has come to the conclusion that vocationalising the school curriculum is not viable (Foster, 1965; Lillis and Hogan, 1983a; Urevbu, 1984, Psacharopoulos and Loxly, 1985; Lillis, 1989; Lauglo and Lillis, 1988; Psacharopoulos, 1991). Since the mid-1970s aid agencies such as the World Bank started showing significant shifts in their sponsorship from vocational to non-formal education and other programmes (Nherera, 1994; World Bank, 1991; Coombe, 1988; Middleton and Demsky, 1989). Most of the evidence castigating the inclusion of vocational courses as part of school curriculum seems to be based on economic arguments. It was found that vocational courses are expensive (Psacharopoulos and Loxly, 1985; Cumming, 1986; Coombe, 1988). For example, the study by Psacharopoulos and Loxly (1985) that was conducted in Tanzania found that costs were 14 per cent higher in the vocationally 'biased' schools than in those emphasising academic subjects. Significant contributions to the debate have concluded that policies emphasising the provision of vocational education in schools are doomed to failure (Foster, 1965; Psacharopoulos and Loxly, 1985; Lauglo and Lillis, 1988, Urevbu, 1984, World Bank, 1991; Sifuna, 1992). They contend that schools should concentrate on increasing access to and improving the quality of general education. However, the suggestion to delay providing vocational

education until after secondary education implies denying the majority of pupils the opportunity to acquire even basic vocational skills (Nherera, 1994).

Although the bulk of literature provides evidence counter to a policy of vocationalising the school curriculum, protagonists have provided counter-evidence in support of its provision. Although acknowledging that vocational subjects were substantially more expensive than academic, Lauglo (1985) argued that in Kenya pupils with more exposure to industrial education in their secondary education were more positive towards the subjects and expected to find technically related jobs.

1.1.2 This Study and the 'Vocationalisation Debate'

The 'vocationalisation debate' is primarily concerned with the issue of the inclusion of vocational subjects in SECONDARY school curricula that aim to prepare students for smooth entry to work place. This study is not directly related to such a debate. Pre-vocational education in Jordan aims to equip students with skills mainly for everyday life and not to prepare them for work places. Therefore, the skills included are below the level of employment (for more details see the objectives of PVE in Jordan and the content of the courses that are provided in Sections 1.2.3, pp. 25-33, and 1.2.4 pp. 33-41, and Appendix 1). It is aimed, by the Jordanian Ministry of Education, to improve students' attitudes towards work and careers. Moreover, this is done at the stage of basic education (grades 1-10) which is before secondary education and where the age of students does not allow preparation for employment.

This study is concerned with methods of delivery used in relation to the subjects included in PVE, and the achievement of the intended objectives in order to determine the demands on the teachers' abilities and their required training. Therefore, whilst important in terms of contextualising this study, the mainstream vocationalisation debate is not one that is directly related to it.

1.1.3 Pre-Vocational Education: General or Technical?

'It is not intended from the practical and technological content in the basic education to give the school a social utilitarian characteristic that confines its function to prepare students for vocational work. However, it is intended to involve the practical side of the cognitive knowledge, particularly that of science subjects in which the included facts and the desired benefits cannot be revealed without presenting concepts through practical application or tangible uses. Confining the school role to a function that contradicts its main task should be avoided. The school task should not be changed from a 'constructive cultural task' into a 'vocational task' (Fadheel, 1993, p. 44).

The focus of the argument above is that the school has a general cultural task as its major objective. The introduction of the technological and practical parts within the school curriculum should be carefully planned and managed in order not to shift the task of the school to that of a vocational preparation institution. In this sense, the school should concentrate on the academic, intellectual, and cultural subjects that contribute to the cognitive construct of the students. However, there is a debate about what schools should teach (more about this issue can be found Pring, 1999). However, it is an intention of the introduction of vocational education in basic education to show the function and benefits of the other subjects taught at schools.

Even to gain entry into employment, the importance of general skills rather than specific skills is underlined. This was stated in the so-called SCANS (Secretary's

Commission for Achieving Necessary Skills) report in the USA (The United States Department of Labour, 1991). The report recommended competencies and skills for someone entering the labour market, in order of priority:

- a) the ability to allocate time, develop and prioritise goals, allocate money and prepare budgets;
- b) the ability to identify the need for data, employ the means to obtain them, and organise and keep them;
- c) the ability to participate as a member of a team, and communicate with clients;
- d) the understanding of social, organisational and technological systems work and how to operate them;
- e) the ability to select technology and apply it to the task in hand.

Psacharopoulos (1997), from his experience in the World Bank, noted that emphasis is placed on general communication skills, rather than on narrow technical/vocational specialisation. This does not mean, according to Psacharopoulos, that there is no room for vocational education, rather that it should be offered outside formal education and linked to employers through firm-based training. In this sense, the role of the school is to instil general not vocational specialised skills, a fact that undermines the vocationalising of the school curriculum and suggests the de-linking of vocational education and training from the formal school system. Psacharopoulos (1997, pp. 391-392) expressed and justified this as follows:

‘Experience in several countries has shown that it is vain to try to vocationalise the curriculum, whether this refers to the secondary or even the basic education cycle. The formal school’s main function is to instil general skills. This is what students and their families expect. If the school tries to offer something different, it will fail or be boycotted. Also, it might be internalised that a solid basis of general skills is essential and facilitates more efficient training later on

in life. The key policy here is preparation for an unknown future facilitation of training'.

What could be clearly concluded from this view is that the school curriculum should emphasise general skills that prepare students better for their 'general life'.

1.2 Pre-Vocational Education in Jordan

1.2.1 The Nature of Pre-Vocational Education in Jordan

It was found in the review of experiences of countries other than Jordan that the introduction of vocational education in basic education is not usually named 'pre-vocational'. Among the other names found were 'introductory' technology, 'manual skills', 'manual arts', 'manual work', and 'design and technology' (Tweisat, 1998). The literature reviewed concerning PVE indicates that the term 'Pre-vocational Education' is mostly used to describe provision that aims to prepare students for the work place at 'entry level' in secondary education (see for example the English experience in the previous section). Based on the fact that the Jordanian provision does not have this aim, it might have been better to give it another name that more clearly reflects its aims. But PVE comes from the direct English translation of the Arabic term, *Attarbiyah Al-mehniyah*, where the first word means Education and the second means vocational. Nevertheless it is difficult to find literature on similar provision with a similar name.

Pre-vocational education in Jordan is a practical form of provision that is studied at all grades of basic education. It is delivered as modularised training packages in agriculture; industry; business; home economics and health education (Tuffaha, 1990).

These modules, designed within a competency model, do not aim to prepare students directly for the work place, but rather to expose pupils to a wide base of vocational experiences, useful at personal and perhaps family levels, and to identify their vocational abilities and interests at an early stage (Tweisat, 1998). It is hoped by the Ministry of Education (MoE) that this may encourage students to better appreciate manual work, and where appropriate, to be prepared to select it as a career (MoE, 1994, p. 8).

It is important to take note that PVE is not intended to prepare students to work in paid jobs. Therefore, none of the units of the curriculum cover all the tasks of any vocational job. There is no precise dividing point between employment related and non-vocational skills. If employability means the ability to do jobs in industry, agriculture and business, the only difference is the breadth of the delivered skills, that is the number of vocational tasks covered in the programme. In programmes that aim to prepare people directly for employment, a spectrum of skills is delivered to cover all the tasks associated with a certain vocation to a certain competence level. In PVE only selected tasks in different careers are taught, and levels of skills are generally less than the employment level. More consideration is given to this issue later in the chapter.

For this study, the nature of the skills delivered has to be clearly defined, since it is an important issue for teacher preparation. Preparing teachers to deliver 'employment-level' skills implies additional components of teacher education, higher levels of competence that are probably associated with long work experience. Economic and managerial issues of jobs are usually considered subsidiary in PVE provision (in

Jordan) while more focus is given to the teacher's mastery of subject matter and guidance activities.

1.2.2 A Brief History of Implementing Pre-Vocational Education in Jordan

a) 1950-1978

An early form of PVE was introduced for grades 7-10 but not in all schools. It was then called 'Vocational Activity', and it was allotted two class periods (a total of one hour and a half) per week. The curriculum in schools for male was different from that in those for female. The latter studied home economics, while the former studied agriculture, industry or business. There were only general guidelines for teachers and no student textbooks (Nasrallah and Al-Nabtiti, 1995).

b) 1979-1990

During this period, it was still not required by the Ministry of Education to implement the PVE curriculum in all schools. The deciding factor in this was the available facilities. The term 'Pre-vocational Education' was adopted and where this was taught it was for all grades of basic education with two class periods (a total of one hour and a half) per week. There were guidelines for teachers but no student textbooks. The period before 1987 could certainly be considered as an experimental one for PVE since no specific curriculum existed and not all schools taught the subject (Nasrallah and Al-Nabtiti, 1995).

c) The Educational Reform Plan and PVE

The Educational Reform Plan in 1987 established PVE as a compulsory subject within basic education. The Education Act.3, 1994, created a new curriculum and applied it to all basic schools (MoE, 1995). The structure is organised at three levels according to grade.

Level-1: Introducing PVE at grades 1-4 on the basis of one class period per week (45 minutes). Newly developed publications were prepared as teachers' guides and student work books.

Level-2: Developing PVE at grades 5-7 on the basis of two class periods per week. The syllabus for these grades includes units relating to five different PVE packages, that is agriculture, industry, business, home economics, health and general safety.

Level-3: Further extending the teaching of the subject at grades 8-10 on the basis of four class-periods per week. At this stage each school is required to choose packages in at least two different fields from a range provided in the curriculum guidelines. This choice should be based on the needs of local society and school facilities. This introduced a responsibility on the school and the teacher of PVE not found in other curriculum areas. It required that the teacher select packages based on informed knowledge of the students' needs and understanding of the available facilities both within the school and the local environment.

The curriculum guidelines do not suggest that PVE is gender specific at any of its stages. In fact it is stated explicitly that at the second stage (grades 5-7) it is intended to expose all students to a wide base of vocational experiences regardless of gender. Similarly at the third stage (grades 8-10), the curriculum guidelines do not imply that

any specific training unit should be taught to male or female students, but it is stated that selection of these training units should be based on student needs and available facilities. In practice 'students' needs' does imply that the subject is gender specific at this stage because when traditions of society are taken into account, what is needed for females is different from male students. In Jordan, females need to acquire skills in domestic and homework like food preparation, sewing and dressmaking, but males need to have skills of an industrial, business, or agriculture nature. The recognition by the MoE. that PVE is gender specific at this stage, can be seen from the difference in the workshops of female and male schools where in the former larger areas are allocated for home economics and in the latter for industrial training.

Based on the fact that the educational year is 32 weeks long, the total number of periods allocated for PVE amounts to 660 classes during the basic education stage. Teachers usually complain that this number of class periods is insufficient to achieve the stated objectives, but the study shows that educational supervisors have a different view. They emphasise that the textbooks are intended to be flexible: not every exercise in these books should be conducted. It is required that the selected delivery covers all the curriculum fields in order to achieve the objectives of exposure to a wide vocational experience and to explore student aptitudes. This teacher selection is not a feature of other curriculum subjects.

1.2.3 PVE Objectives and Their Implications

The curriculum guidelines (MoE, 1990b, pp. 61-62) state the following as the general objectives of the entire provision in all three stages. In addition, each of the three stages

has its own specific objectives (see Appendix 1). The statement of the objectives is provided (in 'italic' font), followed by a brief analysis of the implications.

1. *Inculcating in the students positive attitudes towards manual work and workers, by breaking down psychological barriers.* Although PVE in Jordan is not intended to prepare students for employment, this requires an introduction to practical applications in order to familiarise students with such work (Murad et. al, 1995). The objective is intended to encourage the improvement of society through enhancing attitudes towards manual work in a view to fulfilling the prospective demands of labour market (Masri, 1995). Such attitude change as a learning outcome needs a long term commitment in delivery and evaluation, since attitudes are inculcated and changed by the accumulation of experiences (Jaradat and Tuffaha, 1995).

2. *Enabling the students to acquire practical and applicable skills with useful economic and social dimensions.* Taking into account that these skills are not intended to prepare students for employment (MoE, 1990b), this indicates that the activities should be 'life-relevant' but within a limited social and economic dimension. It also implies that the delivery of the curriculum should be learner centred. This demands that the teacher go beyond practical delivery of the curriculum and show the advantages of the subject for the learners' life (Atwan, 1995).

3. *Providing the students with an opportunity to discover their affinities and aptitudes in order to facilitate their selection of prospective careers based on informed and realistic bases.* This implies that students should be exposed to vocational skills covering complete tasks in different careers to have a realistic measure of their abilities and to discover and utilise his/her affinities towards the right career (Jaradat and Tuffaha, 1995). However, the curriculum should keep offering subjects that fulfil all ranges of interests of students (UNESCO, 1974).

4. *Developing awareness in students of the different vocations and their employment requirements.* Although it is not intended to prepare students for employment, this demands the delivery of practical skills within a career context in the labour market. The teacher must therefore update his/her knowledge of career opportunities in the labour market at local and national levels (Tuffaha, 1990). Additionally, opening channels of communication between schools, society and vocational establishments is very important to achieve this goal.

5. *Acquainting students with the practical application of knowledge obtained from other subjects.* This requires integration between PVE and other curriculum subjects. Also integration between theoretical (scientific and technical) information and practical skills. This in turn requires co-operation between teachers of different subjects, a feature which is absent in Jordanian schools (Batarsah, 1994). To achieve this objective effectively, transferring some of the curriculum units to other scientific subjects could enhance the intended integration.

6. *Improving the students' practical sense and improving their ability in problem solving.* This implies that the student should be exposed to certain tasks individually, and should be equipped with the skills of analysis, construction and testing of solutions systematically. Whilst this should be a feature of all subjects studied, PVE has the major contribution to make because of its practical nature (Al-Anati, 1993). However, this requires the delivery of the subject as a practical subject and not to confine its delivery to theoretical knowledge as is the case in some schools (Tweisat, 1998). It also requires a suitable approach to delivery that enhances the students' ability to solve problem and to undertake tasks independently (UNESCO, 1974).

7. *Helping the students to perceive the values of vocational work and their importance in developing personal behaviour of vocational practitioners.* This requires a major consideration of the values in terms of the quality of the work and the general professional values. The teacher needs to focus on work-values during training in practical skills and to conceptualise them as part of skills' acquisition (Tweisat, 1998).

8. *Providing students with knowledge and skills that enable them to deal with modern technology.* This objective requires that PVE should be flexible in its approaches and examples. The curriculum should be flexible to involve innovation. The facilities should be revised sufficiently frequently to afford new technology provision for the teacher and the students to use. The most important aspect, the teacher, should be able to follow technology through continuous development and

self-effort. This also implies that teaching loads for the PVE teacher should not be as heavy as to leave inadequate time to prepare materials concerning new technology. It is a good occasion to recall that information technology is one of the main tools and provisions of technology. This implies that the teacher should be equipped with the necessary skills to use information technology to help him/her to gain awareness of new innovations and to help in preparation of relevant materials (Adams and Pratzner, 1987; Farley, 1983).

9. *Developing the students' consciousness of the requirements of domestic life and its health, economic and social dimensions.* As the Educational Reform Plan (ERP) stated (Jaradat, 1989), the main objective of education in Jordan is to cope with social changes and 'growing-up'. PVE is the most practical subject in the basic education stage. To meet the goals of the ERP, its activities should be oriented towards life, and related to community needs. Understanding this, the view of PVE teachers is that they should be more aware of current and prospective needs of society. Adams and Pratzner (1987) stated that the success of vocational teachers depends heavily on their consideration of the ever-changing demands of the society.

Due in part to the academic background of the teachers, and in part to some social traditions, male teachers tend to teach units that suit their background and that they feel are suitable to male students. This does not normally include domestic tasks. This is contrary to the guidelines of the curriculum. These aim to break down psychological barriers by encouraging girls to look beyond the traditional feminine roles by providing opportunities to practise some industrial skills, and to expose boys to some experiences

that are traditionally considered as female roles as, for example food preparation (Tweisat, 1998).

Therefore, the changes in society imply an additional dimension for teacher educators. They must have the ability to match the skills taught with the current and projected roles of vocational teachers (Brawn and Davison, 1991). Moreover, they need to encourage the development of strategies which equip teachers with the means to link schools more immediately to the community (Wentling et al, 1994).

10. Helping the students to understand the health and nutrition practices and adopt these to achieve healthy growth.

More than 20 per cent of the health education content in the basic educational system in Jordan is included within the PVE curriculum. Good nutrition is part of the health of the person and the family. This important objective of PVE implies that all the students should be exposed to the included experiences regardless of gender (see the ninth objective).

11. Providing the students with an opportunity to practise vocational skills that encourage a constructive approach to work.

A constructive approach to work does not mean undertaking tasks at the employment level. This objective intends that students should develop positive attitudes towards PVE such as to practise vocational skills during their leisure time. Also, teaching activities should help the students to use self-learning approaches. They should understand and accomplish exercises fully in the workshop in order to be confident

when working elsewhere and on their own, and use textbooks as guidelines for further work.

The teacher should play the role of a facilitator of learning. He/she should try to be effective when providing demonstrations for the students. This could help to emphasise the functionality of PVE. Also he/she should encourage the students in extra-curricular exercises, take interest in the accomplishment of these exercises, and evaluate the students' performance (Salamah and Nazzal, 1995).

12. Developing the students' sense of responsibility towards the local environment and society.

Pre-vocational education is one of the school subjects that has a role relevant to the environment. This could mean the use of environmental waste materials, or of knowledge of environmental dangers and their solutions for example, accident prevention and first aid. The curriculum and the teacher should be flexible enough to select environmental issues that are appropriate to circumstances and the locality. Indeed, one of the authors of the curriculum emphasised that relevant competencies should be general rather than specific. This allows the teacher to develop different specific skills to suit the needs of the locality. Teachers should try to raise awareness of relevant issues through all PVE activities (Nasrallah and Al-Nabtiti, 1995).

It is worth noting that environmental education (as a cross-curricular issue) implies a wide understanding of local, national, international and global issues (Tilbury, 1993).

The PVE curriculum, however, focuses only on local environmental questions and

neglects all higher levels. This may be due to political considerations but, nevertheless, environmental education is still seeking its identity (as a philosophy) in the educational system in Jordan. To deliver it successfully at any level, it should be incorporated in teacher education programmes so as to equip teachers with the necessary competencies to deliver such issues (Tilbury, 1993).

13. Enabling the students to communicate through drawings and symbols.

Drawings and symbols have become one of the main means of communication in life. Without knowledge of this 'language' people will not be able to deal even with the simplest everyday things, such as clothes labels, road traffic regulations, user and operation manuals for domestic equipment. Teachers should therefore consider this issue when delivering the curriculum, so as to help the student understanding during everyday activities. It must not be forgotten that the teacher has to understand these issues to explain them to students. Also, this is one of the aptitudes required for the students to enter careers in the future. Usually, students find technical drawing a difficult subject that hinders their progress in vocational and technical studies; it is highly dependent on hobbies, interests and previous experience (Masri, 1993).

Although these strategic objectives for PVE seem to be realistic, in fact the specific competencies (Appendix 1) identified are idealised and difficult to achieve. This is made worse by the present level of teachers' abilities and of schools' facilities. For example, the curriculum includes a training unit in rearing chickens and rabbits, but no basic school has any suitable facilities for this, and few teachers (if any) have the required knowledge and practical experience to deliver such a topic successfully. The

problem becomes even more problematic when linked to the negative attitudes of many people towards PVE (Fadheel, 1993). The updating of the school curriculum and the changes that are occurring in knowledge and skills aspects of every profession, including teaching itself, imposed new roles and additional tasks on professionals (Attwell, 1997). Brawn and Davison (1991) emphasised that to train and educate vocational teachers to perform their duties effectively, trainers must be aware of these changes and should be prepared to act accordingly. Therefore, introducing a PVE curriculum with the aforementioned objectives implies new roles for PVE teachers. In turn, teacher educators should study these roles, understand them, and take them into account in design and implementation of teacher education programmes in order to enable teachers to perform their roles effectively. Based on that, this study, will investigate the role of the PVE teacher and its implications for teacher education and training. The updating of the school curriculum and the changes that are occurring in the knowledge and skills aspects of every profession, including teaching itself, imposed new roles and additional tasks on professionals (Attwell, 1997). Brawn and Davison (1991) emphasised that to train and educate vocational teachers to perform their duties effectively, teacher trainers must be aware of these changes and should be prepared to act accordingly.

1.2.4 The PVE Curriculum

The PVE curriculum is distinguished from the traditional academic curriculum in that it includes not only theoretical knowledge and basic subject skills, but also practical ability in real-life situations. Pre-vocational education does not take the form of a linear curriculum, and thus interaction of all the relative components will continuously occur.

Indeed, one of the features of the PVE curriculum is the flexibility it offers for teachers in skills' selection (Tweisat, 1998).

As mentioned before, the PVE curriculum in Jordan comprises three stages. The curriculum guidelines state that teachers can select exercises from those prescribed in the grades 5-7 in order to cover all curriculum fields. They must then choose training units in at least two of the main fields of the curriculum for grades 8-10.

It is noticeable that, at grades 5-7, the curriculum aims to expose the students to a broad base of vocational experiences, therefore a broad but superficial range of skills are to be delivered. More in depth training in a narrower selection of vocational tasks is provided for the students at grades 8-10. This is intended to explore their aptitudes and inclinations. This is essential if the students are to take realistic decisions regarding selection of the educational stream at secondary stage.

a) Grades 1-4:

The curriculum at this stage comprises only an introduction to simple skills. It encourages the students to follow a healthy life style, deal with domestic needs, local environmental issues, and to improve their co-ordination through manual games. It comprises the subjects of health and nutrition, domestic skills, general safety and road safety, and some games (identified as 'vocational activities') that introduce simple vocational abilities. More details are available in MoE (1990b). In short this stage aims to achieve student awareness of personal and social requirements (Olaimat, 1991). The curriculum at this stage is therefore not vocational in the conventional sense. Moreover,

some of the skills included at this stage could be acquired in the home life, for example the importance of food, personal hygiene, tidiness, and cleaning vegetables (see MoE, 1990b).

The curriculum is delivered through a teacher's guide and student workbook. The students undertake written exercises and study theoretical concepts. The teacher is not a PVE specialist. The curriculum guidelines state that it is delivered at this stage by a 'class-teacher' (who is able to teach all subjects in grades 1-4). Although PVE at this initial stage is not the subject of this study, there must be a question of whether these class teachers are qualified to teach PVE at all. One course of three credit hours (total of 48 hours) is provided at Jordanian universities for the student teachers who are studying to be class teachers. This course is theoretical, and usually delivered through lectures to a large class of students. Additionally, this course has no clear objectives in terms of the competencies it is required to achieve (Rawaqah, 1994).

b) Grades 5-7

The curriculum at this stage aims to expose the students to a wide range of basic vocational skills appropriate to everyday life (but not intended for employment). Also, it aims at developing positive attitudes towards vocational work. It comprises seventeen units in five different vocational fields (industry, agriculture, business, home economics, health and general safety). This variety of content helps the students cope with the continuous change in life requirements. Jaradat and Tuffaha (1995) emphasised that to cope with these requirements, students need a broadening of their knowledge of the world of work and careers, an awareness of the factors that affect the world of

careers and work, and to develop positive attitudes towards manual work, and to respect and appreciate workers.

The content of the curriculum is as follows:

- Agricultural subjects cover plant fertilisation and maintenance, harvesting (of crops and flowers), and animal husbandry. Planting content, it is advised by the curriculum guidelines, should be delivered practically utilising the school garden and other environment resources, meanwhile the subject of animal husbandry should be delivered through discussion, videos, and field trips. This is because of the lack of facilities required. The intended outcome from teaching of animal husbandry is to have an appreciation of the subject (see Appendix 1).
- The industrial subjects cover using simple hand tools, industrial drawing, painting and carpentry, metal work, plumbing, and electricity systems. Most of the curriculum content in this field is practical and is recommended, by the curriculum guidelines, to be delivered through training. Female teachers have tended to neglect subjects within this field because they are traditionally considered as male tasks. Not all teachers can teach this field because their different backgrounds do not provide the necessary experience.
- The business subjects cover financial and administrative skills that serve the general life of the students like the concept of bank accounts, scheduling of jobs, and companies.
- Home economics covers food and nutrition, domestic management, sewing and dressmaking. The content is mainly practical with a very low level of theory. The theoretical content is to support the effective acquisition of skills. Male teachers

have tended to neglect this field due to the social tradition that such tasks are seen as female work.

- Health and safety includes personal health and home nursing, occupational health and safety, first aid and road safety. The content here comprises life skills and behaviours. For example, the content for first aid included in the seventh grade is concerned with the knowledge of the proper contents for a first aid box as well as basic first aid practice. More details of the content of the curriculum are available in Appendix 1.

Skills expectations are raised progressively (from one grade to another) to enable the students to acquire them effectively. The objective at this stage is to achieve vocational awareness, so that the students know the available careers, practise some tasks associated with these careers, know the requirements and aptitudes involved, and the labour-market situation (Olaimat, 1991). One of the main problems that face the teaching of the curriculum at this stage is the background speciality of teachers that do not enable them to teach the required wide range of skills. The teacher is specialised only in one of the curriculum fields.

The curriculum for each grade at this stage is supported by a teachers' guide and a students' book. The teacher's guide includes the PVE objectives, the desired competencies, guidelines for teaching the subject, the necessary materials and facilities required for teaching the subject, examples of instructional approaches, accompanying activities and evaluation rules. The students' book includes the desired competencies, examples of useful accompanying activities and behaviours, and the safety rules.

Provided that the student is interested in the topics included, the books can be used as manuals for self-learning. For this reason, the books have extra exercises and all the instructions necessary to complete them. This structure is intended to encourage the students to do more exercises to enhance their abilities.

The curriculum guidelines state that this stage should be delivered by a teacher specialised in PVE (MoE, 1990b). The role of the teacher is therefore becomes quite complicated due to the variety of the curriculum fields and the specific objectives of PVE (vocational awareness, skills' acquisition and attitude development). For this reason the teacher at this stage will be the main focus of this study. Teachers select exercises from all five fields of the curriculum based on the students' and local community needs, and the available facilities (MoE, 1990b).

c) Grades 8-10:

The curriculum at this stage is dedicated to exploring the vocational abilities and aptitudes of the students. It comprises more than seventy training units in the fields of agriculture, industry, business, home economics, and health and safety. Each training unit covers one vocational task that is considered as a discrete part of a job. The content of each unit combines theoretical knowledge, technical information, practical skill, safety procedures and attitudes. However, the knowledge base does not include the scientific related subjects. It only addresses the structure and mechanisms of the operation of equipment, and description of the procedures followed to undertake tasks. Success enables the student to undertake certain tasks, but not the full range for any

vocational career (Hassan, 1990). The following are the main training units in each of the curriculum fields:

The agricultural training units address: vegetable production, nursery-plant production, interior decorative plants, flower gardens, tree surgery, tree maintenance, the keeping of chickens and rabbits, dairy produce, food storage, crop grafting, and lawn maintenance.

The industrial training units concern: industrial drawing, carpentry, building and construction, painting, decoration and curtains, finishing of buildings (coating and paving), metal work, glass work, welding, electrical circuit connection and maintenance, plumbing and sanitary systems, interpretation of architectural and industrial plans.

The business training units cover: Arabic and English typing, commercial correspondence, commercial forms and banknotes (vouchers), accounting and bookkeeping, and sales.

Health and general safety training concerns: first aid, safety in using medicines, beneficial uses of medicinal plants and management of common health problems. More details of the curriculum content for this stage are available in Appendix 1.

In health and safety and in home economics the curriculum skills are at an introductory level, and thus far from the level required in employment. However, in industrial, agriculture and business disciplines the skills are studied in depth and they could be used in the context of employment. For example, in business education it is intended for

the student to undertake typing in English and Arabic with a speed of more than twenty words per minute - near to employment level in the context of Jordan. Similarly, in industrial education and in agriculture where skills are at or close to employment level.

Each school chooses to implement training units in at least two of the curriculum fields. This selection should be based on the available facilities and the surrounding environment that is the needs of local society. Because of the latter, schools can propose to implement new training units not included in the curriculum, but in practice this rarely happens, as it requires a detailed understanding of the locality and a teacher with the ability to develop a curriculum of the new training unit. The curriculum guidelines state that each unit should be taught by a teacher specialised in its vocational field, but up to now the MoE has been unable to provide schools with such specialists (MoE, 1990a). Consequently the subject is delivered either by teachers who are general PVE specialists or by specialists of various vocational fields who were originally prepared for vocational work (not teaching). This is also the case of the second stage (grades 5-7) since in most of the schools the same teacher delivers PVE for all grades (5-10).

The teacher's responsibility for selection of the units to be taught in grades 8-10 puts additional demands on his/her abilities particularly with respect to the locality and the students' needs. Having a specialised teacher of the specific vocational field of the unit is the more appropriate to deliver PVE at this stage. Therefore to realistically take the locality needs into account when teaching the subject, the MoE should appoint teachers with specific specialities in specific localities. For example, localities of specific interest in fields of agriculture need teachers able to teach specific agricultural subjects to be

appointed in their schools, and industrial localities need teachers of industrial specialities. This will better mobilise the curriculum and enable the subject to serve the needs of the students and to help them make realistic decisions regarding their selection of future careers.

1.2.5 Curriculum Expectations of Practical Skills and Theoretical Knowledge

Curriculum guidelines (MoE, 1990b) stated that practical performance is the core objective of the subject teaching. This is also reflected in the percentages of the mark allocated to practical performance in student assessment. Seventy per cent (70%) of the student's total mark is for practical skills, while the remainder is for attitudes and theory.

To have a strong focus on the practical abilities of students, the curriculum was produced in a structure emphasising psychomotor and affective objectives. The theoretical content does not address scientific principles, but rather technical knowledge that is directly relevant to the desired practical performance. The level of skills is raised progressively according to the grade in grades 5-7, and they are less specific in identifying the level of the skills than objectives of training units in grades 8-10.

Subject knowledge is a core element of any teacher education. Because of the considerable demands of the PVE curriculum it is essential to identify subject-related ability levels before designing the content of the subject matter courses for teacher education programmes. Below is an analysis of these subject-skills using examples from grades seven and nine.

Grade: Seven**The Unit: Use of Simple Manual Tools**

Objectives	The content	
	Practical	The associated theoretical content
<ul style="list-style-type: none"> - To dismantle and assemble simple mechanical devices 	<ul style="list-style-type: none"> - Practical interpretation of manual - To dismantle one of the following: <ul style="list-style-type: none"> a. bicycle b. table made of joined pipes c. baby walker 	<ul style="list-style-type: none"> - Instructions assembly of mechanical structures. - The importance of selection of the necessary and suitable tool for the work.

Grade: Nine**The Training Unit: Mechanical Structures**

Objectives	The content	
	Practical	The associated Theoretical content
<ul style="list-style-type: none"> - to fasten screws and nuts to suitable torque. - to dis-assemble, clean and check simple mechanical structures. - To re-assemble mechanical structures after replacing any damaged parts. - To use the manuals of manufacturers. 	<ul style="list-style-type: none"> - To use different types of spanners and torque spanner for assembly and disassembly. - To use manual tools of assembly and disassembly like spanners and angles. - To make gaskets. - To dismantle, check and re-assemble mechanical items like, sewing machine; vehicle tyre, simple drill, screwing machine, mincing machine. 	<ul style="list-style-type: none"> - Understanding torque settings. - Necessity of gaskets. - Manual tools for assembly. - Methods of dismantling and re-assembly. - Power transmitting devices: belts, gears, levers, clutches and chains

It is apparent from the first table where the performance level is simple and does not go beyond acquainting students with the use of simple manual tools to accomplish simple tasks (to dismantle a bicycle or a baby walker). However the required performance is more complicated at the higher basic stage (the last table). It is now necessary to select

and use different types of tools, to dismantle, check and re-assemble more complicated devices and to make gaskets. In both cases, theoretical information is only required to make possible the desired practical performance. In general this is concerned only with the names of tools and their use.

The behavioural objectives of the curriculum in all fields for all grades are available in the curriculum guidelines (MoE, 1990b: 262-274). An abstract translation of these objectives is provided in Appendix 1. It should be recognised that the target for PVE is for students to acquire the skills but not to achieve perfection of these skills. This has an important bearing on the level of subject skills of teachers. If perfection is required from the students, then the level of skills of the teacher could be in the 'employable skills' range, which is difficult to achieve in teacher preparation across five different fields of the curriculum.

1.2.6 Narrowing of the Skills' Fields at the Higher Basic Stage

Because the main aim of PVE at this stage is to explore the students' aptitudes and inclinations, in-depth training in complete vocational tasks is required and undertaken by students. Curriculum guidelines state that the teacher selects training units in at least two curriculum fields. This increases the depth, but narrows the spectrum, of vocational experiences that the subject presents at this stage. In itself an understandable approach, this creates a serious difficulty. After the exposure of the students to a wide variety of vocational experiences (at the second stage), the curriculum now fails to achieve its objectives for these students who would prefer to pursue training in a field not selected

by the school. Regardless of the situation for schools, to meet the curriculum objectives, a wide spectrum choice should be kept at the higher stage.

Although it is clear that schools cannot currently provide training in all curriculum fields, within the number of class periods allocated for the subject and the available facilities, this does not make it acceptable to narrow the choice of fields if individual student inclinations are to be taken into account and their aptitudes explored. To avoid the problem, the following three solutions might be considered:

1. Increasing the time allocated to the subject. This is difficult within the current system with the teaching day lasting only five hours.
2. Reducing the depth of skill expected at this stage, which might imply the possibility of preparation of a PVE teacher who could teach the subject for both stages. It should be kept in mind, however, that real aptitudes are to be explored at this stage to facilitate selection of the educational stream in the proceeding secondary stage. This exploration demands training students in real vocational tasks at a certain level of competence. To guarantee effective exploration of the students' inclinations taking into account the large number of students in schools, the subject needs to be delivered using a learner-centred approach. This would give the students a degree of freedom to select the subjects and training units that satisfy their needs, meet their inclinations and enhance their abilities in the chosen fields. To deliver the subject using such an approach, the problem is not basically a problem of teacher preparation or training, but it is a problem of understanding and implementation of the role of the teacher as a 'facilitator' of learning, not as a trainer. This demands a

high degree of student motivation towards the subject and a willingness to take responsibility for their own learning.

3. Restructuring of the PVE curriculum in such a way that training in some of the curriculum units is limited to other school subjects like sciences (Physics, Chemistry, Biology), Mathematics and Arts. Possibly excluding some industrial training units the majority of units could be taught through other subjects; health and safety, food preparation and agriculture could be delivered through the sciences, business units could be delivered through mathematics. This requires also a restructuring of the curricula of the other subjects and, in turn, a change in their teachers' competencies.

Whilst teacher generic teaching abilities may not differ between the second and the third levels of the curriculum, subject knowledge is significantly different both in level and breadth. This requires that teacher educators identify breadth and depth of skills necessary to deliver the subject. Although the MoE states that each training unit included in the curriculum at this stage should be taught by a teacher specialised in the related vocational field, subject matter requirements are not identified. Without this, appropriate teacher preparation for this stage is not possible.

1.2.7 Suitability of the Design of the PVE Curriculum

UNESCO (1993,p. 3) stated that the curriculum consists of a statement of aims and objectives, of content in terms of theoretical knowledge, practical skills to be

acquired, attitudes towards work, and necessary support materials to be used in presentation.

'If there is to be any real and significant improvement in students' learning experiences, however it is *curriculum* evaluation that will require attention and practising teachers who will have the most crucial part to play. Teachers should be encouraged to adopt a more reflective and systematic approach to obtaining information useful for understanding, and making decisions about curriculum matters' (Davis, 1980, p. 4).

In this sense teachers' views regarding the suitability of the curriculum are vital contributors to the process of curriculum development. The aforementioned are the bases of one of the core roles of the teacher, which is to thoughtfully apply the curriculum to achieve its main aims. The findings of Tweisat (1998) on PVE in Jordan found perceptions of the respondents to range between 'completely satisfactory' and 'acceptable' in the following key areas: the expression of curriculum objectives, relevance of the curriculum objectives to students' vocational needs, integrity between theoretical and practical areas, and time allocated to the subject in the study plan. However, it was seen that separate lessons, of forty-five minutes each, are not sufficient to undertake the programmed activities in the classroom as well as in the workshop and school garden. This difficulty may have a negative effect in achieving integration between the theoretical and practical parts of the curriculum and make it difficult or impossible to accomplish practical tasks during PVE lessons. Therefore it was recommended to have the lessons of PVE as one unit (not two separated lessons). Teachers and supervisors were satisfied with the sequence of PVE instructional materials from one class to another and the coherence of PVE with other subjects within basic education. Also teachers were satisfied with the curriculum function of assisting

students to choose their secondary educational stream through the various experiences included in the different fields of the curriculum that contribute to the students' awareness of their aptitudes and the available future careers. However, it was found that PVE did not effectively achieve this objective since it had been so recently introduced.

Curriculum effectiveness was also investigated through the perceptions of learners themselves. Tweisat (1998) investigated student perceptions of achievement of learning outcomes. The findings indicated that PVE skills taught are relevant to student needs, the curriculum does encourage a positive attitude towards work, and is helpful in guiding pupils towards the appropriate educational stream.

Tweisat (1998) studied the general factors of effectiveness and efficiency of the provision of PVE in Jordan, but he did not address the ability of the provision and methods used to achieve the specific objectives identified (see Section 1.2.3, pp. 24-32). This will be incorporated in this study through relating the activities of the delivery to the objectives, and studying methods that could be followed to achieve the objectives.

Despite these satisfactory perceptions Tweisat (1998) reported some weaknesses in the process of curriculum design. Teachers themselves had not been involved. This separated curriculum decision-makers from those who implement and know what is achievable through the available facilities, including teacher abilities. Also, he identified a lack of available professionals able to participate in the task of curriculum development. Thus, the policy makers are restricted in the process of choosing authors for the curriculum. This again raises the question of why teachers are not involved in

the process of curriculum development if the MoE has a problem of shortage of skilled resources.

1.2.8 The PVE Workshop

Practical skills form the main part of PVE delivery. The teaching of PVE, particularly at the second and third stages, cannot be delivered without the workshop, since skills' acquisition cannot be achieved without practical training. Effective workshop use implies additional teacher competencies (Nasrallah and Al-Nabtiti, 1995). There is a standard list of workshop facilities, see Appendix 2. Consideration of this list, in conjunction with the content of the curriculum (Appendix 1), gives an indication of the abilities required by the teacher. Also, it is worth mentioning that teacher is expected to enrich the facilities of the workshop utilising the local environment. Thus if the workshop lacks the facilities required to teach in a subject, teachers can find or select an alternative according to available facilities or to use the environment (MoE, 1990b).

However, to serve the delivery of the curriculum at grades 5-7, the workshop should be supplied at least with basic equipment, such as the hand tools used and the basic consumable training materials. At the higher basic stage (grades 8-10) availability of all the equipment and training materials required for the selected units should be assured in advance of selection of these units. This is implied by the aim of training at this stage, which is to explore the students' aptitudes through the accomplishment of complete vocational tasks with their standard facilities. Without this training would be confined to demonstration by the teacher or even to imparting only theoretical information.

There is a difference between the workshops in female schools and those in male schools. In male schools, emphasis is on industrial and business activities, while it is home-economics activities in the workshops of the female schools. However the second stage content requires that students to be exposed to the same wide base of vocational experiences regardless of gender (MoE, 1990b). The difference in workshops, between male and female schools, could be argued to reflect the intention of the MoE to render PVE gender specific at the upper stage (grades 8-10), since males traditionally (in Jordan) do tasks different from those done by females. But there must be a question whether gender-specific training units delivered at this stage help to explore the students' aptitudes and inclinations towards a realistic decision of future career.

There is also a debate about the large areas of the workshops and the complexity of the exercises. Moore (1986) argues that as PVE does not extend to employment skills; very sophisticated equipment is not necessary. Workshop facilities in schools that have only grades 5-7 are not complicated, but those for grades 8-10 are. However, these facilities are not well utilised due to the lack of suitably qualified teachers and of training materials (Tweisat, 1998). Therefore it is important to investigate to see the role of the workshops in curriculum delivery, and the implications for teacher training (Nasrallah and Al-Nabtiti, 1995). This will be one of the components of this study.

1.2.9 The Relationship Between PVE and Vocational Education (VE)

Discussion of the relationship between PVE and VE is useful in two respects. First it explains the rationale behind the selection of literature consulted and used for the

purposes of this study. Second, it indicates in what ways PVE serves VE as one of the main streams of education that students may choose at secondary level.

Pre-vocational education and vocational education are practical in nature. Both aim to provide vocational knowledge and skills, but the main difference is that VE provides skills for career entry, while PVE provides an appreciation of occupations and a realistic base for relevant career decision making. Also vocational education usually deals with just one vocational field, while PVE exposes students to experiences in different fields.

There are some accompanying activities of PVE regarding promotion of the desired students' attitudes towards the subject and vocational work. That implies broader roles for the PVE teacher (Jaradat and Tuffaha, 1995). Introduction of PVE in basic education has serious implications for vocational guidance, which can be elucidated through the drawing of the students' attention to vocational implications of subject choices, helping the students to make their decisions regarding choices of future careers on a realistic base, and the opportunity that its practical experience provides for pupils to try out, reflect, review, and learn within a planned framework. So, this practical relevance has by one way or another, some links with vocational education.

In vocational education the subject courses are the majority of the study plan, while in PVE the subject is one course among other subjects of the study plan of the basic education stage. These differences have an impact on the deepness and nature of knowledge and skills delivered in each, leading to different activities and different teaching methods. Nevertheless there are enough commonalities to refer to VE literature, (which is extensive), as a relevant domain to PVE (Tweisat, 1998; Moore, 1986, p. 26).

This has led many writers, such as Olaimat (1991), Masri (1993), Tweisat (1998) and Al-Jawarneh (1999) within the Jordanian context, and others internationally (Matthew, 1993) to consider PVE and VE, regarding the quality of teachers, and the way those teachers should be prepared, as the same. This is acceptable and indeed useful, provided that the particular specifications and different objectives of PVE are taken into consideration. These specifications and objectives sometimes imply different roles for the teacher and, in turn, different aspects and needs in preparation and training. For this study, the context of each issue will be considered within the literature review, as it is in the construction of data collection instruments, and interpretation of the findings.

1.2.10 Particular Problems of PVE in Jordan

In addition to the lack of workshops and facilities, PVE faces a problem of an awareness of its importance among schools administrators, students, parents and teachers.

The existing in-service teacher training programmes are inappropriate and do not meet the needs of the trainees (Al-Nahar et. al, 1992; Tweisat, 1998; Al-Jawarneh, 1999). Also, the teachers who are specialised in PVE (the community college graduates) are not competent in its teaching (Tweisat, 1998; Salamah, 1994 and Al-hadidi, 1994) for details of the shortcomings of these community-college programmes see Section 3.5.1, pp. 88-90. On the other hand, there are no university teacher preparation programmes except those programmes used for in-service certification of teachers in government schools. The content of these programmes is derived from the general study plans

designed for pre-service programmes that universities intend to offer in the future. In PVE teacher certification, content of these programmes is identical for all teachers regardless of their background specialisation in their former diploma. This fact simply means that the programme was not based on a realistic assessment of the teachers' training needs (Al-Jawarneh, 1999). Details of the components of the syllabus for these programmes are available in Section 3.5.5, pp. 93-99.

Tweisat (1998) investigated the aspects of effectiveness and efficiency of PVE provision in Jordan. He examined the components of the teacher, facilities and workshops, the curriculum, students and the educational administration.

- Regarding the teacher, the findings revealed that they are not well equipped to teach practical skills. As already indicated, practical skills are the main tool to achieve curriculum objectives, so they must be delivered to the students in proper ways. In this regard, it was reported that teachers sometimes confront the delivery of the subject to theoretical knowledge only, because they lack the practical ability to do exercises. It was emphasise that pre-service and in-service training programmes do require re-appraisal at the country level with special attention towards practical skills

- Regarding facilities, the study revealed shortcomings in some schools. Other schools were not found to utilise facilities properly due to weakness in the teachers' abilities. The study revealed that there is a wide variation in the time allocated to practical work, and sometimes PVE practical lessons have been completely omitted,

perhaps understandably in those schools where lack of facilities and equipment is reported. This has an impact on the teachers' performance in delivery of the curriculum since PVE objectives cannot be achieved without effective delivery of the practical exercises.

Another characteristic that may render the task of the teacher difficult is that PVE lessons, on the school timetable, invariably come as the last period. This fact influences the lessons since there is a significant variation in students' motivation between 'early' and 'late' class periods. Moreover, Tweisat added that the students commonly believe that subjects of less importance come at the end of the day. The assumption is that subjects that require more mental alertness come early in the day, when students are expected to be fresh.

- Regarding the students, the study revealed that students' attitudes are not positively influenced by the introduction of PVE. Instead, it seems that PVE does not break the orthodox and negative view towards vocational or manual work. However, it may be agreed that the most recent PVE curriculum has not yet had the chance to change attitudes since its introduction.
- Regarding educational administration, the study revealed that many of the supervisors who are currently in position lack adequate experience and professional background. This situation should have been foreseen in that the previous qualifications and experience of many of the supervisors are not relevant to the PVE programme. Thus, they are ill equipped to accomplish many of the objectives of the

teacher in-service training programme for which they have administrative responsibility. Also, Tweisat reported misunderstanding of the relationship between teachers and supervisors. Teachers complain of only one supervisory visit during the academic year, and the concentration of the supervisors on the weaknesses they found in the teacher's performance rather than advice and guidance to the teacher or providing feedback from the field to help in policy improvements.

The research attributed many weaknesses to the absence of the school administrators' commitment towards effective delivery of PVE. Implementation of pre-vocational education is further hindered by negative attitudes among relevant parties (students, parents, school administrators and, finally, teachers themselves). Generally, these attitudes are due to prejudice that places vocational careers low on the social ladder (Rihani et. al, 1997). This has a negative impact for the PVE teacher because of the low interest that schools administrators show in PVE and in its requirements in terms of facilities provided. Some principals ask PVE teachers to make students clean the school areas during PVE lessons. This reflects its status and the absence of awareness of the specific advantages that it intends to achieve for the students. On the other hand, the students' negative attitudes towards the subject make it difficult for the teacher to convince them of the importance of PVE and to attract their attention during lessons (Tweisat, 1998).

Al-hadidi (1994) studied the managerial and technical problems that face female PVE teachers in Amman. Many of the difficulties correspond to those listed by Tweisat. Technical problems were found in the professional development of the teacher, the

curriculum, planning of teaching, teaching media and approaches, assessment and evaluation. Managerial problems were found in the educational supervision, school management, the school building and facilities, the students, parents and the society.

The most important problems perceived by the teachers identified by Al-hadidi were:

- shortage of textbooks for the subject;
- shortage of training courses in teaching methods for the subject;
- inability of the training programmes to improve the teacher's competencies to suit curriculum demands;
- the lack of the necessary facilities and equipment;
- the lack of suitable workshops;
- the parents' negative attitudes towards PVE;
- teaching of PVE by non-specialised teachers;
- shortage of incentives that could motivate the teacher to improve her teaching approaches;
- limited workshop space in comparison to student numbers;
- large numbers of students in the class, that hinders the use of different teaching methods;
- the lack of resources for external activities;
- difficulty in undertaking activities due to high teaching loads;
- the lack of maintenance of the workshop facilities;
- existence of problems hinder the teacher's achievement of higher qualifications, because of the system of priority in nomination for certification programme that take into account different aspects like the teacher's experience;
- the teacher's teaching of various subjects that affects her drive (motivation);

- students' negative attitude towards PVE;
- the lack of supervisors' help to the teacher in developing and devising the yearly plan;
- the lack of the help from supervisors in solving the teacher's problems in the school;
- time location of the PVE lessons at the end of the school day;
- arrangement of the two lessons of PVE separately, the issue that hinders the implementation of practical activities, because training in practical skills requires adequate time, and cannot be accomplished in a lesson of 45 minutes. It was recommended to have the two weekly lessons consecutively.

There was no deep justification or discussion of the problems identified by Al-hadidi (1994), however in most of the cases, the research related these problems to the lack of the teachers' ability, the lack and ineffectiveness of the training courses to satisfy the teacher training needs; the lack of the teachers' understanding of the requirements of the subject delivery and its nature, the work conditions and the educational administration and the lack of awareness of the importance of PVE among all involved. So, the research recommendations emphasised the necessity of conducting effective training courses, enhancing working conditions for teachers, and improving awareness of the subject. Given that the lack of effective teachers was reported, among other problems, this study will investigate the activities of PVE delivery, identify problems related to the other components of the provision (students, facilities, administration, curriculum) and then identify the tasks and competencies of the teacher required for an effective delivery of the subject.

Summary

This chapter provides a general background to the introduction of vocational education in basic education concerning the philosophy and aims it seeks to achieve. The components of PVE provision and its particular problems in Jordan have been examined. Also, this chapter examined the rationale, significance, aims, and questions of the study.

Chapter Two

An Overview of 'Pre-Vocational Education' in England and Wales

Introduction

This chapter will examine some English provisions of 'pre-vocational' education. The late 1970s was a period of rapid change in the British educational system (Lee, 1996). A greater effort was made to break down the 'liberal' and 'vocational' divide. Around this time there were also strong efforts made to adapt the teaching of technology in school to changes in the perceived social and political requirements. The applicability of the term 'Pre-vocational Education' in England and Wales is strongest in relation to courses that intend to prepare students for a smooth transfer from school to work (Reece, 1988). Since the early 1980s there has been growing acceptance of pre-vocational and vocational courses by both the education and the training systems. There have been new attitudes to the way in which the young people should be educated and trained so that they may more successfully make the transition from school to work (Bynner, 1990). The acquisition and mastery of core (or basic) skills remains a key element of vocational preparation, but there has also emerged a greater acceptance of the necessity to construct programmes based on the individual needs of young people related to their personal development, self-evaluation, and their ability to relate to local employment demands. Thus, counselling, guidance and experience in a work situation are generally accepted as central elements of such programmes (Reece, 1988; Cattell).

The objectives that are intended to be achieved through PVE in the basic education in Jordan are met through different provisions in the British context. 'Design and Technology' focuses mainly on practical skills of design and making things; 'Careers

Education and Guidance focuses on careers awareness and decision making concerning future careers. These two subjects are comparable to PVE in Jordan that is delivered at the basic education stage. General National Vocational Qualifications (GNVQs) prepare students at the upper secondary stage for smooth entry to work places and higher education. Although GNVQs are not directly comparable to PVE in Jordan, analysis of the GNVQ approach in parallel with other programmes ('Design and Technology' and 'Careers Education and Guidance') provides an integrated picture of PVE in England and Wales, and raises the issue of transportability of such programmes to developing countries like Jordan

2.1 Design and Technology

The Education Reform Act, (1988), which introduced for the first time a national curriculum, was introduced by statutory orders (DES/WO, 1989). 'Technology' as a new and foundation subject in the curriculum is taught to all pupils in state schools aged 5-16 (to 14 in Wales). Design and Technology is an activity which goes 'across the curriculum' drawing on and linking with a wide range of subjects (DES/WO, 1989). Design and Technology works within a framework which encourages schools to co-ordinate the range of design and technological activities that exist within different school subjects. To many academics, councils, authorities, and teachers, the emergence of technology as a component of general education is one of the most significant curriculum developments of recent years (NCC, 1991, p. 1).

2.1.1 Design and Technology Capability

The programme is set out in the form of *attainment targets*. These define the core knowledge, skills and understanding, that pupils are expected to achieve at the end of each key stage. Programmes of study describe the means through which pupils are able to achieve the ends defined by the attainment targets. They are intended to assist and encourage the co-ordination of the knowledge, skills and values necessary for design and technological activities which are to be found in Art and Design, Business Studies, CDT, Home Economics, Information Technology, Mathematics and Science (DES/WO, 1988, p. 2).

At each key stage, pupils are required to work in business/industry and to produce three different types of outcome (artefacts, systems and environment) using a range of materials (DFE/WO, 1992). The Design and Technology structure is comprised of two main attainment targets: designing skills and making skills, combined with the knowledge and understanding which underpins the application of these skills:

- **Designing skills:** these requirements focus on the need to explore what the task requires and to use experiences along with other sources to generate ideas that may be suitable.
- **Making skills:** this group of skills is concerned with extending pupils' abilities to use materials, tools and equipment creatively and effectively.
- **Planning and evaluating skills** are required throughout the design and making process and may at different times be a major or minor part of the activity.
- **The knowledge and understanding section** deals with materials and components, systems and controls, structures, products and applications, quality, and health and safety.

The range of activities required to ensure development of 'capability' are of three essential types:

1. design and making assignments, which provide pupils with the opportunity to put their capability to work to develop products that meet real needs and wants. Assignments require the pupils to draw on their repertoire of design and making skills, together with their knowledge and understanding in an overall context.
2. focused practical tasks which gives pupils the opportunity to practice particular skills and knowledge to add to their repertoire;
3. activities in which pupils investigate, disassemble and evaluate products and applications; these give pupils the opportunity to explore existing products and use what they find out to add to their own repertoire of knowledge, understanding and skills (SCAA, 1995a, p. 35).

According to Hodge (1997) we know a lot about the teaching of the traditional diversified curriculum, and we know how pupils learn knowledge and skills, but less is known about how pupils learn technology. Therefore, teachers must now be left to get to grips with the Design and Technology curriculum. Hanson (1993) was concerned that in-service training is needed for teachers especially in the area of Electronics, Information Technology, and Control Technology in schools, a view that is also shared by Hodge (1997). Nevertheless, according to Hanson, much development will continue to be carried out in the life of Design and Technology, but he contends that 'we must avoid the narrow sectoral interests indulging in special pleading and the factional infighting that has done so much damage to Technology in the past' (p. 11).

Encouraging the participation of all technology teachers should be the main focus so that a high quality subject can be developed well in schools. Pupils should be given the opportunity to increase their responsibility for their work; to work independently and in teams, and to use visits as a starting point for designing and making (particularly to pupils in Key Stage 3) (Pritchard, 1993).

2.1.2 Developing Pupils' Capability

Enabling pupils to develop their 'capability' has become a concept well embraced by educationalists (DES/WO, 1988; Black and Harrison, 1985). Capability needs both a *task* and an *action*; this was depicted in the model 'Task-Action-Capability' (Black and Harrison, 1985). Indeed many of the ideas concerning pupils' Design and Technology capability reflect ideas from the 'Task-Action-Capability' model. Black and Harrison (1985) stated that 'capability' entails the ability 'to perform, to originate, to get things done, to make and stand by decisions'. To them, these form an essential part of technological activity. Pupils' capability is the major focus of the Design and Technology profile component which can offer pupils opportunity to learn in terms of capability to operate effectively and creatively in the made world (DES/WO, 1988). The goal is to 'increase competence in the indeterminate zones of practice' (DES/WO, 1988, p. 3).

Hodge (1997) mentioned that according to the Working Group, a distinction is drawn between 'knowing that' and 'knowing how', between 'propositional knowledge' and 'action knowledge', and between 'Homo Sapiens' and 'Homo Faber', that is 'man understander' and 'man the maker'. Care should therefore be taken not to imply that the

components in these polarities are seen as mutually independent. It is the second in each pair which is indicative of what is distinctive about an education in Design and Technology.

2.1.3 Delivering the Design and Technology Curriculum

Implementation of Design and technology in the school curriculum of England and Wales has been a major challenge to implement (NCC, 1993a; Smithers and Robinson, 1992). The following concerns were raised by the NCC and HMI during the monitoring of Design and Technology:

1. problems with attainment targets in that they are ambiguous and not clearly defined, therefore teachers do not adopt them in assessment of the student. This was also reported by Layton (1995) and Newton and Hurn (1996);
2. many teachers having experienced difficulty with the statements of attainments and programmes of study;
3. the statutory order (DES/WO, 1989) poses heavy demands in that different subject specialities are to be delivered. This was also reported by Layton (1995) and Evans (1998);
4. problems have been caused by teachers' lack of expertise and resources (NCC, 1993b; Evans, 1998).

Much work, however, has been done since its implementation to further develop Design and Technology, making many changes to the original statutory order (DES/WO, 1989) up to current developments. These include reviewing the content, restructuring and simplifying the programme of study, simplifying the language used as far as possible

(while recognising that Design and Technology requires a technical vocabulary which will be unfamiliar to some teachers), reducing the prescriptive nature of the curriculum (thereby increasing flexibility and manageability) (SCAA, 1994). However, according to Layton (1992), curriculum changes will not alter in any deep sense unless change happens in the minds of teachers and shared meanings are achieved between those involved (change agents) teachers and students. Curriculum development needs time for teachers to talk through their uncertainties of the requirements for change and to acquire ownership of the innovation.

Delivering Design and Technology has not been a simple task for teachers. The demands of the statutory order posed great difficulty for teachers to implement the requirements in the way the statutory order (DES/WO, 1989) would expect. There was some evidence from the documents reviewed that an 'overburden' of content in the curriculum did exist, something that should be avoided at all cost (Layton, 1992). Teachers were found using whatever means possible to get the pupils to be as able as they can be (Hodge, 1997). Nevertheless, the National Curriculum for Design and Technology does not prescribe a strategy for teaching the initiative (DFE, 1995).

2.1.4 Teacher Preparation for Design and Technology

Teachers of Design and Technology in England and Wales are generally prepared through competence-based training. This is most commonly through Initial Teacher Education (ITE) that is undertaken in partnership between higher education institutions and schools leading to the award of a Postgraduate Certificate of Education (PGCE). According to Evans (1998) there was a degree of criticism from experienced technology

teachers for PGCE students' and for newly-qualified teachers' (NQTs) inadequate subject knowledge. Criticisms were based largely upon deficiencies in workshop skills and experience, and most of the blame for these deficiencies was apportioning to teacher training courses. The consensual complaint was that PGCE technology teacher training was generally failing to deliver teachers who were skilled in many of the areas in which schools sought skills. A variety of reasons were suggested for this failure. These included inappropriate recruitment, inappropriate course design and content, and course brevity (Evans, 1998). Preparing teachers for multi-discipline subjects is usually difficult. In Jordan, it was reported that graduates of teacher education programmes for PVE which include different subjects collectively (agriculture, industrial, business, home economics, and health and safety) lack the mastery of practical skills of these subjects. This factor resulted in neglect of some of these subjects by the teachers (Tweisat, 1998; Al-Jawarneh, 1999; Salamh, 1994; Al-hadidi, 1994). Based on that, Jordanian educationists could consider the framework of the English experience in delivering 'Design and Technology' as a cross curricular theme. This could make the PVE provision more realistic in its objectives, and could reduce the demand of PVE teaching that is currently handled by the PVE teacher only.

2.2 Careers Education and Guidance

'Changes in industrial and business organisation, driven by the use of new technologies and greater international competition, are likely to continue to have a major effect on work as well as on education and training. As a result, career patterns are changing dramatically. Pupils will need a firm foundation of essential knowledge, understanding and skills and a commitment to lifelong learning as jobs continue to change and skills are required' (SCAA, 1995b, p. 7).

Careers education and guidance in England and Wales focuses on the young persons knowledge of themselves; their attributes and vocational inclinations; knowledge of education and job opportunities; ability to choose wisely and make decisions; confidence in practical skills needed to research and apply information; access opportunities and ability to make successful transitions (QCA, 1999; Morris, 2000).

Careers education provides a means of developing the individual's knowledge, understanding and experience of opportunities in education, training and employment and the skills necessary to make informed decisions. Careers guidance provides a means of helping the individual to apply relevant knowledge, understanding and skills to their own particular circumstances when choices have to be made. In practice, careers education and careers guidance are interwoven. Schools and the careers service work collaboratively, with schools taking the lead on the careers education programme and the careers service leading on guidance at key decision points (SCAA, 1995b). A 'career' in its broadest sense, includes all aspects of an individual's evolving experience of work. The implications for the school role as mentioned by SCAA (1995b, p. 6) are:

- all individuals have careers and schools have a key role to play in promoting opportunity, access and choice for all of their pupils;
- personal career development continues through life. Schools need to work with other providers of education, training and employment opportunities to ensure that pupils establish the basis from which they can continue to progress;
- work is but one aspect of life. As part of pupils' spiritual, moral, social and cultural development, schools should help pupils to understand the meaning and value of work to individuals, communities and the country as a whole;
- there are types of work other than paid employment. Schools should help to prepare pupils for a variety of experiences which may include employment, self-employment, volunteering, work in the home and work in the community.

Pupils are entitled to a planned programme of careers education and guidance within their overall education. SCAA (1995b, p. 6) stated the following broad aims to be achieved through the programme:

Aim I: Understand themselves and develop their capabilities. In thinking about education, training and work, pupils need to assess their own needs, interests, values, aptitudes and aspirations. Schools should provide pupils with opportunities to reflect on these matters and to develop the knowledge, self-reliance, key skills and other capabilities required for working life.

Aim II: Investigate careers and opportunities. Pupils need to understand changing patterns of careers and work. Provision needs to be made for them to find out about local, national and international opportunities in education, training and work and gain direct experience of work as part of the curriculum:

Aim III: Implement their career plans. Pupils need to develop increasing autonomy in making decisions and implementing their career planning. They need to be able to review and evaluate their decisions and cope with change. Pupils need to be able to acquire skills for making effective transition such as a move from school to further and higher education, training or work.

Within these general aims, there are specific aims identified by SCAA for each key stage. These aims and their incorporated activities are graduated and involve more practical activities according to the key stage (age of the students). Each school establishes its aims from an assessment of needs and expectations of all those who have a stake in the school (pupils, parents, linked schools and colleges, careers services, training providers, employers, trade unions, Learning and Skills Councils and local and

national government). SCAA (1995b) mentioned the key elements that contribute to quality careers education and guidance. These include a coherent teaching programme within the curriculum, continuing guidance, accurate information, experience of work, action planning and the recording of achievement. The work experience should be provided as a part of the curriculum. The school should work closely with business and other parties to offer a range of suitable learning activities.

2.2.1 Co-ordination and Management of the Programme

Different people are involved in the programmes of careers education and guidance in schools (the senior manager, the co-ordinator, and the other teachers). The roles of the senior managers involve the statutory responsibilities, policy formulation, curriculum design, development planning, staff management, resource management, and evaluation. The role of the co-ordinator involves vision and leadership, programme management, staff development, teaching and support of pupils, and working with partners (careers service, parents, employers, trade unions, local colleges, Local Education Authorities, education business partnership, compacts and Learning and Skills Councils). The roles of other teachers involve guidance and advice to pupils on educational and social matters and on their further education and future careers, including information about sources of more expert advice on specific questions. The involvement of different people from the school and other external 'partners' could present a good lesson for Jordan. The PVE teacher in Jordan is responsible to achieve the whole range of objectives of careers education through the PVE activities. Moreover, links with external parties such as business or careers service are very weak

due to the lack of teachers' motivation and the high level of bureaucracy (Rihani et al, 1997).

Findings of research that was carried out by the National Foundation of Educational Research (NFER) between December 1998 and September 1999 (NFER, 2000) showed that there was no universal formula for effective careers education and guidance in schools. Instead, successful provision appeared to be the product of a number of different factors, combining appropriate internal mechanisms, such as systems to support the links between the careers and guidance programmes and the wider school curriculum, and external links (with the careers service, post-16 providers, including employers, and parents) within a clearly understood philosophy. It was also emphasised that there is a need to establish a 'Guidance Community' or 'partnership approach' that is a model of interaction, both between schools and careers services, and perhaps within schools, in the provision of career education and guidance. There is now a very large body of literature on schools effectiveness and school improvement and there have been numerous attempts to identify and quantify the characteristics (and outcomes) of an effective school. Many researchers have taken the view of that, whilst academic achievement, usually expressed in terms of 'hard' statistical examinations outcomes, is a fundamental part of a school's effectiveness, account also needs to be taken of 'softer' qualitative indicators, including the quality of school leadership, pupil attitudes, and ethos or culture of a school (Leithwood et al 1986; Morris, et al, 1999; Morris et al, 1995; Mortimore et al, 1988; Reynolds and Parker, 1992; Reynolds, 1992; Sammons et al, 1995; Sammons et al, 1996). It is possible to identify some impact of careers education and guidance on certain aspects of school effectiveness, including a positive

impact on the development of curriculum management strategies, the enrichment of the wider curriculum, and the promotion of effective student transition at 16 (and 18) (Morris, 2000).

Views of school effectiveness in Jordan contribute to the negative attitudes towards career guidance and pre-vocational activities. Parents and students themselves concentrate their entire attention on academic subjects (such as mathematics, science, English) that have quantitative grades in their assessment, and which contribute to the future university entry (Rihani et al, 1997).

2.3 General National Vocational Qualifications (GNVQs) and National Vocational Qualifications (NVQs)

The British system of technical and vocational training that qualifies people from upper secondary education onward has been based on the NVQs and GNVQs and has adopted a competence model of the curriculum. To understand the provision of these qualifications, it is useful to mention the key concepts that guided their development and their key characteristics. Certain principles guided the development of NVQs, as mentioned in Castling (1996, pp. 4-5):

- achievement should be based on the concept of competence, or demonstrated ability to perform to given standards;
- competence should be defined largely in terms of performance in workplace and employers should define the standards to be met;
- access to these vocational qualifications should be as wide as possible-they should not depend on having to attend courses of study at set times in set places for set periods, although they could continue to be gained in this way;
- assessment, therefore, could be carried out in the workplace by suitably trained and qualified workplace assessors;
- occupational competence would be defined at different levels; there would be narrow band of levels (1-5) representing increasing degrees of responsibility and autonomy in the workplace (not higher academic attainment);

- since competence was, by definition, achievement of all the skills and knowledge required, a pass/not yet competent grade was all that could be given;
- progression would depend on gaining more units of competence 'a series of areas of activity' at the same level or attaining a higher level as job responsibilities increased;
- although there was a broad equivalence between the levels of vocational and academic qualifications, the routes were parallel rather than interlocking;
- all candidates for qualifications should have access to fair and reliable assessment – therefore, all candidates should have an equal opportunity to succeed, standards should be written to facilitate unambiguous interpretation, all assessors should be trained and qualified and all assessment should be subject to rigorous quality assurance procedure (internal and external verification);
- candidates could demonstrate their competence in several ways, including through the accreditation of their prior learning –they could be considered competent if they could present sufficient valid reliable evidence of current competence in an appropriate range of contexts, without having to undertake any further training or experience.

According to Castling (1996), for assessment to be fair and reliable, the standards of competence must be explicit. They must be detailed and specific, so that all assessors interpret them in the same way. This leads to a description of workplace performance by means of a series of performance criteria. The candidates use the criteria to build up an accurate model of what is required, so that they are able to prepare themselves satisfactorily for assessment.

To deal with the problem of students leaving courses before completing their qualification, the occupational area is broken up into a series of areas of activity. These are then designated 'units of competence', and candidates can gain accreditation for as many of these as they can manage. At a larger date they can attain any remaining units to complete their full qualification. The units themselves are divided into elements of competence, which represents subsections of the activity described in the larger unit. Because candidates are proving their competence, the proof is called evidence. It is

organised into a file which is called a 'portfolio'. Evidence can take more varied forms than traditional examinations or coursework sometimes allow. It includes statements from suitably placed and qualified people who witness the candidates' competence, for example, a colleague in the workplace or a teacher/trainer on a course taken earlier. It can include video and audio tapes, photographs, reports on practical performance, records of oral questioning and task-based assignments.

However, Byram (1999) mentioned that a common criticism for the NVQ assessment framework is that the competence model has led to a mountain or a torrent of paper. While the notion of small steps that are called 'units of competence' is useful in learning, and links with theories from programmed learning, the production of portfolios, with evidence and personal evaluation is seen, as a series of tasks that is not worth the trouble. Byram (1999) further suggests that the provenance of the evidence is often dubious: a friendly colleague writes a glowing report, or a learner writes his/her own report and presents it for signature to a line manager. Human nature is such that effort is not welcomed in areas that are considered to be of little advantage, interest or relevance (Byram, 1999; Konrad, 2000).

General National Vocational Qualifications (GNVQs), established in 1986, were designed to provide a broad education as a foundation for training leading to further and higher education, and for employment (Grugulis, 2000). Through GNVQs students develop the general skills, knowledge and understanding that underpin a range of occupations or professions, and a number of key skills including Application of Number, Communication, and Information Technology (Edexcel Foundation, 1997).

GNVQs are alternatives to GCE A level or to GSCEs which develop the knowledge, understanding and skills needed for broad areas of work. They were developed mainly for young people in full-time education but have since become available as part-time courses and for adults. They follow some of the design principles of NVQs, such as the division into units and elements of competence, but with some important differences.

These differences include:

- they are related in a general way to occupational areas but they are not specifically about particular occupations;
- they include core skills of communication, application of number and use of computers (Information Technology), working with others, improving own learning and performance, and problem solving;
- they are offered at three levels, Foundation, Intermediate and Advanced;
- they are tested by means of coursework and external exams;
- results are graded pass, merit and distinction.

The need for a closer link between learning and work underpins much of the rationale for GNVQ programmes. Schemes are designed to enable GNVQ students to develop skills for life which are valued by employers and higher education; all GNVQ students must gain core skills and they are encouraged to take responsibility for their own learning. The school or college help the students to plan their work, but the students need to understand clearly what they have to do to get certification because they are responsible for their own learning and assessment action plans. GNVQ teachers are expected to help students complete work by offering counselling, advice and regular

review of progress with the up-dating of action plans and encouragement to the student reflect on what has been learned (Cotton and Robbins, 1996).

Adopting a competency-based approach to the curriculum is not an uncontested area, but rather controversial. In the case of NVQs and GNVQs, Castling (1996) emphasised:

‘The development of competence-based qualification is a controversial issue, causing much debate at all levels within teaching and training’ (p. 5).

Comparison of earlier views of competence-based vocational education, such as those of the Further Education Unit (FEU), with those of the National Council for Vocational Qualifications (NCVQ) reveal a narrowing of the concept.

‘Competence involves ‘profession and development’ of sufficient skills, knowledge, appropriate attitudes and experience for successful performance of life roles’ (FEU, 1984, p. 3).

‘NVQs emphasise that competence is essentially concerned with performance in employment’ (NCVQ, 1988, p. 5).

It is this more narrow view which has prevailed and which has provoked criticism (Hyland, 1994). There is a design problem in that, instead of looking at existing skills and ways of improving and developing them, NVQs promote the accreditation of existing skills at the expense of training people to learn and practice new ones (Brady and Armitage, 1996). It should be acknowledged, however, that the NCVQ has been responsive to criticisms offered by teachers and others (Ellis, 1995) and the subsequently introduced GNVQs certainly showed a modification of the competence-based approach (Harrop, 1994).

Superficially competence, with its emphasis on what people can do, appears to be an attractive concept. It can be seen as breaking down the stranglehold of 'academics' over the curriculum and as bringing the world of education nearer to that of the world of work. Instead of cramming knowledge into students' heads it is claimed that there should simply be checks that they can perform to a pre-specified standard those activities pertaining to a particular occupation or job within an occupation (Brady and Armitage, 1996, p. 119).

For developing countries, the idea of such an orientation in education, rather than providing a 'watered down' liberal education, may be particularly attractive. (Brady and Armitage (1996) emphasised that however initially attractive the concept may seem, further reflections and experience suggest that it is not such a simple matter. There are problems in assessing competence and problems concerning the relationship of underpinning knowledge with practical performance. Even if it is adopted in principle there are further questions to be asked about the form it should take and the support which it needs if it is to stand and chance of being successful. The NVQ model, with its emphasis on work-based assessment and part-time students, may not fit at all with developing countries in terms of educational organisation, industrial development, culture and other conditions.

The NVQ model of Competency-Based Vocational Education (CBVE) has been criticised on a number of theoretical and practical grounds. Proposals to incorporate it into the education system of another country requires consideration of these issues such as the role of underpinning knowledge, its behaviouristic and reductionist tendencies,

and its narrow employment focus. Similarly the practical problems which have arisen also need to be heeded; these include assessment issues, record keeping, the relationship between Technical and Vocational Education and Training (TVET) and basic academic education, and the place of pre-vocational education. In their study concerning the transportability of CBVE to developing countries, Brady and Armitage (1996) discussed these issues in the following terms:

1. Education-industry links

A feature of educational rhetoric, including government statements, has been the advocacy of education-industry links. One of the arguments put forward for CBVE is that it requires learning to be less remotely academic and more closely related to the world of work. Control has shifted from the teacher to the employer; performance rather than knowledge is stressed and outcomes are stressed at the expense of experience. It is impossible to deny the importance of close links between education and industry when TVET is concerned. Problems arise when we try to work in detail what should be the nature of these links, and what influence industry should have on the curriculum. Various informal and formal approaches have been used (Finch and Crunkilton, 1999); one problem then arises is that they tend to focus on current rather than future occupational needs.

In the case of developing countries the situation arises that TVET is seen partly as serving current occupational demands looking forward the hope is that the TVET provided will help in generating employment. The major form of CBVE in UK, namely NVQs, were originally intended for people in work. Developing countries may well not

be in this situation in that their industrial base is smaller and less secure than in the UK (Brady and Armitage, 1996). Murugasu (1991) emphasised that international experience suggests that vocational and technical education and training are most effective when they follow a sound bases of general education and are job-related.

2. Specialisation

There seems to be general agreement that to prepare people for working life extending over several decades, continuing education and training will be required. It is not possible to predict employment requirements in the detail required by a competence-based approach (Brady, 1995). As noted by Murugasu (1991) and King (1991) there are two major requirements for TVET to be successful. One is that they must be work-related and the other they must build on a 'sound general education'. This does not deny the importance of well-planned pre-vocational education but its aims need to be clearly stated and distinguished from vocational education as such. In developing countries the employment situation is such that emphasis needs to be placed on self-employment or at least working in small scale enterprises, hence narrowly defined predetermined competencies (expressed in behaviouristic outcome terms) are not what is needed (Wellington, 1993).

3. Work-based assessment

Despite efforts to refine it, assessment in the work place remains a difficult feature of CBVE (Wolf, 1995). Criticisms include lack of fairness and comparability, together with the excessively bureaucratic recording procedures. These problems are greater in developing countries where bureaucracy is already a problem and support facilities may

not be available. External moderation of work-based assessment of competence may be a partial answer but the greater distances between industrial centres, the lack of extensive industrial base, and the lack of suitable personnel may limit the effectiveness of this (Brady and Armitage, 1996).

4. Co-operation

There is a danger with the competence-based approach to training in that it stresses what the individual 'can do' and neglects the co-operative aspects of many real working situations. In the case of behavioural objectives it was found easier to write these for the psychomotor and cognitive domains than for the effective domain. In a rather similar way, although many writers and official bodies have emphasised practical performance, some have taken on board the need to consider attitudinal aspects as well (moral competence) (Everard, 1993; Wright, 1989). There are certainly difficulties in assessing the attitudinal factors which can be considered as essential feature of a broader concept of competence. Among the criticisms levelled at the NCVQ version of competence is that it stresses individual competence at the expense of willingness and ability to co-operate with others (Ashworth, 1992). Brady and Armitage (1996) concluded that CBVE, particularly the NCVQ version of it, may not be readily exportable to developing countries unless it can be further developed to include abilities relating to co-operation and team work.

Summary

This chapter has summarised some key instances of PVE equivalent provision in England and Wales. It was not intended to compare this provision with PVE in Jordan, but to elucidate some lessons from the delivery practices.

Chapter Three

The Role of Teachers of Pre-Vocational Education and Teacher Education in Jordan

Introduction

The following sections examine the roles of the PVE teacher. These are considered against the more general issues of teacher education in Jordan.

3.1 What is Special in the Demand Made by PVE Teaching?

In short, pre-vocational education requires the teacher to shoulder some tasks, which differ from those required from his/her counterparts who teach more academic subjects (Farley, 1983; Atkins, 1984; Dove, 1986; Fell, 1986; Lillis and Hogan, 1983b). Lillis (1989) emphasised that in order to implement PVE efficiently teachers need to master specific skills and to adopt different teaching styles. Marshal (1990) observed that it should be ensured that PVE teachers are fully equipped with the abilities that enable them to call upon the appropriate pedagogical and practical skills. This requires the investigation of all these task, and implications of them for teachers' abilities and, in turn, for teacher preparation and training.

The following may be seen as the particular aspects of PVE:

1. Pre-vocational education is unique in character in that the curriculum is not limited to a single subject. The programme relates to multiple occupational clusters and related subjects (Moore, 1986). Each package of the PVE syllabus makes its own special demand in terms of instructional approaches and teaching methods, the required

materials and facilities, and has specific objectives and accompanying activities. Also, as mentioned before, the PVE teacher is involved in more extra duties than those who teach academic subjects. These duties include vocational guidance and maintenance activities. Additionally preparation for practical training implies more requirements than those required for academic subjects in terms of equipment and facilities, and assessment of the acquisition of practical abilities (Tweisat, 1998).

2. In the case of PVE in Jordan, most of the teachers are usually prepared in particular specific areas as subject specialists (not as teachers). This may lead teachers to teach in their areas of specialisation, and they may be tempted to neglect the subjects of other fields. This fact makes it difficult to achieve the curriculum objectives unless teachers are trained to achieve subject matter abilities in the other subject of the curriculum that are irrelevant to their background specialities.
3. Pre-vocational education requires the teachers to shoulder tasks, such as selecting the course content. The teacher is required to choose the exercises that cover all PVE fields, that satisfy the students' needs and can be taught with the available facilities (MoE, 1990b). This is one of the main features of PVE and it is not the case in the majority of the school subjects in Jordan, where the teacher simply delivers pre-prepared textbook material. This demands that teachers should understand their key role in the selection of the content delivered to students and the aspects that determine this selection. Moreover, as PVE is intended to take into consideration the students' interests and the locality needs, the teachers' role is that of a facilitator of learning. This might add more to the requirements of teacher training.

4. To link what the students learn with everyday life, the teacher of PVE should be able to bend the students' minds towards ideas of what happens outside the classroom. This is an important aspect, since development of positive attitudes towards vocational work is one of the main objectives of all the activities of PVE. This implies a need for outdoor activities in curriculum delivery in order to expose students to the real world of relevant careers.
5. Pre-vocational education emphasises training in practical skills and this implies that teachers should have appropriate experience in the exercise of these skills. Therefore teacher education programmes may need to include practical training in the work place to achieve the desired level of practical abilities. The need for such experience in the case of PVE in Jordan will be investigated in addition to approaches that could be adopted to gain such an experience.

All the aforementioned aspects add more complexity to PVE teacher education. The variety of the teachers' tasks makes it difficult to determine the demands made on the teachers' abilities and the priorities of teacher training. It was reported that there is a gap between the demands of teachers' abilities and the outcomes of teacher education and training, which, among other factors, led to a shortcoming of Jordanian PVE in achieving its objectives (Masri, 1993; Fadheel, 1993; Tweisat, 1998; Al-Jawarneh, 1999).

3.2 The Teacher of PVE and Vocational Education

Differently qualified teachers teach PVE. Regarding the selection and training of technical and vocational teachers, the International Round Table of Teachers/Trainers in Technical and Vocational Education, UNESCO (1997), maintained that Technical/Vocational teacher education must be analysed in terms of three possible models. It also identified the areas of need for training that each model requires.

- a) People from industry (without formal vocational qualifications) are selected as vocational teachers. They must be given pedagogical training and in some cases, formal vocational qualifications.
- b) Training is offered to a person through which a prospective teacher is given technical knowledge and pedagogical skills at the same time. These teachers lack 'industry' experience and may find it difficult to make their teaching relevant to the real world of work. Further, they may find it difficult to keep their knowledge and skills up-to-date. As community colleges in Jordan have been preparing PVE teachers in the same way, without 'industry experience', the study will investigate whether such experience is essential for them. If so, alternatives that could be adopted to achieve field experience will be investigated.
- c) Another category is employees with some years of experience in relevant work situations and who already have the necessary technical qualifications brought into technical and vocational education teaching. These teachers primarily need pedagogical knowledge and skills to function as teachers. This model was thoroughly endorsed by the International Round Table as the preferred model, and it was recommended to be adopted as far as possible around the world (UNESCO, 1997). For the delivery of PVE at the higher basic stage (grades 8-10), where

specialised training units are to be taught by different teachers, the most convenient method to qualify suitable teachers for such training units is to appoint and train people with 'field experience'.

3.2.1 Teachers of PVE in Jordan

As the curriculum guidelines state, PVE can be taught by the 'class teacher' for the first four grades, by a general PVE specialist for grades 5-7, and by a vocational specialist in the field of the selected training units for grades 8-10. The Educational Act 1998 specified that holding a university degree should be the minimum requirement for the teaching profession, but this is not the actual case in schools. The majority of PVE teachers are diploma holders either in general PVE or a particular vocational field (agricultural or industrial: electrical work, carpentry, metal work, or central heating systems). The remainder of PVE teachers are not specialised in PVE at all. Some are holders of the General Certificate of Secondary Education, with practical vocational skills acquired from field experience or from vocational training courses, but with no educational qualification. The following table shows the distribution of the PVE teachers by academic qualification as found in the statistics of the Ministry of Education (MoE, 1999).

Table 3.1: Distribution of Jordanian PVE Teachers by Qualifications for Year 1999

Total Number	Non PVE degree holders	PVE Qualifications		GCSE
		Diploma	Degree	
2169	433	1517	203	16

Some teachers are not effective they confine the delivery of the subjects to theoretical knowledge and others neglect subjects of the curriculum (Tweisat, 1998; Al-hadidi,

1994). This is not only for the non-specialised teachers, but also for specialised ones. The subject preparation done is not enough, because the PVE syllabus demands motivation and dedication to operate successfully (Tweisat, 1998; Nasrallah and Al-Nabtiti, 1995 and Masri, 1995). This raises the question of the willingness and commitment of the teacher towards the subject and the influence of work conditions on motivation (for example teaching load, incentives and salaries). This problem should be given the attention that it deserves, not only for PVE teachers but for all teachers in the educational system (Halawani, 1990; Tweisat, 1998).

3.3 A Brief Review of Teacher Education in Jordan

Teacher education in Jordan is recent. Before 1950, the school system was itself the source of teachers. High school graduates (with 11 years of schooling) were recruited as teachers for the primary stage (grades 1-7). The first true teacher training programme was a single class established in a secondary school in Amman in the academic year 1950-1951. That class consisted of a selected group of high school graduates from all over the country. The first dedicated teacher preparation institute was established in 1953. It offered a two year programme of study leading to a diploma in teaching for grades 1-9 (Bashyrah, 1993a). Thereafter, the growth of the two and three year institute programmes courses was rapid during the 1960s in terms of numbers, capacity and variety of subjects and specialities offered. Among them, the expansion in secondary vocational (agricultural, industrial and commercial) education during the 1960s and the 1970s, entailed the establishments of specialised vocational teacher training institutes. Graduates of these institutes were employed as vocational teachers (for secondary education) and PVE teachers (for basic education). By the mid-1970s, the private sector

entered higher education to assist the country's development needs. Consequently further expansion took place and the idea of community colleges was introduced. All teacher-training institutes were converted into community colleges and included a wide range of specialities. These colleges have different administrative authorities (MoE, the private sector, UNRWA), but all of them operated under the same regulations and policy and were monitored by the Ministry of Higher Education (Bashyrah, 1993b). The total number of colleges offering two-year teacher preparation programmes in Jordan reached 50 in 1993. These institutions offered more than 100 specialities distributed over 18 programmes (MoE, 1994, p. 24).

The rapid expansion in this branch of higher education was not without problems (Al-Smadi, 1999). One of these as stated by the Ministry of Planning was:

'Ineffectiveness of practical application required for mastery of technical skills; ineffectiveness in the administration of public examinations; and reliance of public exams for measuring knowledge without regard to specialisation skills' (Ministry of Planning, 1994, p. 53).

This problem and others made it uncertain whether graduates would be competent in their fields. This higher education provision has been for a long time the main source of teachers for Jordanian schools. A UNICEF study in 1992 found (for the year 1989-1990) that 70 per cent of teachers possessed a two-year college degree or less (UNICEF, 1992, p. 57).

3.4 The Educational Reform Plan and Teacher Education

Educators in Jordan have been aware for some time that teachers' qualifications and the quality of their initial training needed to be reviewed and improved if the quality of

education was to improve. This was one of the major issues addressed by the 1987 National Conference of Educational Reform (NCER), and the consequent 1989 Educational Reform Plan (ERP), which stated that one of the major objectives was to improve the quality of teaching and learning by:

‘.... Raising teacher qualification requirements for basic education teachers from two to four years’ post secondary education and for secondary school teachers from four to five years’ post secondary work...and ... Upgrading the existing community college graduate teachers’ academic knowledge to a Bachelor equivalency through a certification programme, and providing ongoing in-service training to enable teachers to make effective use of new materials and diversified instructional methods’ (MoE., 1990a:22-23).

In-service education and training is a crucial and decisive element in vocational teachers’ professional development process. It helps to enhance teachers’ performance level, to equip them with state of the art teaching and training methods and to draw their attention to recent educational developments (Masri, 1990). Rubin (1978, p. 55) argues that:

‘However good a practitioners pre-service preparation may be, continual readjustments in educational goals and procedures invariably impose new demands on craftsmanship’.

Consistent with this, in-service training in Jordan aims to achieve the following:

1. to provide the new teachers with basic skills in job behaviour;
2. to acquaint them with knowledge about the philosophy of education in Jordan and its main objectives;
3. to inform them about the school procedures and ethics of education;
4. to develop positive attitudes on the part of teachers about classroom and schools;
5. to equip teachers with skills related to lesson planning, teaching methods, classroom management, and other school related activities.

Most of these are basic objectives of pre-service teacher education, but due to the fact that these programmes are not effective in equipping graduates with such abilities they became objectives of in-service training. In this regard, these pre-service programmes are criticised for lack of practical school practice and over theoretical approaches to the teaching of student teachers (Al-Smadi, 1999, Diab, 1999).

The main function of the certification programme is to upgrade the educational level of practising teachers holding two or three year community college qualifications to a four-year university degree. The undergraduate pre-service teacher education programmes are intended to prepare teachers to teach students at basic education stage (grades 1-10) whose age range is 6-16 years (Al-Smadi, 1999).

3.5 PVE Teacher Preparation in Jordan

Pre-vocational education teachers are mainly prepared pre-service through Community College programmes. A plan is now in operation to certify government teachers through university degree programmes. These programmes will allow teachers in the field to fulfil bachelor degree requirements. In addition, teachers are trained through in-service short courses conducted by supervisors and organised by the Educational Training Centre of the MoE. At present, teacher preparation in Jordan focuses upon theoretical knowledge and subject matter skills first. Only after this does it expose the student teacher to some practical teaching experience. In this regard it was indicated that teacher education programmes focus on marginal and irrelevant courses but lack adequate

practical experience. Al-Smadi (1999, p. 160) evaluated one of the programmes provided at the University of Jordan, and concluded that:

‘The curriculum is currently unbalanced in that the teaching practice has less weight than other components of the course’.

Based on this Al-Smadi recommended better partnership between the university and the schools. It was hoped from this partnership to achieve more common understanding of the training process and more relevant identification of what prospective teachers need to know.

3.5.1 Community College Programmes (Pre-Service)

Pre-vocational education teachers have been prepared in community colleges whose teacher education programmes usually take two academic years. Sandwiched between these two years, the student teacher undertakes a school placement to practise teaching for just one month. Content of these programmes includes general cultural subjects, general scientific subjects, pedagogical methods, technical subjects related to PVE and practical training related to PVE (details of the contents of the programme are in Appendix 3).

These programmes seek to deliver practical skills integrated with theoretical elements utilising the workshops of the community college. There is a difference in the content between the programmes provided for male student teachers and those provided for female student teachers. There is more concentration on home economics for female students. This is the case, although the curriculum guidelines state that for grades 1-7 all students should be exposed to the same experiences in all fields. Again, this raises the

question whether the MoE intends to render PVE gender specific, since the Ministry of Higher Education (which is now united with the MoE) has been responsible for the approval of the programmes of the community colleges. If this is not the case, this difference between male and female teacher education programmes is a contradiction of the PVE guidelines that govern the delivery of the subject. On the other hand, if PVE is required to be gender specific at the higher basic stage (grades 8-10), training units allocated for female students and those for male students should be clearly specified. This will help in better utilising the teacher education programmes of both (MoE, 1990a).

Courses in pedagogy and subject knowledge are delivered in parallel. Graduates of such programmes usually lack practical skills' competency and practical teaching abilities (Tweisat, 1995 and Al-Jawarneh, 1999). Tweisat (1998) criticised these programmes and claimed, based on the teachers' perceptions, that they have the following shortcomings:

1. the training syllabuses were not compatible with the actual needs of the teachers.
2. the teacher educators were not well qualified to prepare PVE teachers.
3. the period of the course was not long enough to cover the considerable area of the PVE training packages for use in schools.
4. the training lacked an adequate practical skills element.
5. inappropriate or insufficient theoretical knowledge was provided.

However, community college graduates are no longer appointed in government schools since the ERP introduced the BA degree as the minimum qualification for the teacher of

basic education. Despite this, some community colleges at present still offer teacher education programmes. This may change as the community colleges are being reformed and their programmes reviewed under the umbrella of Balqa University whose mission is to co-ordinate these colleges to offer professional vocational specialisations.

3.5.2 Short Courses in the Educational Training Centre at the MoE

The Ministry of Education established the Educational Training Centre to take responsibility for the development and implementation of in-service training courses for teachers for the new curricula recommended by the ERP. Short in-service programmes have been introduced by the Centre. Teacher trainers design the content of the programmes. Courses are usually delivered either by trainers from the centre or by educational supervisors from the local educational directorates. These courses are conducted at each local educational directorate utilising the facilities of schools. The focus is mainly on teaching methods and explanation of the implications of the newly introduced curricula (by the ERP). Teachers attend half-day courses for about 24 days during the year. These programmes have been criticised for not meeting the participants' needs, and for using staff not adequately qualified (Al-Nahar et. al, 1992). These are short courses, many teachers are not satisfied with their effectiveness in enhancement of their teaching abilities. Moreover, these programmes do not take into account that teachers have different background specialities and they need subject matter training.

3.5.3 The Programme of the Higher Certification College

Based on the recommendations of the ERP, certification programmes to bachelors' level were started at the Higher Certification College that was originally a community

college. After evaluation (by the MoE) of the programmes implemented there, results revealed that the content of the programme, its implementation strategy and its overall design were of little advantage regarding the effectiveness of the teachers, and that they were not in conformity with the reform plan. A letter from the head of the PVE department (at the MoE) to the researcher, summarised the problem with respect to PVE:

‘Thirty PVE teachers were certified up to the level of BA degree in the Higher Certification College in 1993. The programme was stopped after that for many reasons, of which the high cost of the certification, the lack of specialised lecturers in the subjects, and the lack of model workshops to apply training practically were prominent’.

A review of the syllabus of this programme indicates that it is intended to train teachers to teach PVE for grades 8-10. Subject matter content was found to be organised in specialised units with a level close to the standard requested at employment. For example in industrial training units the student teacher is trained to undertake tasks to a high level. However, transferring the certification programme to the public universities was recommended (Al-Nahar, 1994). Discontinuing the certification programme at the Higher Certification College and transferring it to the universities reflects the unsure development of these programmes. Even following the change, research has raised question on certification programmes now provided at the universities. These programmes still face many problems and their graduates appear still not to be effective (Al-Nahar, 1994; Halawani, 1990 and Al-Jawarneh, 1999) (for details of these problems, see Section 3.5.5, pp. 93-99).

3.5.4 University Programmes (Pre-Service)

Up to the time of writing this thesis there are no pre-service programmes for PVE teacher preparation. Generally, pre-service teacher education programmes at Jordanian public universities are not widely different from those of community colleges in terms of approach (Al-Smadi, 1999). They have three main dimensions:

1. **Obligatory and elective university required courses. These courses cover the general knowledge of the student (as a Jordanian citizen and as a university student) and are obligatory.**
2. **The schools of education have their own requisite courses to cover the general educational knowledge of the student as a prospective teacher. Each field of specialisation has its own courses in terms of subject and specific pedagogical courses (Al-Samdi, 1999). Some subject knowledge courses are offered by other relevant faculties (Arts, Social Sciences, Business Administration, Islamic Studies, Agriculture, Engineering, Medicine, Nursing and Sciences). Certain courses have practical elements, delivered in workshops and laboratories, and are taught in parallel with theoretical lectures. The main shortcomings reported in the educational and subject knowledge courses is that they are delivered through theoretical methods. Students do not acquire practical skills through these courses because they are mainly taught through lectures. The content of most of the subject knowledge courses is irrelevant to what the students need in their teaching. This was attributed to the factor that staff members in the other faculties who offer such courses did not take into account the curriculum expectations of skills and knowledge (Al-Smadi, 1999; Al-Jawarneh, 1999).**

3. After finishing the university courses, the student teachers undertake placements at school. In this placement, the training process is guided and mentored by a teacher from the school and a university supervisor who visits the trainee at the school and in the university to provide guidance and advice. The period of training is different from one university to another, but currently, it does not exceed one full semester (four months) at the University of Jordan, and is less at all others (Al-smadi, 1999). Although there is a study plan for PVE pre-service teacher preparation it is not yet implemented because of the lack of specialised teacher educators and facilities.

Pre-service training of teachers in Jordan is usually criticised for being too theoretical. This is due to the large number of students involved in classes and the lack of experience in teacher educators. Also, the period of school placement that enables student teachers to practice the skills is short (Al-Smadi, 1999).

3.5.5 University Programmes (In-Service)

The certification programmes of pre-vocational education teachers started in 1995 at the University of Jordan and Yarmouk University. The first group finished the programme in 1998 at the University of Jordan, with about forty graduates. The syllabus of this programme is shown in Appendix 4.

In-service teacher education in Jordan has two dimensions:

1. Certification of teachers who originally have diploma degrees to BA level as field specialist or class teachers. The content of these programmes is derived from the syllabus of pre-service programmes in subject knowledge and educational

(pedagogical) courses. Students are exempted from the majority of the general knowledge modules and university general requisites. There is no practical training (placement) in these programmes since students are currently employed as teachers by the MoE.

2. The other dimension is certification of experienced educationalists (teachers, supervisors and others) to the level of postgraduate diploma in education. The content of the programme reflects the fact that all of the students are bachelor degree holders as subject matter specialists and have considerable educational experience. This programme aims to equip the teachers with theory of education including the theory of current educational practice hoping to enrich the experience of the educationalists and to orient them towards better practice in the field.

At the level of a Master's degree, programmes in educational administration and supervision, foundations of education, and curriculum and instruction, are available for people in education (teachers, supervisors and administrators) and for BA graduates in education and other subjects.

The teacher education programmes for pre-vocational education (in-service) take three years to complete; identical courses are delivered to the teachers regardless of the background of the teacher's diploma specialisation. The main dimensions of the courses are:

- a) Educational courses in areas like curriculum, teaching methods, measurement and evaluation, design and production of educational media and others. These courses aim to equip the teacher with the teaching skills and educational theories. Courses in

teaching methods are usually delivered by subject specialists in different fields due to the lack of educationally qualified staff. This problem was focused upon in UNESCO recommendations (UNESCO, 1974, pp. 20-21). Recommendations 85 and 86 identified the basic qualifications of the staff responsible for technical and vocational teacher education and stated:

'Staff responsible for the preparation of technical and vocational teachers should have obtained the highest qualifications possible in their fields:

- **teacher educators responsible for special technical and vocational fields should have qualifications in their in their field equivalent to those of special subjects staff in other institutions and programmes of higher education, including advanced degrees and employment experiences in a related occupational fields;**
- **teacher educators responsible for the pedagogical aspects of teacher preparation should be thoroughly experienced teachers in technical and vocational education and should possess the highest qualifications in a specialised field of education'.**

Teacher educators in Jordanian institutions generally lack previous experience as teachers. In PVE, subject matter and pedagogy are taught by staff specialised in subject matter without vocational or educational qualifications. This emphasises the need for co-operation between teacher education institution and the MoE to select people with appropriate experience to be qualified as teacher educators and trainers.

- b) Vocational courses (either compulsory or subsidiary) like engineering drawing, principles of business administration, animal husbandry. These courses aim to equip teachers with the subject knowledge of the different fields included in the curriculum.
- c) Subsidiary courses related to areas like educational psychology and classroom management.

Al-Jawarneh (1999) emphasised that the abilities of the majority of the PVE teachers who are currently enrolled in the programme are limited. This is a reason for the high failure rate in the courses. On the other hand, teachers criticise the depth and relevance of the content of the courses and irrelevance of this content to their needs in schools. Wherever the problems lie, a comprehensive review of these programmes is urgently required (Tweisat, 1998).

The programme approach also has problems. Teachers find it difficult to meet the requirements of being teachers and students at the same time (Al-Shuyyab and Al-Kuri, 1999). PVE teachers find it difficult to meet the requirements of the programme, since some have no previous background in the subjects included. Many graduated from community colleges in agriculture, business, mechanical or civil engineering...etc. while they are now expected to rapidly master quite different specialities (Al-Jawarneh, 1999). Teachers usually complain that these subjects are higher than their level of understanding, and higher than that required to teach. This leads to a high failure rate and low achievement, particularly in subject knowledge. This is not the only obstacle that hinders the effective implementation of the programme. Other shortcomings, as mentioned by the participants themselves (Al-Jawarneh, 1999) are:

1. the non-availability of equipped workshops. This leads to another shortcoming which is:
2. the emphasis on theoretical aspects more than the practical. This simply means that graduates are not effectively prepared because their practical ability is essential for the curriculum delivery.

3. dependence on the lecturing method for delivery, because of the large numbers of students involved and, maybe, due to the inability of teacher educators to use other methods
4. the inclusion of 'unnecessary' courses not related to the specialisation of the participants. This includes deep theoretical courses in subject matter general knowledge. The reason for this may be the full freedom given the staff members who teach such courses. They design their content without consideration of the PVE curriculum expectations. The study will analyse the curriculum expectations in subject knowledge and examine how these can be linked to teacher education (see chapter 10).
5. the non-availability of specialised lecturers in the various fields of specialisation. This problem is one of the main obstacles that hinder the effective implementation of teacher certification programmes in Jordanian universities, see also Al-Shuyyab and Al-Kuri (1999) and Abdul- khaleq (1999). In this regard a co-operation is needed between the universities and the MoE to select and qualify suitable people, who could be experienced teachers, as teacher educators.
6. the incongruity of the fields of specialisation of the participants in the PVE teacher certification programmes. This makes it difficult for teachers to succeed in the courses.
7. the poor relation between what is taught in the programme and the school curriculum.

This means that the programme does not meet the actual training needs of the teachers, and therefore the programme does not provide the upgrading intended (Halawani, 1990; Bolam, 1986). Lookheed and Verspoor (1991) gave examples of unbalanced

content frequently found in teacher education. One reason is that in many developing countries most teacher education time is devoted to general academic courses, while the rest is poorly used, focusing on broad theoretical content rather than providing more relevant pedagogical skills. Dove (1986) had earlier identified curriculum overload, use of inappropriate pedagogical models, irrelevance of training to school needs and lack of integration and balance between theory and practice, as problems in teacher education in developing countries.

The aforementioned obstacles could reflect that the programme does not achieve the desired objectives. They also indicate that the content of the programme is not well designed. In addition, the intake to the Jordan programme is poorly qualified, since many of the teachers have a low average in their previous degrees. This affects the outcome from the programme as the quality of the student determines, partially, the quality of the graduate (Avolas, 1991a; Al-Smadi, 1999). See Section 4.1, pp. 109-110.

According to Corrigan and Haberman (1990); Lookheed and Verspoor (1991) the quality of students is deemed to be problematic in many countries around the world. In some countries, where there is a high demand for teachers, teacher education institutions usually 'soften' the requirements for entry and graduation so that less able candidates can enter the profession. In Jordan, there is another reason. The teaching profession is not traditionally attractive, therefore poor quality candidates are allowed to enter training institutions.

Certification programmes also face administrative problems, and these may reduce performance due to the employment, social, and personal conditions of the students. These obstacles were summarised by Al-Jawarneh, (1999) from participant responses as follows:

- the long distance between the schools (where participants teach) and the universities;
- lack of time available and physical and mental tiredness of participants due to the work pressures;
- the poor financial situation of many participants and the extra burden the programme puts on them;
- the distribution of the modules across university faculties and the relatively large distance between faculties where the students take their lectures (This often causes students to arrive late in the lecture room).

From the point of view of the participants, many things need to be changed for effective implementation of the PVE teacher certification programme. A glance at what has been suggested by Al-Jawarneh (1999), reveals that a comprehensive change of the programme is needed; in the entry requirements, the approaches to delivery, the qualifications of the teaching staff, and the learning content.

3.6 The Role of the Teacher in the Context of Technology Education

Numerous studies and reports have recommended changes in teacher education to prepare teachers better for the classroom of today and tomorrow (Burden, 1995; Charles, 1996; Charles and Senter, 1995; Henson, 1996; Kindsvatter et al, 1996; Moore, 1992;

Spaulding, 1992; Weinstein, 1996). Developing subject matter expertise is an essential element in teacher preparation (Moore, 1992); however, there are other factors that have been identified as important in the teacher's role. Teachers are expected to encourage and develop personal qualities and attributes in their students (for example the work ethic, qualities of character, as well as to counsel students through life issues (Hill and Wicklein, 2000). In addition, teachers must develop management skills to guide their students and regulate classroom behaviour. School teachers are being asked to take on more of the roles traditionally reserved for parents, families, communities and places of religious worship (Lickona, 1991). Teachers are now required to address issues within their classrooms that are well beyond the content of their academic subject. The role of personal counsellor and advisor, disciplinarian, personal and academic motivator, classroom manager, and even values' developer are becoming more commonplace in schools. The successful teacher must be able to deliver a growing variety of non-academic inputs alongside their academic curriculum (Hill and Wicklein, 2000).

The problems associated with this are increased for most technology-education teachers because of the growing challenges presented by their teaching. Technology education teachers must manage laboratories with complex equipment, materials and tools, accommodate a significant number of disadvantaged students, and keep up with a complicated technical curriculum. The content of technology education is rapidly changing, requiring teachers to upgrade continually their knowledge and expertise. These circumstances present a unique challenge for the field of technology education, especially to recent graduates entering the profession (Hill and Wicklein, 2000).

3.7 Implications of the Teachers' Role for Teacher Preparation

Research on critical issues and problems in technology education has identified teacher preparation as a significant concern for the profession (Hill and Wicklein, 2000; Weiklein, 1993). Serious questions have been raised about the effectiveness of teacher preparation programmes and their responsiveness to the changing needs of technology teachers (Israel, 1992). The extent to which programmes are successfully shaping the next generation of teachers to cope with both academic and non-academic curriculum content is unclear (Moore, 1992 and Zuga, 1994). As these programmes cannot equip graduates with all the abilities required, it is frequently assumed that they will be acquired after the teacher starts a profession. Hill and Wicklein (2000, p. 18) stated:

Teacher educators could honestly submit that there is only so much that can be accomplished within the limited amount of time that they have to prepare entry-level teachers for the field. Beginning teacher qualities must be viewed from the perspective that initial preparation can only provide the basics in teacher preparation. To acquire higher levels of preparation from new teachers is to overstep reasonable expectations. Master teacher capabilities will only come after extended time in the classroom and many efforts on the part of the teacher to determine the best combination of pedagogy, technical content, and curriculum design.... Teacher education programmes are providing the essentials for new teachers, but there appears to be room for improvement in some areas of teacher preparation. University faculty should continue to explore alternative approaches to teacher education and, in particular, to consider ways to cultivate broader exposure to counselling and classroom management strategies.

3.8 The Role of the Teacher in the Jordanian Context

From some time, the role of the teacher in Jordan was to provide the only source of knowledge; that is the teacher's task was to transfer knowledge mostly included in textbooks to students. This generated the norm of student passivity in the teaching/learning process and encouraged teachers to use teacher-centred methods

(mainly lecturing). However, encouraged by the ERP, the role of the teacher has changed. It is now seen as important to:

... upgrade the teaching competencies, particularly deepening the approaches of the scientific and objective thinking in problem solving, and to upgrade the ability of criticism, analysis and innovation' (Al-Khateeb and Al-Nabhan, 1996, p. 2).

This new philosophy of teaching, in addition to the radical changes in information, knowledge, science and technology, telecommunications and media, and the social system, has added to the teacher's function, and included the role of researcher, evaluator, innovator, technologist and mediator of social change. In a study by Al-Khateeb and Al-Nabhan (1996), results showed that the emphasis of teacher education programmes in the public universities of Jordan on these new roles of the teacher (as perceived by the student teachers) is not satisfactory. The researchers recommended that reform is essential in the content of and approaches to teacher education. According to Hill and Wicklein (2000), reform of pre-service teacher education programmes should be accompanied by a well-designed modification of in-service programmes. In-service training should enable the teacher to achieve professional development by building on pre-service education.

3.9 The Role of PVE Teachers in Jordan

It is one of the main objectives of this study to analyse the role of the PVE teacher and its implications for teacher preparation and training. There is no practical account of this in the literature or in the PVE-related official documents. Following an analysis of relevant documents of the MoE, Al-Jawarneh (1999, pp. 16-17) interpreted the roles of PVE teacher as follows:

1. The most prominent role of the PVE teacher is to train and equip students with practical and intellectual skills included within the PVE curriculum.

Training in practical skills requires the teacher to master these skills sufficiently to demonstrate them to the students. Also to use suitable training methods to train students in these skills and integrate them with their theoretical bases. These skills are across five vocational fields, which means that the training of the teacher in these skills will take a high proportion of the time available in the programme. More importantly, how could teacher training institution deliver subject knowledge in five different fields up to a level that enables graduates to teach across all of these fields?

2. PVE teachers should ensure the availability of the materials, equipment, and tools that are necessary to perform PVE practical activities.

It is stated in the curriculum guidelines that development and selection of alternative exercises to those presented in the textbooks (in the case of unavailability of facilities) is one of the teacher's responsibilities. This implies a good background knowledge of the subjects' scientific and technical base, to enable the teacher to change or modify exercises successfully, particularly at the more demanding second stage (grades 5-7).

3. PVE teachers should be able to deal with a large number of students whether in the class, the workshop, or the school garden.

To deal with large numbers of students, taking into account the difference in student inclinations towards alternative subject specialities (particularly at the higher basic stage) implies some difficulty in the teacher's job since PVE cannot be delivered by teacher centred approaches, but it requires the student to practise skills using the

workshop and other facilities. Teachers must be able to adopt different training approaches that enable students to practise varied skills within the content of the facilities available. One of the examples of such an approach is the use of work-stations in which students are divided into groups. Each group practises a task (with specific facilities) different from those of other groups. After completion one task each group moves onto another until the cycle is completed (Obali, 1990). However, the over crowding of classes in Jordanian schools forces teachers to use theoretical and teacher-centred approaches (Bani Khalaf, 2001). The use of learner-centred approaches to teaching of PVE raises the issue of learners' selection of content, and their independence in achieving the desired learning outcomes, and the requirements for the teacher in relation to subject matter knowledge (that could be greater than the demands of teacher-centred approaches).

4. In the cases where the materials that are necessary for performing PVE activities are not available, PVE teachers should be able to arrange for field visits to nearby or remote establishments.

Field visits made it possible to show the students vocational activities as they are practised 'for real', a factor that effectively contributes to vocational awareness (EURYDICE, 2000). However, field visits cannot be used as alternatives to the training processes, even when facilities are not available at schools. It is worth noting that PVE objectives cannot be achieved if the actual training is replaced by any other activity, where students do not practise skills (Atwan, 1995). Despite all advantages, there are some limitations which may include financial cost, technical and administrative problems, safety measures, and teachers' reluctance to bear the responsibility to take students for outdoor activities (Easa, 1993; Han 1991).

5. PVE teachers should maintain, arrange and look after the workshop's equipment, materials, and tools.

One of the questions that should be answered regarding the teachers' responsibility for maintenance is: should the teacher do all the maintenance of the workshop facilities? or he/she should undertake only preventive maintenance and repair simple faults in the equipment. In terms of teacher training, how important is this requirement in comparison to the skills of the curriculum delivery? Is the teacher required to undertake all the maintenance tasks for the workshop facilities? This may require complicated training, an element that might negatively affect the teacher training in the curriculum related skills.

6. PVE teachers should continuously maintain various school facilities.

Maintenance of school facilities is a voluntary job of the teacher. It is not one of his/her official responsibilities. However, it has tended to become so because of head teachers' evaluation of a teacher's performance. But, considering the curriculum guidelines, if maintenance of school facilities is found useful for the teaching/learning activities, it could be considered as a local environment resource (Atwan, 1995). It is clear that a maintenance requirement does not apply to all specialities, for example agriculture.

7. PVE teachers should keep records of the workshop contents.

Keeping up records of the workshop is not a difficult job if the teacher is adequately trained in organising such records. But this task does not receive much attention, so teachers often face penalty actions during auditing because of mistakes found in their

workshop records (Al-hadidi, 1994). The PVE curriculum involves training in some business tasks. A comparison between the tasks required of the teacher to record the workshop facilities and the curriculum competencies could reveal whether teachers need extra training in these tasks.

8. PVE teachers should look after the garden with regard to planting, watering, cleaning and other related activities.

Most of the schools have gardens for aesthetic purposes. It is recommended, by the MoE, to allocate an area of about 50 square meters, to train students in agricultural subjects. The teacher is responsible for maintenance of this part, but not for the whole school gardens

9. To ensure the achievement of PVE objectives, PVE teachers should be able to assess students with regard to cognitive, affective, and psychomotor domains.

Evaluation is one of the fundamental components of the teaching/learning process. Pre-vocational education teachers need to use long term evaluation methods to confirm the development of the desired attitudes. Also, the practical skills requirements add more tasks to the role of PVE teacher with respect to assessment: it is a practical subject and therefore, assessment cannot focus only on cognitive parts as it is the case with most subjects and even with PVE in schools (Salamah, 1994). Additionally, student achievement in PVE should inform selection of the secondary educational stream. This demands the long term detailed recording of achievement for each individual student showing progress in each field of the subject together with the students' inclinations and aptitudes. The Design and Technology Association considered this as one of the important teacher competencies (DATA, 1995).

10. PVE teachers should provide the students with guidance and counselling services regarding the available careers and work in society so as to help them to choose the career that suits their capabilities and inclinations.

Vocational guidance should be associated with all stages of PVE delivery. In addition to specific guidance, the teacher should seek to integrate career education elements with the training by providing general information on the career relevant to each activity. This helps the student to understand the nature of each career (Jaradat and Tuffaha, 1995).

In these early stages of the students' development, vocational guidance could include some labour market information, as well as material on the nature of careers and their required aptitudes. This could be achieved through information and discussion on career options, study visits, presentations by representatives for the world of work, and short work placements in firms (EURYDICE, 2000). The latter is difficult to use in Jordanian schools where the educational system strictly prohibits leaving school premises during school time.

An overview on these statements show that the roles of the teacher as researcher, innovator, technologist and mediator of social change are still not established in the documents that govern the teaching/learning process of PVE. So, the previously mentioned roles of the PVE teacher are only guidelines for the PVE teacher's work. There are technical issues behind some of these roles, philosophies behind the origins of others and rules to control them. In this study, these roles will be investigated and

analysed. The implications of these different roles for teacher preparation will be discussed, as the approach to teacher training must reflect these roles (Bramald et al, 1995). Main (1985, p. 23) emphasised this:

Any training course for teachers must be a model for the teacher-in-training to use in his or her own teaching situation. It should contain experiences and use methods which are, by themselves, cogent examples of educational practices which are appropriate for the participants in their own work in the classroom.

Main (p. 24) further stated:

....courses content and the methods chosen to accompany that content need to reflect the teacher-as-teacher and the teacher-as-learner. They must act as good signposts to “good practice” in both these aspects of pedagogy.

Therefore, teacher education and training programmes should be an exemplar for the prospective teacher in the teaching styles to be used, teaching methods, accompanying activities and teacher educator professional behaviour (Masri, 1990). It is obvious that training programmes that use theoretical approaches, and strongly depend on lecturing, will not consider this aspect. This shortcoming was reported in most of the studies concerned with teacher education in Jordan (Al-Smadi, 1999; Al-Jawarneh, 1999; Halawani, 1990).

Summary

This chapter has provided the context of the study in terms of the demands place on the PVE teacher, the teacher’s expected roles, and the teacher preparation programmes in Jordan and their shortcomings.

Chapter Four

Teacher Education and Meeting the Demands of the Teaching Profession

Introduction

This chapter will examine additional background issues, in particular the theoretical context. To provide a theoretical framework for the study, it will explore aspects of teacher education, and the epistemology of teachers' professional knowledge and its impact on the relationship between education and fulfilment of the requirements of the teaching profession. Literature relating to PVE will be utilised to provide a description of the background to PVE teacher education. The chapter will address components of and approaches to vocational teacher preparation.

Teacher education aspects are usually affected by the country context where the specific research is done, and it is not guaranteed that a researcher can generalise from the findings of other research nor draw conclusions pertaining to another contexts. To avoid misleading conclusions, it is possible and useful to understand findings of studies within their own contexts and limitations (Corrigan and Haberman, 1990).

4.1 The Contexts of Teacher Education

Influencing factors include the departments of teacher education and the schools that are served by graduates of the programmes. The quality of intake to those programmes is also another important factor. In developing countries, where conditions of service and salaries are poor, teacher education programmes are less attractive and the pool of candidates therefore small and frequently of low quality (Avolas, 1991a). The quality of the intake to some extent determines the outcome from these programmes, that is it

dictates what is possible in the teacher education programmes (Corrigan and Haberman, 1991; Al-Smadi, 1999). In addition the qualifications of the available teacher educators can influence the achievements from the programmes. Hawley (1990) criticised teacher education faculty for lack of training in research and limited practical school teaching experience.

Teacher education in Jordan faces the same problems where lecturing is traditionally used in teacher education institutions (community colleges and universities); some poor quality students enter such institution due to the unattractiveness of the teaching profession; very large numbers of students are involved in classes, a factor that encourages teacher educators to use only lecturing. Moreover, the majority of Jordanian teacher educators have no previous teaching experience. For the case of PVE and vocational education, particularly at community colleges, teacher educators lack higher level qualifications within their fields (Abu Hala, 1999; Al-Smadi, 1999).

4.2 The Epistemological Basis of Teachers' Professional Knowledge

The various epistemological traditions and the ways in which knowledge can be linked to teaching practice (sources from which professional knowledge has been derived) are subject to debate within the teacher education curriculum (Tom and Valli, 1990). Designers of teacher education programmes and teacher educators should have a clear vision of the perceived epistemology of the teacher's professional knowledge in order to design and deliver curriculum content and to assure relevance.

a) Positivism

Positivists consider the universe as an integrated system consisting of smaller systems and sub-systems. These all naturally exist and are independent of our knowledge. To the positivist, social phenomena are not exceptional, and are also governed by cause and effect relationships. Knowledge is about discovering these relationships, and has to be 'objective', that is independent of the views and values of the inquirer. The discovered knowledge accumulates over time and takes the form of generalisations that are relatively stable, enduring and context-free (Tom and Valli, 1990).

'Professional knowledge for teachers is conceived as the accumulative generalisations from the investigation of the casual relationships between variables relevant to teaching/learning process' (Al-Smadi, 1999, p. 38).

The values of the educator can play the role of the compass and show what variables are to be studied, and what definitions adopted in order to serve a particular purpose. But such values' specifications are arbitrary, and thus cannot be subjected to the same methodological rigour.

'In this sense, positivist teacher educators tend to organise the curriculum around a selected pre-ordinate set of objectives and/or competencies, claimed to represent effective teaching behaviour. Effectiveness refers to research-proved effect of the particular teaching behaviour on the students' learning outcome, usually measured by test scores' (Al-Smadi, 1999, p. 38).

Regarding the knowledge-practice relationship, positivists view practice as deriving directly from knowledge. The effectiveness of practice depends on the teacher's professional judgement in choosing important instructional objectives so that the appropriate rules can be applied to achieve them. The practice is seen to be both the

context in which research can be conducted and an object that can be organised and adapted to conform to the knowledge derived from it (Tom and Valli, 1990).

B) Interpretivism

Interpretivists view all phenomena with which the social-behavioural inquiries deal as embedded in the minds of people. As such, knowledge of and about these phenomena has to be sought in the perceptions of and the meanings that participants attach to the object of inquiry. The inquirer then needs to get involved in the social situation to discover, interpret and understand. Inevitably, the characteristics of the resultant knowledge will be context-specific and value-laden. However, this does not mean that the interpretations are totally subjective, because the interpreter has to comply with the methodological canons of the research community, and to use theoretical constructs from the relevant domains of knowledge (Tom and Valli, 1990).

It is clear from the definition of interpretivism that teacher education is more a theoretical than a practical training in specific competencies. It aims to build knowledge in the teacher to deal with different situations based on theoretical constructs from the relevant domains of education. The interpretivist may face value-pluralism, or even contradictory value positions, and therefore be in the difficult situation of having to decide which values to refer to in particular situations. This is particularly problematic for the interpretivist when this knowledge is intended to inform practice. The issue then becomes a question of whose knowledge should inform whose practice (Tom and Valli, 1990).

These two competing views of knowledge impact on the actual content of teacher education. For example, positivists tend to focus the content around the findings from research on teaching effectiveness. This largely draws on constructs derived from the domain of educational psychology. Mastery learning and programmed instruction are typical examples of such content. Interpretivists in contrast lean towards a constructivist stance on the curriculum that mainly involve theoretical knowledge in different fields of education to inform the prospective teaching practice in different situations.

The influence of these two different epistemologies extends to teacher socialisation, producing different traditions of teacher education. This will be discussed in the following section.

4.3 Different Perspectives on Teaching and Teacher Education

‘What makes a good teacher? is a question that has intrigued and challenged philosophers, researchers, policy-makers and teachers for many centuries. It is also a question that has generated diverse answers, varying in their nature and degree of specificity in different countries and across different periods in history. Educational thinkers and writers have variously emphasised different aspects of teaching role – the teacher as expert in their subject; the teacher as facilitator of learning, the teacher as a motivator and source of inspiration, the teacher as upholder of moral standards.... Often construing teachers as deliverers of a prescribed curriculum, necessitating the acquisition of particular skills and competencies’ (Calderhead and Shorrock, 1997, p. 1).

How we conceptualise the work of teachers inevitably influences how we think about their professional preparation, and ultimately shapes suggestions for the further improvement of teacher education (Calderhead and Shorrock, 1997). Avalos (1991b) notes that the differences in the actual content and structure of teacher education programmes are, to a large extent, attributable to the variation in the traditions of teacher training used. Doyle (1990) identifies five major paradigms

concerning the job of the teacher as perceived by different involved parties (school administrators and experienced teachers, academics and legislators, social and behavioural scientists and educational researchers, teacher education professors and education professors). The five paradigms are 'The Good Employee', 'The Junior Professor', 'The Fully Functioning Person', 'The Innovator', and 'The Reflective Professional'.

a) The Good Employee

'According to this model, the effective teacher is one who can cope with the reality of the classroom. In this sense pre-service education is preparation and socialisation for the 'job' of teaching as it exists in school system. The training process focuses on the technical skills of teaching such as classroom management, carrying out teaching according to a formal set of rules. This model of preparation rests heavily on field experience and apprenticeship with an experienced teacher' (Al-Smadi, 1999, p. 40).

According to this paradigm, effective teacher education prepares candidates in the prevailing norms and practices of classrooms and schools. The ideal teacher, in this framework, is one who can cope efficiently with the real world of schooling. The emphasis is on training and socialisation for the job of teaching as it exists. A successful graduate of pre-service teacher education would, therefore, be able to 'slip easily' into the teacher's role and be skilful in enforcing the rules, in managing classrooms, and in carrying out the standard forms of instruction and evaluation with a minimum amount of supervision. Teacher education for these purposes is technical and experiential. That is, preparation focuses on the technical skills of teaching and rests heavily on field experience and apprenticeship with a 'master teacher'. Evaluation is based on the demonstration of specific competencies and on the judgement of experienced school practitioners. This view of the nature and function of teacher education is commonly

held by school administrators and many experienced teachers (Doyle, 1990). However, the behavioural approach of teacher preparation incorporated with this view results in the neglect of a proper conceptual understanding of subject matter and of the development of more broadly based teaching repertoires by student teachers (Avolas, 1991b).

There should be a balance between training in teaching skills and the other professional aspects of teacher preparation. In the context of Jordan, Al-Smadi (1999) emphasised this balance and maintains that it is important for the prospective teacher to acquire teaching skills that make the transition to practice effectively. But an over-emphasis on skills can result in a mechanical approach to teaching, and graduates may suffer from a lack of professional insight and possibly insufficient subject knowledge, particularly if the multiplicity of the fields of PVE is taken into consideration (Tillema and Veenman, 1987).

b) The Junior Professor

According to this paradigm, the foundation of effective teaching is knowledge in the core disciplines of the university curriculum, in other words, the liberal arts and the sciences. Improvement of the quality of teaching, therefore, requires an increase in academic course work. Doyle mentioned that this view of teacher education is widely held by members of the academic community and by American Federal legislators. According to Doyle advocates of this position are suspicious of the substance and rigor of pedagogical courses in teacher education institutions. They want teacher education in the hands of academic subject specialists rather than educationalists and maintain that an apprenticeship with a skilled teacher is sufficient to learn how to teach. They often point

to news accounts of teacher illiteracy to illustrate the detrimental consequences of time spent in pedagogical training and are distressed by reports on the intellectual quality of teacher education students. Within this framework, then, teacher education is selective, rigorous, and academic. That is, the emphasis is on high standards for entry and on disciplined academic preparation.

A solid knowledge base is important for student teachers in that such knowledge may facilitate the understanding of concepts and relationships underlying subjects in the school curriculum. There is, however, a danger in over-stressing this. Through concentration on subject matter knowledge, the ultimate purpose of training which is for classroom teaching may be lost. The issue then of the relationship between theory and practice is to resolve as harmoniously as possible the question of how conceptual knowledge can become knowledge which is to be effectively communicated to a group of school children (Avolas, 1991b).

Where people are not sure about their future careers, even if they have the requisite qualifications, this model maintains the opportunity for graduates to enter careers other than teaching. But this also implies that the teacher should be exposed to adequate training (after initial preparation) to acquire specific teaching skills (Masri, 1990).

c) The Fully Functioning Person

According to this paradigm, teacher education is best when it facilitates personal development of the student teachers. The emphasis in this personalised approach is on coming to terms with one's self, maximising a sense of self-efficacy, clarifying one's values, and discovering one's own personal meaning and style in teaching. In addition to

personal understanding, knowledge of human development, and of processes for creating supportive learning environments to promote growth are considered to be at the heart of teacher education. Prospective teachers are encouraged to seek their own self-knowledge, and psychological maturity is the bench mark of success. This view of teacher education is often held by specialists in developmental and counselling psychology, and it strikes a responsive cord among many education academics, especially elementary teacher educators (Doyle, 1990).

It seems that this view considers teaching as an art, where there is little use for standardised procedures because every teacher discovers his/her own expertise, and learns to fall on his/her own personal resources. This model of preparation is difficult to monitor as it primarily stresses the intuition and creativity of teachers (Tillema and Veenman, 1987). What is also required to determine is the place of subject-matter knowledge of the teacher within this perspective and the level of this knowledge (Avolas, 1991b).

d) The Innovator

'In this model, teacher education is about preparing 'proactive' agents of change in the education system: teachers who can apply the most recent educational ideas and knowledge to their work, regardless of the conventions of the school system. The focus of this process is to prepare a confident teacher, to guard against influences from traditional teaching' (Al-Smadi, 1999, p. 41).

According to this paradigm, teacher education should be a source of renewal and innovation for schools. Rather than accommodation to the so-called realities of schooling, teacher education should be proactive. Teachers should not be prepared in the standard forms of teaching but rather in the latest designs incorporating the most recent

research and theory. Within this framework, teacher education can be quite technical and prescriptive, with a focus on training in and evaluation of specific competencies to be used in the classroom (Doyle, 1990). Field experience and apprenticeships in conventional classrooms are, however, viewed with caution because these settings are seen to socialise prospective teachers into the mores of traditional practice. Learning to teach in field settings, it is argued, most often means learning to survive, and survival engenders conventional modes of thinking and behaving among teachers and resistance to new ideas and innovative practices (Doyle, 1990, Avolas, 1991b). Clinical training should take place rather in laboratory settings in which candidates can be exposed to preferred models and given the chance to master innovative practices so that they can resist influences towards traditional teaching in schools. Avolas (1991b) emphasised that student teachers need to distance themselves even from their previous experience in order to look at teaching from a different perspective. This, of course, is equally true of practising teachers who undertake in-service activities; they also need to distance themselves from their reality. Doyle (1990) mentioned that this perspective on teacher education is common among social and behavioural scientists, educational researchers, and many teacher education academics.

To abandon adopted traditions and to teach a multi-disciplinary subject with a flexible curriculum like PVE, and to achieve demanding educational objectives, there is a need to be an innovative teacher equipped with the main competencies required for the subject delivery. The objectives set for PVE, its curriculum content and approach to teaching, indicates that the teacher should be well prepared and capable with good subject knowledge and skills (Doyle, 1990; Tillema and Veenman, 1990).

e) The Reflective Professional

According to this approach, the role of teacher education is to develop the perspective teacher's reflective capacities by careful participant observation, critical analysis and interpretation, since the professional should be able to inquire into his own work' (Al-Smadi, 1999, p. 41).

According to this paradigm, teacher preparation should foster reflective capacities of observation, analysis, interpretation, and decision making. Professionally trained teachers, in other words, should first and foremost be able to inquire into teaching and think critically about their work. The knowledge base for the preparation of reflective professionals includes personal knowledge, the craft knowledge of skilled practitioners (including a portfolio of teaching methods and teaching skills), and propositional knowledge from classroom research and from the social and behavioural sciences. Within this framework, research and theory do not produce rules or prescriptions for classroom application but rather knowledge and methods of inquiry useful in deliberating about teaching problems and practices. Along similar lines, teaching skills are seen as an important part of teacher education, but they must be embedded in a conceptual framework that enables teachers to decide when to use different skills. In addition, competencies in teaching should include inquiry skills as well as classroom behaviours. Evaluation in this framework focuses on inquiry processes rather than standard modes of behaviour and emphasises description and feedback rather than summative judgements (Doyle, 1990). Doyle mentioned that this view of teacher education is held primarily by education professors with a qualitative or phenomenological orientation to research and theory.

Taking into consideration the complexity of teaching, the process of reflection on practice is questionable with regard to whether student teachers need to be taught how to

reflect, and whether they need to have a basic mastery of teaching before informed reflection on practice is actually possible. Researchers and teacher educators have also focused on the content of reflection: is all content an equally appropriate for reflection? How does one prioritise the subject matter for reflection? (Calderhead and Gates, 1993).

The implementation of reflective teacher education has not been without its difficulties. Creating a course that helps student teachers to become more analytical about their practice and to take charge of their own professional development is a task with a number of inherent dilemmas. Calderhead and Shorrock (1997, p. 17) raised the following questions: How do teacher educators reconcile their traditional role as a gatekeeper to the profession with that of mentor and facilitator of reflection? The goals of reflective teaching are extremely ambitious –what is reasonable to achieve in pre-service education and what can only be achieved in the much longer term? How does a teacher education institution foster reflection when in schools much greater importance is attached to immediate, spontaneous action rather than to reflection and evaluation? Does reflective teaching require a particular supportive, collaborative ethos in schools in order for the efforts of teacher educators to be effective? The development of reflective practice in pre-service and in-service courses has not proved easy and there are many questions posed by current research and development efforts (Calderhead and Shorrock, 1997).

Doyle's models seem to present rather general perspectives of teaching and teacher roles drawn largely from experience in the USA, rather than from theoretically or philosophically grounded models. He maintained that these frameworks should not be read as absolute categories. They do not adequately reflect the diversity within

perspectives based on the fact that individuals (and programmes) are often 'eclectic', so rationales fall within more than one framework (Doyle, 1990). Nevertheless, these five approaches do provide a perspective for debates about the purposes and goals in teacher education and illustrate the enormous complexity of the interpretive environment in which decisions about content, time allocation, pedagogical practices, and assessment in teacher education are made.

The teaching of PVE involves various and complicated teacher roles. The curriculum is flexible and not prescriptive, subjects are varied, and the teacher has various roles such as vocational guidance, aspects of special-needs students, necessity for practical skills, and the subsidiary activities that the teacher should do. Teacher education designers and student teachers need to be aware of these aspects. Student teachers should ideally decide in advance that they wish to be PVE teachers. This is important since preparation to teach the topic demands a long-term commitment to master a variety of practical vocational subjects and to fulfil the demands of the curriculum.

4.4 Teacher Education' and 'Teacher Training'

4.4.1 Teaching: a Craft or a Profession?

Several writers in the field of teacher education have in the past drawn a distinction between 'teacher education' and 'teacher training' (Cruickshank and Metcalf, 1990; Calderhead and Shorrock, 1997), as if these represent two poles of an ideological dimension concerning the ways in which teachers are most appropriately prepared for their profession. Teacher education is deemed to be concerned with the intellectual development of teachers, whereas teacher training is more specifically concerned with

the development of particular areas of knowledge and skill that are instrumental to the task of teaching. It has been argued that 'teacher education' is involved in the all-round education and development of teachers, emphasising teaching as a profession involving well-informed judgement; whereas 'teacher training' refers to a more mechanistic approach to teacher preparation, more akin to a craft apprenticeship involving the mastery of well-defined routines. Obviously learning to teach does involve the acquisition of certain knowledge and skills that are essential to adequate classroom performance. Learning to teach also involves being able to reason about one's own action, being able to justify particular strategies, understanding the subject matter, children and their ways of learning, and having a conception of the purposes of education and the ways in which schools operate in order to promote education (Calderhead and Shorrock, 1997).

Most research on the training of teachers concentrates on the concept of teaching as-a-craft and teaching as-a-profession, with emphasis on the latter. Teaching as-a-craft training is largely seen as the acquiring of behavioural skills and specialised techniques that are considered to be effective in facilitating desired learning in students. These technical skills or teaching actions can be used as generic repertoires for different teaching situations. They can be rigorously practised by focusing on their behavioural components. Competency-based teacher education programmes could provide examples of these technical skills. Teaching as-a-profession training is seen as the acquiring of a repertoire of specialised techniques or teaching strategies in which knowledge on the applying of patterns of behavioural skills is included in the training programme (Medley, 1984). Other included, too, in training is the sequencing of events, substantive exchanges between teachers and students, and the teaching of analytic and hypothesing

skills rather than strictly observable teaching ones. In this context, training can be defined as the acquiring of a repertoire of specialised skills, including judgement by the trainee on how and when to apply such skills, for correct task performance (Tillema and Veenman, 1987).

4.4.2 Connotations of Training in Teacher Preparation

Opponents of training in teacher preparation hold a narrow definition of the term and mostly equate it with conditioning or indoctrinating teachers, so that they become less critically minded and are not aware of why they are doing what they are doing (Silberman, 1970). Cruickshank and Metcalf (1990) summarised their arguments in the following way: training is vocational in nature and has no place on a university campus; teaching cannot be reduced to principles and techniques; emphasis on training significantly curtails pre-service interest in becoming educated; and training has resulted in teachers being treated as hired hands. According to Cruickshank and Metcalf (1990) such criticisms in part resulted from equating or confusing training in a profession with training for a trade.

Advocates consider training integral to professional preparation. Zahoric (1986) exhorts that one goal of teacher preparation must be to help teachers become more skilful and thoughtful about their work. Gliessman (1986) notes that teachers cannot be expected to infer the skills implied in the body of knowledge about education. Allen and Ryan (1969) called for a method of bridging the gap between instruction in education and classroom practice, and they suggested such a method should provide teachers with training in specific skills and strategies.

In professional preparation, prospective teachers gain general knowledge (general education), academic knowledge of their teaching discipline(s), and professional knowledge of such things as child development, effective teaching, and classroom management through education. On the other hand training prepares them to do something with what they have come to know, that is, to put knowledge into practice (Cruickshank and Metcalf, 1990). Ideally, training in a profession implies having knowledge of some phenomenon and being instructed with regard to how to use it. Medley (1984) defines professional skill as the ability to use professional knowledge in the solution of problems. When individuals gain knowledge and understanding of their actions, when they know why they are doing what they are doing, they move towards an educated state. Thus, the skills of teaching may be thought of as the professional application of knowledge about teaching to the conduct of a teacher's classroom on a day-to-day basis. These skills are implemented and utilised, whether or not they have been firmly grounded in professional knowledge and whether or not they have been developed at a level befitting the label of professional knowledge (Cruickshank and Metcalf, 1990).

Both education and training are widely accepted as requisite to professional preparation. Although training conveys a negative image to some in teacher preparation circles, that ought not to be the case. Its proper use within teacher preparation focuses on helping pre-service and in-service teachers gain higher level skills that require prerequisite, and at times, considerable theoretical knowledge (concepts, definitions, facts, and conditional propositions), in order for the learner to know why, how, and when to initiate a certain action. Therefore, training within teacher preparation more closely mirrors training in the professions.

4.4.3 Implications of Pre-Vocational Education for the Teacher Preparation

'A professionally and intellectually adequate teacher is essentially a continuously creative enquirer and as a result is, by definition, adaptable. In the context of the pre-vocational education, these are relevant attributes of the teacher and are synonymous with being educated for creativity, utility and national development' (Kanu, 1986, p. 10).

In pre-vocational education, a teacher education curriculum would not only equip its clients with knowledge and skills to implement established curricula, but also innovative ones. A major feature of that type of curriculum is that it would be closely linked with the realities of both school and community. An important implication of the pre-vocational curriculum for teacher education is an extension of its boundary to include those economic and social institutions and settings that are related to the subjects being taught in the school of education (Kanu, 1986).

The pedagogic implications of the pre-vocational curriculum for teacher education is a drastic reduction in tutor talk and greater use of student self-directed and inter-learning. If students have to inquire on their own, they need to have previously acquired the necessary skills and have the source materials to do so; above all they need to possess the 'mentality' for such a style of teaching. These are very complex issues that touch on all aspects of the education culture of society. For teacher education, they imply that what student teachers are taught links to what teachers in schools need to know and do. That is the rationale for field experience and the teaching practice contents of teacher education. Pre-vocational education requires that non-school activities become part of the field experience of student teachers. The supervision of student field practice would have to become a shared responsibility between the staff of the school of education and staff of the other institutions involved in the curriculum. Such 'non-college' staff are

likely to be more knowledgeable about their own contexts. Joint responsibility calls for good interpersonal professional relationship.

The pre-vocational curriculum implies a comprehensive view of assessment and its modes, contexts and content. Teaching practice does not provide enough assessment of student teachers' practical knowledge; classroom instruction does not constitute the sum total of the teacher's role. Candidates should be encouraged to demonstrate not only what they know, but also what they understand, feel and can do. A criteria would have to be developed to indicate what knowledge, skills and competencies are required to attain teacher certification both in theory and practice of the curriculum (Kanu, 1986).

In the case of Jordan, the teaching of PVE involves a variety of activities that require different skills and competencies. For example, teachers undertake vocational guidance, field trips, expert talks; integrate PVE subjects with other subjects, develop attitudes towards manual and vocational work, and deliver subject-matter skills in different fields with different natures and different objectives (industrial, agricultural, home economics, business, health and safety). Therefore, the teacher needs training in applying the principles of education that are learnt from in-campus activities into teaching. Moreover, the subject-matter skills, as unit vocational skills, require that a kind of training be undertaken as they are to be effectively gained. This training could be required to take place in work places.

4.5 The Curriculum of Teacher Education

Research into teacher education usually focuses on the nature and use of knowledge within the professional preparation of teachers, as it represents the basis of that

education. The following subsections will offer an explanation of the theoretical background to the curriculum, and will seek to analyse different understandings of the relationship between content in teacher education and the use of the knowledge acquired within the teaching profession.

There is a considerable degree of consensus among scholars and professionals that the teacher education curriculum should cover the following areas of study: general education, subject matter specialisation, and professional education (Tom and Valli, 1990). However, the actual content within each area may vary widely within programmes for both conceptual and structural reasons,

‘Part of the curriculum designer’s mission then, is to consider the issue of balance between the different kinds of contents, determine what looks suitable for the particular context and possible within the time available, as well as other constraints’ (Al-Smadi, 1999, pp. 42-43).

Shulman (1987) gave some indicators about what is important within each area of study in teacher education. He stressed the importance of teachers understanding the structure of the subject matter, that is having the ability to distinguish between what is essential and what is peripheral to the subject. He stressed that teachers need to know the methods of enquiry used to produce this knowledge. He also advised teacher educators to put more emphasis on content specific pedagogy rather than content-free aspects. This means that pedagogical courses should be practically rather than theoretically oriented. Thus teacher educators should have some school teaching experience prior to their training role. This is one of the main shortcomings to programmes in Jordan which tend to be highly theoretical (Al-Smadi, 1999; Al-Jawarneh, 1999 and Halawani, 1990).

4.6 Elements in Vocational Teacher Preparation

The content and scope of vocational teacher preparation programmes are largely determined by the role, expectations, and requirements placed on the graduates of the programmes (Glenn and Walter, 1999; Hill and Wicklein, 2000). As these demands evolve, so too must the teacher education programmes evolve. Generally, at present, with respect to vocational education, teachers are usually unable to meet these demands (Glenn and Walter, 1999). The main components of teacher preparation are:

4.6.1 The Liberal Education of Teachers

This is the same as that for any citizen who has received higher education. It provides the teacher with understanding of the major domains of human knowledge in the natural sciences, both physical and biological, the social sciences and the humanities (Nitsaisook and Postlethwaite, 1986). Courses aim to improve the cultural level of the teacher and broaden his/her understanding and general knowledge in order to enhance the teacher's understanding of the students' needs as vocational persons, citizens and human.

'Initial teacher training institutions should also make positive efforts to ensure that future teachers understand the part their subject plays in the economic and cultural life of their society, and they have sufficient understanding of the economic foundations of the society' (D.E.S., 1983, p. 1).

4.6.2 Teachers' Education in Subject Knowledge

'If any thing is to be regarded as specific preparation for teaching, priority must be given to a thorough grounding in something to teach' (Peters, 1977, p. 151).

This aspect of teacher preparation is concerned with the knowledge of the subject in all its components. Lewinberg and McDiamid (1990) argued that substantive knowledge of

ideas, facts, theories and skills is but one aspect of subject matter knowledge. It also includes understanding about the subject. Shulman (1987, p. 9) argues that:

‘Teachers must not only be capable of defining for students the accepted truth in the domain. They must also be able to explain why a particular proposition is deemed warranted, why it is worth knowing and how it relates to other propositions’.

It is logical to assume that teachers with mastery of their subject would be particularly effective in conveying it to students (Mullens et al, 1996, p. 139). When teachers possess inaccurate information or conceive of knowledge in narrow ways, they may pass on these ideas to their students. They may fail to challenge students’ misconceptions; they may use texts uncritically or alter them inappropriately. Strictly, teachers’ conceptions of knowledge shape their practice –the kinds of questions they ask, the ideas they reinforce, the sort of tasks they assign (Lewinberg and McDiamid, 1990). The subject matter knowledge is generally recognised to be essential to the teacher’s ability to deliver the subject, (Nitsaisook and Postlethwaite, 1986). This dimension usually comprises three elements:

- the basic sciences that form the cognitive base of vocational and technical skills;
- the technical information in the field of skills;
- the training in practical skills of the students’ field (or fields). This practical training may be performed either in the laboratories, workshops located in the teacher education institution itself or in the sites of work and production.

There are two questions facing the designer of vocational teacher preparation programmes. These questions are related to the proportion of each of the three elements that comprise the contents of the programme, the influence of this proportion on the level of the teacher preparation, and the necessary period required to cover the

dimensions of the programme. The other question is concerned with breadth of the professional technical preparation of the vocational teacher in his/her field of specialisation (Masri, 1990).

Thorough preparation in the technical skills of the fields needs a long time. In these circumstances, the graduates usually have lower ability to carry out certain tasks in the field directly after graduation. This implies a need for some extra practical field training in practical skills. It is recommended that student teachers should have this training at the work and production sites. Despite some resistance to this broad-based approach to vocational teacher preparation, modern approaches that emphasise a narrow preparation of technicians, professionals and vocational teachers should be avoided, because of the negative reflections on the individual, regarding his/her ability for academic and professional growth and improvement. So it is recommended to start vocational teacher preparation through a broad base of knowledge and skills. This preparation could be deepened gradually and finished in the specialised field (Masri, 1990).

In the case of PVE, it is expected that this component will be the most difficult one due to multiplicity and variability of the subject matter of the curriculum and the difference in levels between the subjects (Masri, 1990).

4.6.3 Pedagogical and Educational Preparation

‘Teachers not only have to have personal knowledge of subject matter, but also they need to know how to represent that knowledge for others’ (Lewin, 1992, p. 147)

This component of teacher preparation includes,

First: Theory of curriculum and instruction (teaching skills) in the field in which the teacher will be teaching. Essentially this component deals with what and how the subject should be taught (Nitsaisook and Postlethwaite, 1986). This preparation includes pedagogy in general and also particular instructional approaches and teaching methods, in addition to Educational Psychology. This dimension of teacher preparation aims to upgrade the teacher's competence and his/her ability to transfer knowledge and skills to the students and develop their positive attitudes. With regard to PVE teaching skills, several key questions can be raised. Firstly, what are the appropriate technical skills of teaching? Secondly, do these skills vary from subject area to subject area or from grade to grade? Thirdly, are some skills general to all subjects/grades, and are some specific? It is very important to find the right answers to these three questions, since the PVE teacher education programmes in Jordanian universities allocate a separate course to teaching methods in each of the five fields of the curriculum. This is not useful repetition, particularly when these courses are not practically oriented. To deliver PVE effectively and efficiently, the teacher should be provided with a *relevant* level of pre-service qualification and appropriate in-service development (Herman, 1987).

This preparation and pedagogical qualification can be integrated with the professional preparation (the integrative approach), or it can be done after the professional preparation (the consecutive approach). Generally, choice of consecutive or integrative approaches is not only a matter of time, but also has other economic and administrative aspects. Usually, the integrative approach is used in the institutions originally established for teacher preparation, while the consecutive approach is used to provide the pedagogical qualification for teachers who are originally qualified only in a certain

professional field without any accompanying pedagogical qualification. More details on consecutive and integrative approaches are presented later in this chapter.

Second: The sociological, psychological, philosophical and historical foundations of education: the teacher acquires a grasp of the concepts, principles and issues in the areas that have characterised concern with education over the centuries. The sociological foundations deal with such matters as the structure and functions of large and small social entities, ranging from whole societies to small groups. The psychological foundations of education deal with the nature of learning and the learner, his/her cognitive and social development, his/her motivation as a state of the moment and as an enduring trait, and the nature of achievement and its measurement and evaluation. The philosophical foundations of education deal with the relationship between curriculum and values, with the theories of knowledge underlying the curriculum, and with the proper relationship of education to the society at large and the “good life”. The historical foundations of education draw upon human experience down through the ages in acculturating the young so that they become useful, productive and integrated members of the society into which they are born (Nitsaisook and Postlethwaite, 1986).

4.6.4 The Practical Experience Required for Vocational Teachers

According to UNESCO (1997) and Masri (1990) a person should have different types of experience before appointment as a vocational teacher. These experiences should include,

- a) technical experiences, which are concerned with the teachers experience as a technician or professional in his vocational field before his recruitment as a teacher.

Teachers should know the actual application of their subjects in working life. This can be obtained through visits (either short or long-term) to firms and institutions (DES, 1983). In the PVE context of Jordan, Tweisat (1998) emphasised that the practical capacity of the teacher is of great importance for delivery of PVE. Thus, some work experience will be of great advantage for PVE delivery. Kanu (1986, p. 8) emphasised the importance of the field experience (of the teachers) indirectly by mentioning the implications of PVE for the learners themselves that could not be achieved without practical field experience of the teacher himself:

'It is evident that the core of the Pre-vocational curriculum innovation seeks to that scholars acquire not only factual conceptual knowledge, but also skills, attitudes and behaviour that enable them to continue to learn and so to adapt themselves to changes in their life circumstances'.

Teachers need practical field experience of vocational field(s) to enable them to relate what the students learn to life circumstances at personal and institutional levels.

b) experience in the field of vocational teaching or training regarding the teacher's experience as a vocational teacher or trainer.

For PVE, the teacher education curriculum should not only equip their potential teachers with knowledge and skills to implement established curricula, but also to help them to be innovative. A major feature of that type of curriculum is that it would be closely linked with the realities of both schools and community (Kanu, 1986).

The above two types of experience can also strengthen the teacher's mastery of subject matter. Wentling et. al (1994, p. 432) maintains that:

'Subject matter competence must be maintained throughout a career. This must be achieved through an approach that integrate theory and practice, but not just in the world of teaching, but also in the world of work'.

This means that effective subject matter training is achieved through work placement that could integrate the theoretical knowledge learnt on campus with practical application. This simply requires that work placement should be relevant to the subject that the teacher is being prepared to teach. As the teaching of vocational subjects includes training in practical skills, the practical experience in the field of work could break the barriers and give the teacher better confidence in using tools and equipment improving the teacher's abilities to train.

Regarding the teaching placement, in the model adopted for school teacher education in Huddersfield University, Matthew (1993, p. 41) refers to the practice of placing the student teacher in more than one school during the course. The obvious advantage of this is it widens the teachers' experiences by providing them with opportunities to teach different topics in different environments and with different resources.

Students should learn skills in the context within which skills are used in the 'real world'. This implies the following for teacher preparation:

- 1. Teachers must be able to apply their subject matter speciality in a 'real world' context.**
- 2. Pre-service teacher candidates must have more opportunities, prior to their first teaching job, to apply pedagogical skills they have learned (Wentling et al, 1994).**

Article 84 in the UNESCO Conference number 18 emphasises all the aforementioned elements and explains the general content of vocational teacher preparation (UNESCO, 1974, p. 20). It states:

'The professional preparation of all technical and vocational teachers should include the following elements:

- a) Educational theory both in general and as especially applying to technical and vocational education.**
- b) Educational Psychology and Sociology as it especially applies to the group or groups for which the future teacher will be responsible.**
- c) Special teaching methods appropriate to the field of technical and vocational education for which the future teacher is preparing and the groups to be taught, in methods of evaluation of student work and in classroom management.**
- d) Training in the choice and use of the whole range of modern teaching techniques and aids presupposing the use of up-to-date methods and materials in the programme of professional preparation itself.**
- e) Training in how to create and produce appropriate teaching materials, of special importance in those cases where technical and vocational materials are in short supply.**
- f) A period of supervised practice teaching experience before appointing to a teaching post.**
- g) An introduction to educational and occupational guidance methods as well as to educational administration.**
- h) A thorough grounding in safety and emphasis on the ability to teach safe working practice and habitually to set a good working example'.**

This long list of educational requirements for vocational teachers shows the complexity of vocational teacher education. In particular, teaching methods appropriate for each field of the curriculum should be determined and the teacher should be trained in using them in a practical situation. This simply means that lecturing which is dominantly used in the teacher education programmes is not appropriate for delivery of such courses. Additionally, the teaching practice that is required before appointing the teacher should cover the whole range of the included subjects. Taking into account the other mentioned components in the list, the teacher education programmes for PVE seem to be complex in that the components are varied and overlapping, and in that these programmes require a longer period than that of teacher education for academic subjects.

4.7 Approaches to Vocational Teacher Education

Since many writers consider PVE as vocational education (Al-Jawarnah, 1999), the available vocational education literature will be discussed taking into consideration the particular aspects of PVE in Jordan. According to the structure of the programme in terms of the time of pedagogical preparation with respect to the other components, there are two approaches traditionally used (Masri, 1990). Each of the two approaches is used in different situations and has its own advantages and disadvantages.

4.7.1 The Integrative Approach

In this approach, the teacher is qualified pedagogically through the preparation programme in addition to the general and professional subjects. The advantages of this approach can be summarised in the following:

a) The administrative advantages

To include the pedagogical subjects in parallel with the other subjects usually facilitates the procedures of planning, supervision and execution of the pedagogical subjects, since the target group are still students in the educational institution, so it is easy to manage and supervise their programmes and work. In the case of PVE in Jordan, it is better for subject matter training and pedagogical qualifications to be undertaken at the same time. This would achieve teacher awareness of PVE objectives and how they can be achieved. However, the balance between subject matter and pedagogical qualifications should be carefully considered, taking into account that teachers need to master the subject knowledge of five different fields.

b) The economic advantages

The cost of preparation of a certain group of students through the integrative approach is usually less than that of other approaches, since training through the consecutive approach requires additional cost to carry out the separated pedagogical qualification programme (Masri, 1990).

Shortcomings of the integrative approach

a) Students do not have sufficient experience to enable them to utilise properly the pedagogical subjects. Some of the students may undervalue these subjects and not take them non-seriously. This will have negative reflections on the level of the students' performance. However, if preparation is linked properly to school with school-based training, this shortcoming could be overcome.

b) The integrative approach implies that the group of students who will be vocational teachers should be selected in advance before the start of the programme. This selection takes place when the students register in the educational institution, which means that some students may become teachers even though they do not have adequate aptitudes and affinities towards teaching.

4.7.2 The Consecutive Approach

In this approach teacher is prepared first as a technician or professional, then prepared pedagogically through suitable programmes. Advantages of the consecutive approach include that students are usually more conscious of and have the aptitudes to make use of the pedagogical subjects functionally, particularly when the pedagogical qualification takes place as in-service training. The candidate's decision to work in teaching or not is

taken after completion of technical preparation.' This may increase the chance of appropriateness of the teachers in terms of affinity and aptitudes. This cannot be applied in the case of PVE in Jordan, since the prospective teachers are prepared in different disciplines of vocational subjects without deep acquisition employable knowledge and skills that enable them to work as technicians or professionals. However, once a person with a vocational qualification in one field is appointed to teach PVE, this is the only approach that can be adopted to equip him/her with the required pedagogical abilities.

Shortcomings of the consecutive approach are that there are some administrative difficulties in planning, supervision and execution. Teachers should leave the schools for the period of the course, and gathered from different regions in the place of the course. What makes certification more problematic is the different academic background of the teachers, a factor that makes it difficult to certify appropriately PVE teachers in Jordan.

4.8 Job and Role Analysis in the Determination of Teacher Training Needs

'In job analysis conducted specifically for training purposes, the main aim is to identify not only the practise tasks that a man has to perform in his job, the task inventory, but also the conditions under which they are performed and the standard to which they must be performed. However, there is a danger in concentrating wholly on the job, there is a need to widen the perspective to look at the man in the job. In this way it will be possible to identify not only the skills and knowledge but also the attitudes necessary for effective performance' (Royal Air Forces (RAF), 1991, p. 1).

Within the school sector, as within other sectors of society, educational planning is usually based on the experience of a few individuals with the subsequent risk that decisions may be made on extremely unreliable grounds (Gestrelus, 1972). Job analysis involves examining a job in order to identify its component parts and the circumstances

in which they are performed (RAF, 1991). Provided that the job analysis can identify all the aspects mentioned in the above quotation, why not use to analyse the roles of the teachers? This certainly will help us in identifying the preparation and training needs of the holders of the teaching jobs regardless of the complexity of the subjects they teach.

Youngman (1987) outlined different approaches to job analysis: content, detail, proximity and objectivity. He maintained that if tradition is not to be the determinant, then a major consideration is the purpose of the analysis. Frequently the aim is to devise training procedures and training content. In that case, for Youngman, it is likely that a method involving high levels of detail and content will be more suitable.

Many studies in an educational context have used job analysis to determine the performance description of the job in order to determine the preparation and training needs for people who hold or will hold the job (Gestrelus, 1972; Norton, 1987). It is the first step in the analysis of the training needs that result in description of job goals which should state what student teacher should be capable of achieving after training in addition to what knowledge, skills and attitudes should be conveyed to the student teachers

In teacher education contexts in Sweden, Gestrelus (1972) used job analysis to determine the training needs of teachers, school principals, lecturers in methodology and tutors. He referred four data collection methods used to undertake a job analysis: questionnaire, observation, diary (self-observation), and interviews. Other references mentioned other methods such as conference of experts, reference or document analysis. It should not be forgotten that, like any other data collection method in research, the

validity and reliability of the instruments used in job analysis should be tested (RAF, 1991).

The Centre for Vocational Education in the USA (1972) designed model curricula for vocational teacher education. The project started with a career analysis of vocational teacher. This phase resulted in a list of performance requirements of the vocational teachers. These performance requirements were clustered in instruction planning, instruction execution, instruction evaluation, management, guidance, school-community relations, students' vocational organisation, professional role and development and co-ordination. The task force members, who had been doing the project, master teachers and supervisors, verified the performance requirements. The performance requirements were categorised as common for the majority of vocational teachers, and as unique, mixed and not important for beginning and experienced teachers. General performance objectives were derived from the performance requirement. Criteria for evaluation of the performance of the objectives were also established.

As a process, job analysis can be done systematically through the following stages:

1. **Planning:** This stage includes the understanding of why to undertake job analysis and what has been done in the specific case, choice of the data gathering method and selection of the target population.
2. **Execution:** This stage includes design of the data gathering methods (such as questionnaire and interview schedules) pilot studies, fieldwork and data processing.
3. **Analysis and interpretation of the data:** This requires the job analyst to examine the data, draw conclusions and summarise the importance and implications of the findings.

4. **Reporting:** Its aim must be to communicate the main findings of the study in a way which is easily understood (RAF, 1991).

This model, in its four stages, is typical of such research. The most important stage is the reporting that provides for a job description of the teacher and identifies shortcomings and their reasons. Therefore, this study adopts this model in planning and execution, and seeks to construct a job description of PVE teachers and recognise problems areas in the subject delivery.

4.9 The Application of the Systematic Approach in Planning and the Implementation of Preparation and Training Programmes

Training programmes for teacher preparation should form a complete and integrated system. Determination of the role of the teacher, and of his/her performances and characteristics is one of the main planning activities, and is also one of the aims of this study. It will be useful to explain the application of the systematic approach to the planning and implementation of teacher preparation and training. Educational designers can follow the following steps in its construction (Al-Jabban, 1997):

1. Analysis of the current situation and identifying the education and training needs of the teachers. This includes analysis of the teacher characteristics, determination of the preparation needs of the teacher, and identifying of the objective of education and teacher preparation.
2. Identifying the general objectives of the programme;
3. To measure their achievement, these objectives are transformed into observable and measurable competencies in order to facilitate the determination of the programme effectiveness, and to design the teaching activities according to these objectives;

4. Identifying the programme contents by translating the objectives into instructional situations through identifying of knowledge, skills, and intended attitudes of the prospective teacher. Then the content should be organised to form the courses or modules;
5. Designing of alternative preparation or training strategies: in addition to the teaching plan, different models could be planned to enable the student teacher to select what suits the particular task. Alternatives are afforded according to the obstacles that the planner faces during design, implementation, and the pilot experimental development. In one way or another, the different physical or administrative obstacles that hinder the success of the programme should be specified and alternative methods should be identified;
6. Construction of the assessment and evaluation procedures. The systems approach depends on the continuous assessment. Feedback indicates the extent of achievement of the transient and behavioural objectives. If the evaluation indicates the success of the programme, then the programme is approved and its path is fixed. If the assessment indicates a deviation from the intended outcomes then the programme should be modified.

In addition to the informative evaluation, pre- and post-evaluation of the real implementation of the programme indicate the extent of improvement and the achievement of the desired objectives.

7. Piloting the programme for its development: the systems approach adopts the continuous improvement through pilot and individual experiments. In the light of these experiments, programmes can be modified or improved;
8. The real implementation of the programme.

4.9.1 The Contribution of the Study to the Application of the Systematic Approach to PVE Teacher Preparation

This study examines the planning phase for PVE teacher preparation and training and identifies the general objectives of the programme, the competencies required for PVE teachers, in addition to analysis of the current situation (steps 1, 2 and 3 above). To provide for these requirements, the study will answer the following questions:

- 1. What are the special features of PVE that make it different from other school subjects delivered at the same educational stage?**

This will facilitate the understanding of PVE, and the aspects of uniqueness of the subject that may require different activities of teacher preparation than those required for the traditional teacher preparation for the academic subjects.

- 2. What are the roles of PVE teacher in Jordan, the associated activities, and the tasks required for these roles?**

This will identify the demand of PVE teachers in terms of the activities and tasks that are required to undertake, and their required abilities. This identifies the general objectives and dimensions of the PVE teacher preparation.

- 3. What are the competencies that PVE teachers must acquire to fulfil their roles effectively?**

This will facilitate the design of the teaching activities, and determination of the programme effectiveness in teacher preparation.

- 4. What are the implications of the competencies for in-service teacher training?**

Taking into account the complex and holistic nature of teaching, the study will analyse the situations in which teachers are required to undertake the activities. This will help in determination of the repertoire of skills, understanding and knowledge that are required

for the teacher. Moreover, the study will determine the gaps in the current delivery of PVE whenever teachers found not to undertake certain activities. Reasons for gaps will be analysed, and implications for the different components of the subject delivery will be raised, with particular interest in in-service teacher training.

5. What are the programme-design issues for PVE teacher preparation and training? This will include the following:

- What is the most suitable approach to the preparation of PVE teachers?
- What should be the main components of PVE teacher education programmes?
- Is practical vocational experience necessary for PVE teachers?(If so in what ways?)
- What are the shortcomings of the current provisions?
- What corrective action could be taken in the light of the results of this study?

The elements of this question contribute to the determination of the structure of the teacher preparation programme, its main elements, and the structure of the content of its courses. Taking into account the current programmes and their shortcomings this will facilitate the modification and improvement of these programmes in order to achieve more effective preparation.

Summary

This chapter has discussed different philosophies of teacher education which result in different teacher education traditions and models. General elements and approaches to vocational teacher education have been discussed in the light of the demands of PVE. Those demands indicated the complexity of PVE teacher preparation, the need to use practical approaches rather than theoretical, in addition to the longer training period required than that needed for teacher preparation for academic subjects.

Chapter Five

The Research Methodology

Introduction

This chapter examines the rationale and procedures followed in this study and relates them to their principles. The study aims to provide an analysis of the demands of the job of PVE teachers in Jordan. Such analysis usually aims to identify tasks and responsibilities relevant to an educational career or function. Van Dalen (1969) stated that such studies collect information about tasks and responsibilities of jobholders, activities, relationships in the management of organisations, work conditions and the type and nature of facilities used. They may also study the characteristics and details of the specific teaching and training required for people to do the job, their experience and hierarchical levels, knowledge, skills, habits and behavioural characteristics. The collected data should facilitate the description of work practices, current conditions, the job holder's competencies, and behaviours required to do jobs effectively and efficiently (Odeh and Malkawi, 1992). Job analysis helps decision-makers in the preparation of training programmes, identifying weaknesses of the current preparation programmes, transfer, upgrading and retraining of the involved personnel. It may also help in building a theoretical model of the job and its organisation.

5.1 Methodology Rationale

System, processes or operations are generally designed to achieve certain objectives. The design process is usually started by the identification of intended outcomes (Al-Jabban, 1997; Al-Jabr, 1991; Rafa', 1993). Relating this principle to the aims of teacher preparation implies that characteristics, tasks, roles and activities associated with the required abilities of the prospective teacher are essential requirements for a successful

teacher education programme (Al-Jabbār 1997) (see also Section 4.9, pp. 141-144). Since little research is available about teacher's roles in PVE delivery and the implications for preparation and training, and because all of the available literature about PVE in Jordan indicates that there is a big gap between what is desired and what is actually delivered to teachers in their preparation and training programmes, it was decided to investigate the issue of PVE teacher education from the demands of PVE delivery.

The overview of literature on PVE indicated that PVE has its own particular activities and dimension relating to its delivery. Thus, the PVE teacher should have some particular abilities required to deliver the subject effectively, in addition to generic abilities required for the teacher of any subject. As the focus of this study is the preparation and training of the PVE teacher, generic abilities of the PVE teacher will be taken into account, but greater attention will be paid to particular activities and dimensions of PVE delivery. The investigation will end with a comprehensive discussion of implications of both generic and particular abilities for teacher preparation and training.

This study incorporates an analysis of the PVE teacher in Jordan. It aims to identify the activities of the subject delivery, the roles of the teacher in these activities, and competencies required for the teacher to undertake these roles (tasks) effectively. Also, it will examine the difference between the PVE teacher's role and the roles of teachers of other subjects, in addition to reporting about the implications and issues of the preparation and training. As the last chapter examined the theoretical bases for the principles used in this study (competency identification, job analysis in the teacher

education context and systematic teacher education), this chapter explains the methodology and procedures used in conducting the study. The following sections describe the approach of the study in addition to procedures used in data collection, pilot study, developing of the instruments, sample size and characteristics, administration of the instruments and statistical analysis.

5.1.1 Rationale of the Instruments Used

Because of the breadth and depth of the information required in this study, the researcher used a variety of research methods to collect the required information. These included literature review of the subject, documentary information, interviewing some groups with an interest in PVE, and questionnaires distributed to PVE teachers and supervisors. This use of multiple methods is in keeping the opinion of Van Dalen who stated:

‘One does not master a single method of obtaining data, such as the questionnaire, and applying it to every problem that arises. Each tool is appropriate for acquiring particular data, and sometimes several instruments must be employed to obtain the information required to solve a problem’ (Van Dalen, 1979, p. 127).

The researcher can utilise any method in conducting a research study provided that the instrument of data collection is valid and reliable. The research methodology should be valid for collecting the required data, and should be deep enough to uncover details of the subject. Taking into consideration that the job of the teacher is complex and the activities are varied, in addition to the need for general data that could facilitate the understanding of the teacher’s job (not very detailed skills as in ordinary job analysis), it was found that perceptions of the job holders and other involved people, like supervisors and curriculum authors, would help to achieve the study objectives. Teachers can clearly reflect on the real situation of the delivery of the subject, while

supervisors can compare between what is actually done and what is desired in addition to the perspective they have on delivery of the subject through systematic teaching/learning activities. Curriculum developers should ideally be able to understand fully the intentions of the curriculum and the implications for delivery.

According to Gallemore (1979) the relationship of perceptions among teachers, supervising teachers and college lecturers, is an important area of research if teaching is to maintain its high standing. So it was important for this study to use perceptions of the people involved as a direct source of data. Two issues appeared when thinking of perceptions: to select the people involved who can give valid perceptions of the study subject and to select the suitable instrument to collect data from each cohort of the people involved according to their roles in the subject of the study and their population size.

As a preliminary to taking these two issues into consideration, the researcher started by studying documentary information about PVE including the curriculum guidelines, content analysis of the textbooks, and the roles of the people involved (teachers, supervisors, and curriculum developers). This aimed to discover the intentions of PVE and dimensions of its delivery, and to determine whether each group of people is relevant to the issue of teacher's role or not, and in what aspects they may be relevant.

To identify the teacher's role in PVE delivery, curriculum authors and supervisors were interviewed. Curriculum developers have informed knowledge in the intentions of decision-makers while supervisors represent the link between intentions of decision makers and actual delivery implemented in schools in addition to the different

perspective they have on the delivery of the subject (and on systematic teaching/learning activities). To go more deeply into analysis of teacher's tasks, and to specify competencies required for the teacher, the perceptions of teachers themselves were obtained through use of a questionnaire. To assist validity a questionnaire was also administered to PVE supervisors (Salamah, 1994).

To obtain initial information about the subject, a pilot study was undertaken. Details of both the pilot study and documentary information are presented in the following two sections.

5.2 The Pilot Study

In many types of research, an exploratory pilot study is essential. This usually helps the researcher to identify the dimensions of the study, strengthens the rationale of the study and facilitates the design of instruments. Also results obtained from the pilot study can be used as primary results of the study. Oppenheim (2000, p. 51) stated:

'The earliest stages of the pilot work are likely to be exploratory, and will be primarily concerned with the conceptualisation of the research problem. They might involve lengthy, unstructured interviews, talks with key informants, or the accumulation of essays written around the subject of the inquiry'.

Because of the distance between Jordan and UK, where the study was being planned, the researcher sent a letter to the head of the PVE department at the MoE in Jordan asking if there was any job description of the PVE teacher. This was done in order to explore whether such a job description was available. It was intended to ensure that the study was worth doing and to maintain the idea of contacting key informants about the inquiry (Oppenheim, 2000). The reply from the head of PVE indicated that there is no job description of the PVE teacher in Jordan and this is a crucial point of the research

(as she emphasised). Non-availability of a job description for the teachers of all subjects in Jordan, raised the question of how valid the teacher training is and how the suitability of the appointed teachers for the teaching profession is assured, particularly in PVE where teachers of different specialities are currently teaching the subject.

An open-ended question was sent to a sample of PVE teachers in Jordan. The question was 'What are the tasks you do in your work as a PVE teacher at school? Please give as much detail as you can'. The purpose of this question was to identify the main tasks of the teacher as the first step of analysis in order to identify the main dimensions of the study instruments.

Sixty teachers answered the exploratory pilot question (this was all the teachers who actually teach PVE among those who are being certified at the universities to be PVE teachers since some of them have administrative positions and do not teach the subject). Responses were studied carefully and classified under different categories. Responses were very useful in identifying the main tasks of the PVE teacher, and in turn, helped in constructing the interview schedule and the questionnaire items. To see the responses to this pilot question, see Appendix 5.

The following sections will shed light on the research instruments and how they were constructed.

5.3 Documentary Information

Documents were utilised as a preliminary data collection method to help in building the research instruments, which is one of the main advantages of documentary analysis

(Oliver, 1997). Documents regarding the roles of the 'Team of Curriculum Development' and the 'Team of Supervision of Curriculum Development' were utilised in addition to the roles of the PVE department at the MoE. Documents regarding the educational supervisors' roles and their numbers were also utilised; the instructions of PVE delivery issued by the MoE, the curriculum headlines and its content. That was in addition to many papers presented at the 'National and Regional Seminars for Upgrading the Competence of PVE Teachers and Supervisors' conducted in Amman in 1994. Analysis of all the aforementioned documents helped in constructing a solid background of the subject, the current situation of its delivery in addition to building the instruments and deciding to whom these instruments could be addressed.

Based on the document analysis referred to above, and utilising the available literature regarding similar research areas, it was decided to use the following:

- To acquire the required broad range of information about the teacher's role and activities associated with this role, it was decided to interview the PVE curriculum developers (The members of the Team of PVE Curriculum Development and the members of the Team of Supervision on PVE Curriculum Development). These two teams had taken the responsibility of curriculum preparation and they understand its philosophy, objectives, content, activities of its delivery and learning outcomes to be achieved. Also it was decided to interview a sample of supervisors since supervisors are the link between the required and the actual PVE delivery. Also, supervisors have a different perspective on the teaching/learning process and PVE delivery.

- To identify the required competencies of the PVE teacher, a questionnaire was administered to a sample of teachers and a sample of supervisors. This was in order to access perceptions on the teacher's competencies to deliver the subject from two points of view: perceptions of teachers who actually handle the curriculum in the real school atmosphere, and perceptions of supervisors who have a different perspective on the systematic teaching/learning process and try to guide the process to achieve the targets specified by curriculum authors and decision-makers.

It was essential to use different instruments to collect data from different cohorts of respondents. Teachers and supervisors are able to identify the teacher's competencies since both are involved in the teaching/learning process. Members of the teams for curriculum development are not able to do that since some of them are only subject matter specialists in one of the fields of the curriculum and have never been involved in the teaching process. Members of these teams, however, are able to discuss the dimensions and activities of the curriculum delivery since they are supposed to understand its philosophy because they designed its guidelines, objectives and the content of textbooks. Supervisors are also able to do that because some of them have participated in the curriculum development, and they have already been trained in how to deal with the curriculum and to guide teachers during its implementation. Teachers were not selected to be interviewed regarding the curriculum delivery because of their large number and the difficulty of selecting a representative sample of a reasonable size from this large number.

Use of these two instruments (questionnaire and interviews) could overcome deficiencies that may result from a single method (Cohen et al, 2000; McNeil, 1990).

Dunham and Smith (1979) stated that the unique strengths and weaknesses of both interviews and questionnaires suggest that a combination of the two techniques provides the most essential survey programme. In addition to the activities of subject delivery, teacher's tasks and competencies, aspects that render PVE different from other subjects were also studied through questionnaire and interviews as a form of triangulation.

5.4 Interviews

The interview was designed to serve three main objectives:

1. as an analytical tool to identify the activities of the subject delivery, the role of the PVE teacher, and tasks associated with this role;
2. to identify the main special features of PVE curriculum and aspects that render it different from other subjects delivered at the basic education stage in Jordan;
3. to study the main issues of PVE teacher preparation and training, a suitable approach, its components, and the shortcomings of the current implemented programmes.

The interview is a fundamental tool of job (role) analysis. It is usually used in preliminary work to explore the basic nature of the job and also used as a primary method of collecting information in the main investigation. The interview is necessary in order to ensure the validity and correctness of the information collected from independent sources like documentary analysis, formal and informal reports (Al-Heeti, 1990). Despite the disadvantages of time consuming and incorporated cost, interviews may have the following advantages in the context of this study:

- the interviewer can select only those questions which are relevant to a particular situation;

- the interviewer can check carefully that the respondent has understood technical expressions and terms;
- the interviewer can use his freedom to adapt the sequence of questions, and take the opportunity to add to them and explain them (Cohen et al, 2000; RAF, 1991).

The main information resources utilised to build the interview schedule were the curriculum guidelines of the PVE curriculum and the instructions 'issued by the MoE' for its delivery that provide the main dimensions of the activities, and the approaches that could be adopted to achieve the curriculum objectives. All of the questions of the interview (except one) were open-ended to allow probing for further information as necessary. Such open-ended questions are important in allowing the respondents to say what they think and to do so with greater richness and spontaneity (Oppenheim, 2000).

The interview was semi-structured, and used a framework of seventeen questions. It included questions to reveal the PVE special features; the main approaches and activities of delivery of the curriculum and achieving its objectives; the abilities and skills required for the teacher. It included questions about the necessity of field vocational experience; the most suitable approach and the dimensions that should be covered in the PVE teacher preparation and training programmes. A question was also asked about the facilities and human resources needed for such programmes. The interview schedule is shown in Appendix 6.

5.4.1 The Population Sample of the Interview and its Analysis

As previously stated, the interview population comprised the members of the National Team of PVE Curriculum Development and the Team of Supervision on PVE

Curriculum Development (15 members) in addition to the PVE supervisors in Jordan who number 42 according to the statistics of the MoE for the educational year 1999. Thirteen supervisors, in addition to thirteen members of the mentioned teams were interviewed. Answers were transcribed from audio-tapes for further analysis, the relevant information from each interview was placed systematically under the related headings or sub-headings of the interview schedule, and an interview file was constructed for each interviewee. Analysis of the interview was assisted by the questions having been designed in such a way that each discusses a major issue by itself, and results of each question could be analysed as one unit. However, due to repetition of certain ideas in different questions, the responses were refined and classified in new categories in order to avoid repetition, and to integrate the interview results (qualitative) with the questionnaire results (quantitative). This integration enhances the validity of overall analysis (Braymann and Burgess, 1994; Brannen, 1992).

5.4.2 The Language Used in Interviews

Because interviews were held in Arabic, the preliminary transcription of the responses was in Arabic and the final results of the interviews were written in English. As the researcher used some quotations from the interviewees' words and sentences, and because direct 'word translation' does not produce smooth English sentences, the researcher tried to translate these quotations to the nearest meaning in English. This also helped in overcoming some grammatical problems in the interviewees' sentences.

5.5 The Questionnaire

The interview provided information about perceived roles of the PVE teacher, but the other important part of the study was to identify competencies (specific tasks). The primary purpose of this questionnaire was to specify the competencies of the PVE teacher. Additionally, this questionnaire served the following purposes as a form of triangulation with interviews:

1. to obtain more details of special features of PVE, aspects that make it different from other subjects and implications of these aspects.
2. To obtain more data about subsidiary activities of PVE delivery and the administrative tasks of the PVE teacher.

The questionnaire started with a covering letter clarifying the purpose of the study, stressing the confidentiality and the voluntary nature of participation, and asking for the co-operation of the respondents. The questionnaire itself comprised two parts: the first part of the questionnaire included the demographic factors relating to the respondents, which represent the independent variables. These include the type of the region of the school (urban or rural), the teacher's gender, teaching experience, vocational experience, qualifications, and field of speciality. It was intended to study the effect of each of these factors on the respondents' perceptions. The second part included the questions of the questionnaire (four questions). Two of them were closed-ended items with a space to add comments at the end of each question, and two were open-ended questions. Instructions about how to respond were provided at the beginning of each question.

5.5.1 The First Question

This question was concerned with the competencies of the PVE teacher. It aimed to answer one of the questions of the study, that is, what are the competencies that PVE teacher must acquire to deliver the subject effectively? Several aspects have been taken into account when designing the instruments for data collection about the competencies of the PVE teacher.

a) The Type of Instrument and its Design

As a matter of measurement of perceptions (attitudes) self-completion questionnaires are usually used (Cohen et al, 2000; Fowler, 1993). All of the studies reviewed concerning identifying of the teacher's competencies were found to use questionnaires. This is rational in the context of such studies since teaching usually requires many competencies. To collect data about a list of things, like competencies, from a representative sample in the Jordanian context, the most practical instrument to use was a questionnaire. In this context questionnaire has the following advantages:

- it could be addressed to a representative sample of teachers and supervisors, which is relatively large (Cohen et al, 2000; Fowler, 1993);
- the use of the questionnaire makes it possible to study the effect of certain factors on perceptions of the respondents of the competencies and their importance, if required (Herbert, 1991);
- it is relatively cheap in comparison with other ways of data collection (Cohen et al, 2000);
- as a large number of data points required to be collected from each respondent (about 200 data points), the questionnaire is an instrument that is already pre-coded and consequently easy to analyse (Cohen et al, 2000).

The procedures followed in developing the questionnaire were essentially those recommended by Oppenheim (2000), Ackroyd and Hughes (1981), Sudman and Bradburn (1982), and others. The first step in the design stages was to list the specific objectives to be achieved by the questionnaire, and to relate each question to these objectives. According to Oppenheim (2000) the questionnaire has a task to do, its function is measurement, therefore, the specification should clearly state the main variables to be measured. In designing the questionnaire, it is recommended by many authors to keep the directions as brief as possible and to provide ticking of possible answers already present on the form, rather than requiring a written answer. The researcher decided to modify this advice slightly by asking respondents to add their own comments on some questions. In this way, it was hoped that the respondents would feel more directly involved, and express their opinions more freely. Although open-ended parts of questions may reduce the overall response rate of the question, it could give the respondent an opportunity to comment on the way in which he/she understands the question and the way in which he/she wishes to respond. Thus the chief disadvantage of the closed form - loss of spontaneity and expressiveness on the part of the respondents was to some extent alleviated. This was helpful in the context of this study since there are some debatable competencies and activities of PVE delivery and some debatable dimensions concerning the subsidiary roles of the teacher.

b) Construction of the List of Competencies

Due to the uniqueness of PVE in Jordan in terms of its practical nature, flexibility of the curriculum and variability of the targets it aims to achieve, its delivery implies the adoption of different approaches and activities, and in turn, different teacher

competencies (Moore, 1986; Lillis, 1989; Marshal, 1990). Therefore, it was difficult to utilise fully the fact that the researcher should benefit from the prior measurement efforts of others (Gray and Wigel, 1985, p. 30) because all of the available literature indicated that there is no other study dealing with the teachers' competencies in a similar situation to that of Jordan.

To be able to construct a list of competencies that could completely and realistically reflect the actual required delivery of PVE, the researcher did the following:

- Studied the theory of teaching/learning and what generic competencies are needed for the teacher. This enabled the researcher to identify the general competencies required for the teacher of any subject, like planning, organising and evaluation of teaching/learning.
- Studied the content of the PVE curriculum, and its guidelines; its general and specific objectives and intended outcomes, dimensions and recommended activities of its delivery. This enabled the researcher to identify the particular activities required to deliver PVE and the main teacher's roles required for the teacher to undertake such activities. This is concerned specifically with the use of the workshop for practical training, the required enrichment of the curriculum, vocational guidance and utilisation of the environment in the subject delivery. Additionally, this helped to determine particular reflections of PVE on the required teacher's skills that are usually included in the domain of generic teaching skills.
- Studied the methods, bases and sources for identification of the competencies that are reported in the literature (see Sections 8.6.1 and 8.6.2, pp. 245-250).

Also, this analysis helped the researcher to identify studies relating indirectly to PVE (for example vocational education, Design and Technology, Science) and to utilise teacher competencies found in such studies. Taking into consideration the specific context of each piece of research reviewed (Avolas, 1991) the literature was not of great advantage in constructing the list of competencies. However, relevant studies (see Section, 8.6.2, pp. 246-250) were primarily utilised particularly in lists of competencies they included and their categorising. This group of studies identified the teacher's competencies in a vocational context and helped to identify teacher's competencies mainly in conducting practical training and use of the workshop in addition to vocational guidance.

Additionally, because PVE is taught at the basic education stage and practical training is the main element of its delivery, studies concerning teacher competencies at the same educational stage were useful in constructing the list of competencies of the PVE teacher, particularly in relation to science teaching, which is one of the main school subjects that involve practical parts in its teaching and using of the science laboratory and different teaching styles and methods. In this regard, the following studies were utilised:

- Rafa' (1993) 'Assessment of training needs of science teachers in secondary schools in south-west of Saudi Arabia', and
- Rubba A. (1981) 'A survey of Illinois science secondary school teacher needs'.

Because Design and Technology in Great Britain is the subject most similar to PVE in Jordan (Tweisat, 1998), the researcher utilised the competencies published by DATA (Design and Technology Association) about 'Minimum competencies for students to

teach in Design and Technology in secondary schools' published in 1995. The useful aspect of this publication is that it published competencies in 'subject application', an idea that directs the attention to the philosophy and objectives of the curriculum in the training of teachers of Design and Technology. Also, this publication stated the 'long-term assessment of student's progress and recording of this assessment' as one of the teacher's competencies; an idea that was not found in any of the other studies reviewed. Additionally, competencies of further 'professional development' of the teacher' published were utilised to identify the 'personal abilities' of the teacher.

Studying different references concerned with teaching/learning theories and teacher competencies, in addition to the aforementioned studies and all the documents regarding PVE in Jordan and its teaching, produced a final list of 82 competencies.

5.5.2 Categorising of the Competencies

The classification of teaching competencies is context specific, so references regarding the teaching process categorise teacher competencies in different categories. After studying the nature of PVE and building the initial list of competencies, they were classified into seven fields (categories) that are also validated and piloted.

1. Planning of teaching/learning.
2. Organising of teaching/learning.
3. Evaluation of teaching/learning.
4. The curriculum and its enrichment.
5. Organising and using the PVE workshop.
6. The personal abilities of the PVE teacher.
7. Vocational guidance and counselling.

Competencies in the fields known to be common between teachers were expressed in a way that reflects the required specific detailed skills for the teacher. This is true mainly for the fields of planning and organising of teaching and learning. That was because of the direct significance and contribution of these competencies to the teaching process. Some competencies of the other fields are particularly required for the PVE teacher. The aim was to examine these competencies in order to establish them as required competencies for the PVE teacher, so they were expressed as general statements. Also, availability of the literature concerning competencies of each field affected the degree of detail in which they were expressed in the questionnaire (see Appendix 7).

5.5.3 Responses on the Question of Competencies

To avoid defensive responses, the respondents were assured that the required data was about the demands on teachers' abilities to teach the subject effectively (ideally) and not to evaluate their performance. The required response on this question consisted of two parts. The first part was concerned with the relevance of the competency to the PVE teacher's work (is the competency a part of the teacher's work or not?). This aims to identify the competencies of the PVE teacher in order to help in the determination of the content of the preparation and training of the teacher, that is, what should be included in PVE teacher preparation and training. The second part was about the importance of that competency if it is perceived as a part of the teacher's work. Knowing the importance of each competency (or a group of competencies) can help the curriculum designer in determining the emphasis on the competency in the programme in terms of the periods and modules that could be allocated to train teachers in certain competencies. Also it helps in the determination of the priorities of teacher education that is what should be

delivered in pre-service, and what could be postponed to in-service training programmes (Hill and Wecklein, 2000) because pre-service programmes cannot equip the teacher with all the required competencies within the limited period of time.

As shown in the table below, the respondent was asked to respond on the first part on a scale of two categories, (Yes = the competency is a part of the teacher's work, or No = the competency is not a part of the teacher's work).

No	The task/ competency	Relevance to the teacher's work		Degree of importance			
		Yes	No	Very important	Important	Of little importance	Not important

If the answer of the first part was 'Yes', the respondent was asked to give a degree of importance for that competency to the teacher's work on a four-point scale. The use of a multi-point scale is widely used to examine attitudes and perceptions (Hunting and Godfery, 1986). It is the most convenient for determination of the importance of the competencies because it provides the opportunity to collect a wide range of responses with a high degree of sensitivity and differentiation, that allows compilation of a profile of the important and unimportant competencies for the teacher to do his task (Cohen et al, 2000). Positive perception of importance was covered by two degrees ('very important' and 'important'), and two degrees ('of little importance', and 'not important') were considered negative. The respondent was asked to add any other aspect considered worth mentioning. This allowed the respondent to add, modify and even comment on his/her understanding of the question and the way of responding. For

more details about the competencies included in this question, Appendix 7 shows a translated copy of the questionnaire

5.5.4 The Second Question

This question was designed to reveal the aspects that make the role of the PVE teacher different from the role of the teachers of the other subjects taught at the basic education stage. This was done in order to analyse the implications of these aspects and to take them into consideration during PVE teacher preparation and training, because PVE is taught during the basic education stage in Jordan, while the majority of the subjects, taught at this stage, are academic and theoretical. Also, in Jordan, PVE teacher preparation and training has been undertaken using the same approaches followed in teacher preparation and training of the teachers of the other subjects (see Section 3.5, pp. 87-99) although PVE is a different subject in several important respects. Investigation of these differences was the aim of this question. It consisted of a list of fourteen aspects assembled from different sources. Those are: the guidelines and documents of the PVE curriculum, the documents issued by the MoE, and the documents of the 'National and Regional Seminars of Upgrading the Competence of PVE Teachers and Supervisors' that are concerned with the different dimensions of the effective delivery of PVE. The respondent was asked to indicate his/her degree of agreement or disagreement with each of the listed aspects on a four-point scale, as shown on the table below.

No	The Aspect	The Degree of Agreement/Disagreement			
		Strongly agree	Agree	Disagree	Strongly disagree

Degrees of agreement/disagreement were used to indicate whether each of the listed aspects is one of the aspects that make PVE different from other subjects or not. This

indicates whether the aspect is worth studying in terms of its implications for teacher preparation or not. The framework of data interpretation regarding this question was based on that if the majority of the respondents agreed on an item as a distinguishing factor of PVE, then the disagreement of the other respondents could be justified in the light of the way in which this minority perceived the delivery of the subject and understood its nature. For more details about this question and to see the list of the aspects, see the questionnaire in Appendix 7.

5.5.5 The Third and the Fourth Questions

Two open-ended questions were designed to explore some subsidiary tasks of the PVE teacher. These concern the extent to which the PVE teacher is involved with the maintenance of school facilities, and whether the PVE teacher is usually committed to being a member of certain school committees related to PVE activities, such as the PVE committee and the purchasing committee. The rationale behind these two questions came from the pilot study, which revealed that the majority of the teachers considered maintenance of the school facilities and the care of the school garden as the main tasks associated with their job. The respondents were asked to write their responses in the tables and to add comments in a space following the aforementioned table. The main positive features of written open-ended questions are that the respondents are free to provide their answers, once they understand the intent of the question and the questions are carefully worded, spontaneously and in their own language, and they are easy to ask (Oppenheim, 2000; Hoinville, 1982). To analyse the responses to each of these two questions the researcher categorised responses and analysed them qualitatively.

5.5.6 The Language of the Questionnaire

The questionnaire was initially designed in English. After consulting the supervisors of the study and having it approved, the researcher translated it into Arabic. It was not considered necessary to have it translated by a language specialist without knowledge of PVE. However, the researcher consulted a language specialist, giving him both the Arabic and English copies. After testing and discussing the actual meaning of some terms with the researcher, no critical problems were found in translation of the questionnaire. After testing validity, reliability and doing the field work, the questionnaire was retranslated into English to use this version in the analysis and interpretation of the results.

5.5.7 Validity of the Instruments

Cohen et al (2000) point out that a good questionnaire should be easily understood, short, uncomplicated, reliable and valid. A test is said to be valid if it measures what it is stipulated to measure. Content validity is usually guided by a major question: Is the content of this measure representative of the content of the subject being measured? Content validity consists mainly of judgement. One judges the representativeness of the item alone or with others (Englehart, 1972).

To ensure the validity of the questionnaire the researcher delivered it to a group of 20 people. Five of them were teacher educators at Jordanian Universities; five were teacher trainers and PVE specialists at the Ministry of Education; five were supervisors and five were teachers of PVE. Each of the aforementioned consultants was asked to give their comments about the relevance of each item of the questionnaire to the field that it was

classified in; the suitability of the wording of the item and the concerns that the consultant wished to raise about the item. In addition a space was provided for the consultant to write comments about the entire question in terms of its servicing of the study objectives and the scale used to elucidate responses. Also the consultant was asked to add any item considered suitable or to omit any redundant item.

Based on the notes of the consultants, some items were added; others were omitted and the wording of some items was modified. Some items were moved from one field to another and from one question to another. The content validity index was calculated by dividing the number of the items agreed by the consultants by the total number of questionnaire items. The result was 0.91, which is acceptable for the purpose of the study (Mouly, 1978).

To determine the validity of the interview schedule, the researcher delivered it to the same group of consultants and asked them to give their notes on each question and on the interview as a whole. After considering these comments, some questions were added; others were omitted and the wording of others was modified. Although notes were written on their copies of the questionnaire and interview schedule, the researcher had a discussion with the moderators to enrich the use of these notes.

5.5.8 Piloting the Questionnaire

Before administration to the study sample, the questionnaire, which had been validated and reliability tested, was tried out with a group of ten PVE teachers and two supervisors. The group was asked to respond to the questionnaire and to express their views on the clarity of each item and question. This was a preliminary test of the

questionnaire to locate any ambiguities in the items, and to ensure clarity for the Jordanian PVE teachers and supervisors who would participate in the study. All of the respondents in the group expressed their satisfaction, and confirmed that the questionnaire was easy to understand, and straightforward to complete.

5.5.9 Administration of the Study Instruments

After preparation of the final draft of the instruments (questionnaire and interview schedule) the researcher obtained the permission of the Ministry of Education to distribute the instruments and to do the fieldwork of the study.

Before the researcher travelled to Jordan to undertake the fieldwork, the director of studies, Dr. Michael Breckin, sent a letter addressed to the Minister of Education in Jordan, explaining the aim of the study and asking His Excellency to help the researcher and allow him to distribute the study instruments to the selected participants and gather the responses from them. At the Ministry of Education any study instruments should be approved by the Department of Research and Studies. The questionnaire and the interview schedule were checked in terms of content and objectives. It was explained that this process was to ensure the conformity of these instruments with the educational system. It is unusual for educational establishments to take copies and to check the content of the instruments particularly when such instruments are to be administered to adult people (not children). The problem with such a check is that it could result in omitting of some questions included, if the Ministry did not approve them, a factor that could prevent the research from achieving its objectives.

Subsequently a memorandum was sent to each general directorate included in the sample. These were the Amman, and Balqa' general directorates in addition to the General Directorate of Curricula and Education Technology, the place of work of the members of the National Team of PVE Curriculum Development. To access the sub-directorates in each general directorate Amman and Balqa' the general directors sent memoranda to all of the directors of the sub-directorates (Amman 1st, 2nd, 3rd; Salt, Shounah, and Deir Alla). Each director of these sub-directorates sent another memorandum to head teachers of the schools included in the sample asking them to help the researcher in collecting the data of the study.

There was a possibility of posting the questionnaires to the teachers in schools. Oppenheim (2000) stated that the greatest disadvantage of mail questionnaires is the fact that they usually produce a very poor response rate. The important point about these poor response rates is not the reduced size of the sample, which could be easily overcome by sending out more questionnaires, but the possibility of bias. Oppenheim further added that the personal administration of questionnaires ensures a high response rate and accurate sampling. For to this reason it was considered better to conduct the field study directly rather than to entrust it to the vicissitudes of unreliable mail services either in the country or within the ministry internal mail. It is worth mentioning that in many developing countries, which are not research oriented, it often happens that respondents do not pay much attention to questionnaires that are delivered by mail. In such countries, and to a lesser extent, more generally, personal contact and official support are the best guarantee for the co-operation of respondents (Halawani, 1990).

Taking these issues into consideration, each questionnaire delivered was accompanied by a covering letter clarifying the purpose of the study, stressing the confidentiality and voluntary nature of the participation. The researcher visited each school and directorate involved in the sample, met the teacher or supervisor personally, gave some brief instructions about how respondents should fill in the questions and answering the open-ended questions in the questionnaire. This was in addition to providing written instructions on how to respond to each question, which were included at the beginning of each question. After delivering the questionnaire to the respondent the researcher made an appointment to collect it on another day.

Regarding the interviews, the researcher used to visit the required person, talk to him/her about the study purposes, and tell him/her that the study requires the researcher to conduct an interview with him/her. The interviewee took the interview schedule to have an initial idea, and then made an appointment to have the interview. This helps the interviewee to read the interview schedule in depth and prepare his/her ideas. Also the researcher asked the interviewee for permission to record the interview. The majority of the interviewees agreed to such recording. Some of the interviewees agreed only to write the answers of the questions claiming that this could give them more freedom and time to organise their responses. One of them refused and asked the researcher to write his/her responses while he/she was talking

5.5.10 Statistical Analysis of the Questionnaire

The main source of quantitative data in this study was the questionnaire. The data collected was manipulated, tabulated, and computed. Before the data entry, it was translated from the master sheets of the questionnaire on to a card to make it easy to

enter in the computer software. The questionnaire responses were analysed using SPSS (Statistical Package for Social Sciences). The following information about the analysis of each question of the questionnaire will clarify the tabulated results in the following chapters.

The First Question (Competencies of the Teacher)

To analyse the responses of this question, 'Yes' which means that the competency is a part of the teacher's work, was given the value of 1, while 'No', which means that the competency is not relevant to the teacher's work, was given the value of 2. Frequencies, proportions, and percentages of the responses were used to describe and discuss perceptions on this part. Regarding the degree of importance of the competencies, the responses were given the following numerical values during the data entry to the (SPSS): very important 4; important 3; of little importance 2; and not important 1.

Frequencies, proportions, and percentages are the best statistics to describe perceptions because they reflect what views respondents give directly without any modification (Odeh and Malkawi, 1992). This keeps the nature of responses clear since each category of response (for example very important, important) is a qualitative (discrete) data point by itself. Percentages can be misleading when the sample size is small particularly when a kind of comparison is to take place with a larger sample (Cramer, 1998); therefore the proportions were used to analyse the perceptions of supervisors whose sample was small (13 supervisors), while percentages were used to analyse the perceptions of teachers whose sample was relatively larger (145 teachers). Cramer (1998, p. 145) emphasised that:

'Describing frequencies in proportions and percentages is particularly helpful when comparing some variable across samples of different size'.

Results were interpreted in the light of the hypothesis that a competency is relevant and important for teachers work if a high or relatively high percentage of respondents considered it as so. Perceptions of the rest of respondents (who considered it either irrelevant or unimportant) might identify a shortcoming in the subject delivery in that these perceptions could mean that teachers do not have this competency or they do not use (practice) it. This approach to analysis could help to identify problems in the current delivery of the subject.

For the sake of ranking the competencies, according to their degrees of importance and to make it easier to interpret the data, the importance of each competency was calculated by the summation of frequencies and summation of percentages of the positive perceptions ('very important' + 'important'), and the negative responses ('of little importance' + 'not important'). Details are in the introduction of chapter 9.

The Second Question

In the second question, the degrees of agreement/disagreement were given the following numerical values during the data entry: strongly agree 4; agree 3; disagree 2, and strongly disagree 1. Frequencies, proportions and percentages of the responses were also used to analyse the perceptions on this question.

5.5.11 Studying the Effect of the Study Variables

As mentioned before, it was assumed that perceptions could differ according to some variables with respect to the characteristics of the respondent (the type of the region of the school (urban or rural), the teacher's gender, teaching experience, vocational

experience, qualifications, and field of speciality). It was intended to study the effect of each of these factors on the respondents' perceptions. To study the effect of these independent variables of the study, analysis of variance (one-way ANOVA) was utilised. This test examines the existence of differences between means regardless of the number of levels of the variable. Differences between means are less likely to be due to chance when the between-groups variance is greater than the within-groups variance provided that the variances are equal (Cramer, 1998). Wherever significant differences were predicted from the results of the ANOVA tests, it was necessary to examine the levels of the variable that have significantly different means. To test for significant differences between pairs of means, the t-test was utilised, otherwise the Sheffe-test was performed. This test gives the mean differences between every two levels of the variable and indicates whether these differences are statistically significant (Cramer, 1998; Burroughs, 1971). However, with respect to the results of these tests, it was found that there was no significant difference in perception due to the factors considered except in very few competencies.

5.5.12 The Population of the Study

The population of the interviews included all of the members of the National Team of PVE Curriculum Development and the National Team of Supervision of PVE Curriculum Development (15 members) in addition to all the PVE supervisors in the MoE in Jordan (42 supervisors). The population of the questionnaire comprised all PVE teachers and supervisors in Jordan.

5.5.13 Questionnaire Sample Selection and its Characteristics

When no adequate data is available about the population, Mouly (1978) stated that stratified random sampling provides more precise results than random sampling if stratification results in greater homogeneity within each stratum than would be found in the whole population taken as a unit. Stratification is profitable in the stage of giving more precise results, whenever the population can be broken into sub-populations possessing characteristics differences with respect to the trait under investigation. Van Dalen (1979, p. 133) stated:

‘Since a random selected sample particularly a small sample may by chance an undue proportion of one type of unit in it, an investigator may use stratified random sampling to get a more representative sample’.

The sample of the teachers and supervisors was selected according to the study variables. Because no adequate information was available about the teachers, their accurate experience of teaching, the stages they actually teach; and their vocational field experience prior to teaching, the sample selected was stratified random. That is, the researcher tried to specify the sample according to as many of the study variables as possible. That was because of the assumption that perceptions of respondents may differ according to the study independent variables.

The researcher selected two general education directorates (out of seven in Jordan) to cover the first variable (the type of the region of the school). One of them is mainly an urban area, the capital of Amman general directorate, the other is mainly a rural area, the general directorate of education for Balqa' governorate. Each of them includes three sub educational directorates as shown in the following table. The sample included all supervisors in the selected educational directorates (13 supervisors out of 42 across the country) and all of them responded. To select the sample of the teachers, schools in each

directorates were divided into two categories to cover the variable of the gender of the teacher, and a random sample of thirty per cent of the teachers in each category was selected. This percentage is high enough to cover the study variables and produces a representative sample. The researcher used the schools as a basis to select the sample since there was no data available about the grades that each single teacher teaches. The table below shows the numbers of schools that have the desired educational stage of the study in each educational directorate.

Table 5.1: The Numbers of the Schools That Have the Desired Grades in the Selected Directorates

The General Directorate	The sub Directorates	The number of schools		
		Male	Female	Total
1. The capital of Amman	Amman first district directorate	82	59	141
	Amman second district directorate	60	44	104
	Amman third district directorate	65	74	139
		Sub total =384		
2. Balqa Governorate	The directorate of Salt region	44	56	100
	The directorate of Shouna region	11	9	24
	The directorate of Deir-alla region	10	12	22
		Sub total=146		
Total number of schools in all selected directorates = 530				

The name of each school, of each category in each directorate, was written on a closed piece of paper. The name of each school to be selected in the sample was drawn from the group, then returned to the group in order to keep a constant chance (probability of selection of each school). One hundred and fifty nine (159) questionnaires were administered to teachers, seventy-eight (78) to male teachers and eighty one (81) to female teachers. The number of the selected teachers from each directorate is shown in the following table. Seventy-six (76) male teachers and sixty-nine (69) female ones

responded correctly to the questionnaire in addition to all 13 supervisors included in the sample. So the return percentage was 92.4 which is adequate for the purpose of this research.

Table 5.2: The Selected Number of Teachers in Each Educational Directorate

The General Directorate	The sub Directorates	The number of teachers		
		Male	Female	Total
1. The capital of Amman	Amman first district directorate	21	21	42
	Amman second district directorate	15	16	31
	Amman third district directorate	20	21	41
	Sub total	56	58	114
2. Balqa' Governate	The directorate of Salt region	15	15	30
	The directorate of Shouna region	4	4	7
	The directorate of Deir-Alla region	3	4	7
	Sub total	22	23	45
The total number of teachers in the sample = 159				

5.5.14 The Respondents' Distribution According to the Study Variables

The total numbers of the respondents to the questionnaire was 158: 145 teachers and thirteen supervisors who are all the supervisors in the selected educational directorates (for more details see the Table 5.3 below).

Table 5.3: Respondents' Distribution According to the Study Variables

The variable	The number of respondents	Total
1. The position of the respondent		
Teachers	145	158
Supervisors	13	
2. The type of the region of the school		
Urban	105	158
Rural	53	
The variable	The number of respondents	Total
3. The gender of the respondent		
Male	85	158
Female	73	
4. The period of the teaching experience		
Less than one year	7	158
1-3 years	37	
3-5 years	49	
More than five years	66	
5. The period of the vocational experience		
No experience	22	158
Less than one year	10	
1-5 years	47	
More than five years	79	
6. The level of the qualification		
Diploma	124	158
BA	25	
Higher than BA	16	
7. The field of speciality		
PVE	78	158
Other vocational field	46	
Non vocational field	21	

Statistical analysis indicated that the distribution of the study sample according to the study variables is normal. This facilitates the use of complex statistics that require the normality of the distribution of the data.

Summary

This chapter has discussed and justified the research methodology and procedures followed to collect data. It explains the nature of the study and the rationale of the instruments (documentary information, interviews and questionnaire) and clarifies how they have been constructed, validated, delivered and then how findings have been analysed. However, reflection on the research methodology cannot be completely understood unless the reader sees the results that come from data collected through the actual use of the instruments. These will be discussed in subsequent chapters.

Part B: Research Findings

Introduction to the Findings of the Study

As the study objectives require, findings will be categorised into four themes. These are aspects that distinguish PVE from other subjects; activities of PVE delivery and teacher's roles; competencies of the PVE teacher; and issues of PVE teacher preparation and training).

In Chapter 6 features of PVE that distinguish it from other subjects are discussed in a way that presents the implications of these aspects for teacher preparation and training. To avoid repetition, this discussion is brief. More details are provided in the discussion of activities of PVE delivery in Chapter 7, where the current situation is more clearly reflected and solutions are discussed in addition to a detailed consideration of the teacher's roles and their implications for preparation and training.

A background to the competency-based teacher education will be provided in Chapter 8. As teacher competencies are direct contributors to the design of programmes of teacher training, they will be discussed separately from the activities of the subject delivery. Because many competencies are included, they will be presented in separate chapters (Chapters 9-12) addressing the teaching skills, the subject matter knowledge, the use of the workshop, and subject application competencies required for teachers. Perceptions of teachers and supervisors will be analysed, interpreted and related to the current situation of the subject delivery and teachers' abilities in order for these competencies to relate more closely to teacher training. To give more guidance regarding teacher preparation and training, different issues concerning the most suitable approach to PVE teacher training, the components required in the preparation programme, the necessity

of practical vocational experience and shortcomings of the current programmes are discussed in Chapter 13.

Finally, it is worth restating that the findings of this study should be understood in the context of PVE in Jordan since the majority of the issues presented are actual reflections of the real case of implementation of PVE in Jordanian schools. So generalising any of the study findings should carefully take into account that the study has been undertaken in a particular situation relating specifically to PVE in Jordan.

Chapter Six

Special Features of Pre-Vocational Education in Jordan

Introduction

To assist the reading of this thesis it is important to clarify the characteristics of PVE, its special features and the aspects that distinguish it from other school subjects. This will facilitate the understanding of the context of the findings that relate to the tasks of the teacher and the nature of the related subject.

Qualitatively, data was collected through interviews investigating the special features of PVE. Also to investigate the differences in roles between PVE teachers and teachers of other subjects, the researcher listed them in a questionnaire, and asked the respondents to indicate their degree of agreement/disagreement on each aspect on a four-point scale. To make interpretation of the results more understandable, the researcher combined the positive responses ('Strongly Agree' with 'Agree') denoted by 'A', and negative responses ('Disagree' with 'Strongly disagree') denoted by 'DA'. Wherever seen in tables concerning the results, the letter 'F' is the frequency and 'P' is the percentage of respondents. Results indicated that there is a high degree of consensus among respondents, both teachers and supervisors, about the aspects proposed in the questionnaire. Therefore, after displaying and discussing the quantitative evidence about each item, the researcher will try to analyse the implications of these aspects utilising results of interviews and documentary information in addition to the available relevant literature. Aspects are not ranked according to any category in the discussion, but ordered, by the researcher, in a way that serves the overall theme of the study.

6.1 The Practical Nature of the Subject

The aspect	Degree of agreement/ disagreement				
		Teachers		Supervisors	
		A	DA	A	DA
Teaching of practical skills in different vocational subjects in addition to theoretical bases of these skills.	F	135	10	13	0
	P	93.0	6.9	100	0

The main distinction is that PVE is one of the topics taught at the basic education stage (grades 1-10) where the majority of the subjects taught at this stage are theoretical, but PVE is practical. The curriculum is structured into groups of practical activities relevant to the student's life. This aspect was reflected, as the interviewees stated, by the instructions issued by the MoE for implementation of the curriculum (MoE, 1990a): 70 per cent of the total mark, of the students' performance, is allocated for practical exercises, while the other 30 per cent is allocated for the theoretical and other aspects of performance. Allocation of 70 per cent of the total mark to the practical performance suggests the approach to the teaching of the subject. It implies that practical skills are the main component of the learning outcomes desired from the subject. This demands a high degree of practical capability in the teacher in all of the curriculum fields particularly in grades 5-7 (see Section 7.2, pp. 213-218).

Although interviewees, supervisors and curriculum authors emphasised its practical nature as the main distinguishing feature of the PVE curriculum, seven per cent of the teachers disagreed with considering the practical side as one of the aspects that differentiates PVE from other subjects (see the table above). This could be a realistic reflection of the current situation, where some teachers emphasise the teaching of theoretical knowledge of the fields in which they lack practical ability because of their

different background specialisms and the ineffectiveness and irrelevance of the in-service training they receive (Tweisat, 1998). The practical nature of PVE has special implications for the teacher preparation and teacher's roles.

6.1.1 Practical Training of the Teacher

The aspect	Degree of agreement/ disagreement				
		Teachers		Supervisors	
		A	DA	A	DA
Necessity of vocational practical training for the PVE teacher to be able to demonstrate practical skills to the students.	F	142	2	13	0
	P	98.6	1.4	100	0

It seems evident from the high degrees of agreement on this aspect (see the table above) that the practical training is necessary for PVE teachers. To train in practical skills in different fields requires a competent teacher having those practical skills. This requires that the teacher-education programme designers should study the PVE curriculum and try to integrate theoretical subjects with the practical skills to be acquired by the students. Therefore, due to the great variety of the exercises, teacher should be trained in demonstrations of these exercises before starting on a teaching career (see Section 13.2.2, pp. 376-378), in addition to the theoretical bases that should be covered to guarantee the essential integration. Additionally, the teacher needs to use different teaching methods and styles suitable for each field of the subject. More importantly, the teaching of practical vocational tasks raises the issue of the necessity of practical vocational experience for the teacher (see Section 13.2.4, pp. 381-385). It is usual for the teachers who teach such subjects at the level of vocational education to have some field experience either as a part of their preparation or by appointing vocational experts as vocational teachers (Masri, 1990, UNESCO, 1997). This issue will be discussed

regarding the PVE teacher in the light of field variety and the level of vocational subjects included in the curriculum. Alternative approaches to acquiring this experience will be presented in Chapter 13.

6.1.2 Workshop Use and Management

The aspect	Degree of agreement/ disagreement				
		Teachers		Supervisors	
		A	DA	A	DA
Workshop use and management including the responsibility of the workshop facilities.	F	114	21	12	0
	P	85.5	13.4	92.3	0
Essence of the knowledge of safety regulations of using the tools and devices since PVE has a practical nature.	F	145	0	13	0
	P	100.	0.0	100	0

As a practical subject, PVE delivery implies the use of the workshop. The PVE teacher is responsible for managing all workshop facilities. Using the workshop entails certain particular tasks for the PVE teacher. These include training tasks, management tasks, and maintenance tasks. Details of the tasks and the required abilities of the teacher to undertake them are in Chapter 11. However, teachers prefer to be free from this responsibility, a fact that made 13.4 per cent of them disagree about this aspect (see the table above). Based on this, if the teachers remain responsible for the workshop facilities, they should receive sufficient training on how to deal with these managerial issues as well as how to maintain such facilities.

Generally, management of the workshop records is one of the main difficulties that PVE teachers face, since the teacher is responsible for keeping all workshop facilities. So teachers are asked to record any tool, device or materials entering the workshop

(Salamh, 1994). Also the teacher should know how to record consumption of materials, the out of date materials, and the broken tools or devices, especially documenting any damage and breakage. When the MoE auditors visit them, teachers at schools usually face a problem of a shortage of stock, or existence of non-recorded extra stock in the workshop. This may lead to penalties for these teachers, which usually affect their marks in their annual performance evaluation report.

As shown in the table above, teachers and supervisors agreed on the necessity of knowledge in safety regulations. Safety regulations in the workshops are necessary for both production and training workshops. It includes safety of the workshop facilities and safety of students during training (more details in Chapter 11).

6.2 The Variety of the Curriculum Fields

The aspect	Degree of agreement/ disagreement				
		Teachers		Supervisors	
		A	DA	A	DA
Teaching of different vocational subjects through PVE (industrial, agricultural, business, home economics, health and safety).	F	128	16	13	0
	P	88.2	11.1	100	0

Perhaps because some of the teachers cover fields of the curriculum in which they have a suitable background and neglect other fields, eleven per cent of them disagreed with considering the variety of the fields of the curriculum as one of the aspects of uniqueness of PVE. However, based on the high degree of agreement of teachers and supervisors, this complex nature of the subject should be understood in advance and kept in mind when delivering the subject. This aspect gives an idea about the variety of the subject matter, that the PVE teacher should teach, which requires knowledge of each

subject. This knowledge should be supported with relevant practical exercises, during the preparation and training of the teacher, since the teacher will not be able to train students in practical skills unless he/she is able to demonstrate these skills. Moreover the teacher should have some knowledge of theoretical principles that explain the rationale behind the practical exercises. In the case of the middle school vocational curriculum, Michael (1990) argued that every activity should be related to academic subjects the students are studying 'down the hall'.

The interviewees emphasised the complexity of PVE teacher preparation and training produced by the variety of the curriculum fields. The teacher will teach practical subjects in different fields; this requires different and special abilities on the part of such a teacher. One of the key people in the curriculum development team with long experience in teacher training stated this difficulty as follows:

'Actually, this curriculum is a multi-dimensional one. It is not like Physics, Mathematics or any other school subject. It comprises five different fields (Industrial, Agriculture, Business, Home economics, Health and safety). This adds difficulty to the curriculum in its implementation, and difficulty in the role of PVE teacher (How can he teach this entire curriculum?). Thus, I can say that this curriculum has many sides and fields of specialisation. Its skills are different in their levels and their fields are far from each other. This issue implies particular competencies for PVE teacher. We must prepare him based on these competencies'.

It should not be forgotten that the teacher should deliver the subjects in all dimensions of the desired learning outcomes for all the curriculum fields. So the teacher provides instruction for knowledge and skills in each field of the curriculum, the teacher provides occupational safety information and instructions for each field and he/she evaluates the student's performance identifying the student's interests, abilities and aptitudes for the occupation of orientation and exploration (Moore, 1986). This task requires a well-

equipped teacher who has all the abilities required for performing all the activities in all the curriculum fields.

Difference in levels of subjects was recognised as one of the factors that make it difficult for one teacher to cover the entire curriculum across its five fields. It was also mentioned that this variety requires particular competencies of the teacher. They are not only subject matter competencies, but include also those required to 'apply the subject' that is to teach the subject in a way that achieves its objectives (DATA, 1995). These competencies include particular teaching methods, vocational guidance activities, where necessary modification of the content, choosing of alternatives, and building relationships with different relevant establishments (see competencies of PVE teacher in Chapters, 9, 10, 11 and 12).

Teaching is a holistic process; the variety of the subjects and objectives adds more complexity. Therefore, the competencies stated are not sufficient to describe what is actually required from teachers. A complete description and understanding of subject delivery and the situations in which it is applied is necessary (Chown and Last, 1993). Analysis of the main activities of the delivery provides an understanding of the nature of the essential teacher competencies. The study provides this in Chapters 8-12.

The curriculum at the stage of grades 5-7 comprises seventeen units distributed in five different vocational fields. Those fields are Industrial, Agricultural, Business, Home Economics, Health and Safety Education. The interviewees emphasised that teacher education programmes should cover all these fields during the subject matter preparation, and the depth of the knowledge delivered should be carefully considered

according to the curriculum content. This was also emphasised by Lillis (1989) who stated that to implement PVE, with its varied dimensions, the teacher needs to master specific skills regarding each field and to adopt different teaching styles and attitudes to deliver the different aspects of the curriculum.

Some of the fields have common abilities to deliver to students. Tannenbaum et. al (1994) stated from a transferability point of view that a majority of these abilities are considered as common basic abilities of the teacher to teach all these fields For example, agriculture has some common basic knowledge with Health and Industrial Education. It is argued by Moore (1986, p. 137) that identifying these common abilities could facilitate the achievement of well-integrated teacher preparation programmes free from unnecessary repetition and able to equip the teacher with the necessary abilities). In this regard, Moore classified the abilities and attitudes required for the PVE fields as follows:

Agriculture	Business Education	Health and safety	Home economics	Industrial education
Mechanical ability	Clerical ability	Work with people	Science ability	Mechanical ability
Mathematical ability	Communication skills	Social-self confidence	Mathematical ability	Mathematical ability
Biological sciences	Mathematical ability	Communication skills	Artistic ability	Applied sciences ability
Communication skills	Work motivation	Biological sciences	Working with people	Communication skills
Academic motivation	Human relations	Academic motivation	Academic motivation	Academic motivation
Human relations		Work motivation	Work motivation	Work motivation
		Human relations	Communication skills	

He classified these abilities as outcomes for the students to achieve from a PVE course, but to generalise them as abilities for the teacher to teach in these fields is useful. The idea of the 'common abilities' has its advantage in determination of 'subject

knowledge' abilities common to fields of the curriculum since subject knowledge abilities required for different fields can be clustered and delivered in joint courses. For example 'mathematical abilities' required for Agriculture, Business, Home Economics and Industrial Education could be delivered to the student teachers in one course in the teacher education programme. The 'science abilities' required for Agriculture, Health Education, Home Economics and Industrial Education can also be joined in one course. This technique increases effective use of time in teacher education programmes and makes the content of the courses more relevant to what the teachers need. But applying this idea requires careful determination of the contribution of each field reflected realistically from the requirements of the subject content in order not to deliver irrelevant content to the teacher or miss requirements of one or more of the subject fields. This shortcoming was reported in PVE teacher certification programmes in Jordan because content of these programmes was not selected according to the requirements of the PVE curriculum (Al-Jawarneh, 1999).

6.3 The Flexibility of the Curriculum

The aspect	Degree of agreement/ disagreement				
		Teachers		Supervisors	
		A	DA	A	DA
The curriculum flexibility that makes the teacher select the topics to be taught according to the available facilities and needs of the local society and students.	F	139	5	13	0
	P	96.5	3.5	100.	0.0

This aspect is concerned with flexibility of the curriculum, which means that the teacher chooses between different exercises within the units of the curriculum (not the units themselves). This flexibility increases at the higher stage of the grades 8-10, when the

teacher can choose the units to be delivered. It requires the teacher to design and use supportive and alternative activities to achieve the curriculum objectives in certain situations in addition to having an informed understanding of the students' needs (MoE, 1990a).

Interviewees emphasise that PVE is flexible and open in that the teacher chooses the content of the subjects and in that the content changes according to the situation. A key person in the curriculum development team stated that concisely when he said:

'In my opinion, the PVE curriculum is an open flexible curriculum. It involves the new rapid innovations and it practises modern technology and what technology produces, but the other curricula do not do that'.

The curriculum is flexible but considering it as an 'open' curriculum is incorrect. Based on the way in which it is currently delivered, teachers are required to select exercises from those included in the curriculum. Teachers are also expected to complete a certain proportion of the curriculum content in each semester. If the curriculum is really to be delivered using an open and fully flexible approach, more freedom should be given to teachers in terms of selection of the subjects, modification, and reviewing existing content. This is a convenient solution to the problem of ensuring that it articulates with new technology, particularly as changes to the curriculum are usually made by the MoE only at intervals of several years. In the British provision regarding Design and Technology, the National Curriculum identifies only the desired outcomes (attainment targets) and the main subject that should be taught. Freedom and responsibility is given to teachers for selecting the content and specific objectives (DFE, 1995). This enables teachers to choose the content according to the situation of the school and the local area.

Interviewees emphasised that the curriculum flexibility that requires the teacher to select the topics to be taught to the students, demands that the teacher study the available facilities in school, and is competent to use all these facilities. Additionally, it requires an understanding of the main aspects of the PVE curriculum in order to be consistent with the general objectives when selecting between alternatives and to understand the students and the local needs. It was also emphasised by interviewees that teachers should be aware of the need to cover the objectives of the lessons in terms of theoretical issues and practical skills whatever the exercise chosen. This demands that the teacher should study the classifications of careers. It also requires the teacher to be familiar with a considerable variety of practical skills as mentioned before.

Moreover, as the flexibility of the curriculum and multiplicity of its fields aim to satisfy the students' needs and to explore their inclinations and aptitudes, it requires the use of a learner-centred approach to facilitate the students' learning of their preferred subjects, since a narrowly prescribed list of vocational tasks might not be adequate to meet the inclinations of a large number of students. This was emphasised by one of the interviewees who said:

'We need a teacher who is a facilitator of learning'

A review of similar innovations of curriculum flexibility showed that it implies the need for teachers to be able to plan and develop instructional materials, organise and evaluate additional and extra curricular activities. Taking into account the variety of the curriculum fields, it implies a wide variety of abilities in curriculum preparation aspects and subject knowledge (Kanu, 1986).

Building on the fact that teacher education programmes do not cover all the curriculum subject matter fields (see Section 13.1.2, pp. 370-371) that was also reported in (Al-Jawarneh, 1999; Tweisat, 1998) to prepare a teacher able to teach a subject with a multi-field and flexible curriculum makes it very necessary to determine carefully the balance between subject matter abilities (in comparison with the level of the subject knowledge included in the curriculum) and the abilities required to enable the teacher to deal successfully with the flexibility of the curriculum in terms of extra-subject knowledge and educational abilities.

6.4 Pre-Vocational Education and Technology

The aspect	Degree of agreement/ disagreement				
		Teachers		Supervisors	
		A	DA	A	DA
Helping the students to deal with modern technology.	F	142	2	13	0
	P	98.6	1.4	100	0

Pre-vocational education is the only school subject in the educational system in Jordan that aims to enable the students to deal with technology. This aspect was derived from the eighth objective of PVE. Interviewees emphasised that the word 'technology' in this context means the use of technology in daily life, and not the advanced aspects of technology in design and manufacturing. Even so, technology produces new provisions every day. As the days go by, these provisions become available to the students. Teachers should be able to help the students to deal with these provisions. This means that teachers need be exposed to training in using them. Since technology is changing rapidly, the teacher training concerning these aspects should be continuous and modifiable in its content. In addition to the interviewees, in the questionnaire some of the teachers mentioned this need in their comments on additional required

competencies. Moreover teachers should keep improving their awareness of the technological aspects of daily life. To help them do that, schools need to be supplied with appropriate technology produced to enable the teacher to deal with these facilities in the school situation. More discussion of this aspect is provided in the following chapter.

Regarding teaching styles, it is usually argued that to deliver technological subjects effectively they should be linked to other sciences and academic subjects (Michael, 1990; DeMiranda and Folkestad, 2000). 'Teachers lecture and students listen' will not do this linking effectively. For teachers, this requires connecting with well-researched theories of learning and instruction grounded in the cognitive sciences.

'Instruction grounded in cognitive sciences transfer the self-regulation and monitoring of cognitive functions like memory, process, control of thinking process, appropriate application and the 'cognitive tools of thinking and learning' from the teacher to the student' (DeMiranda and Folkestad, 2000, p. 7).

According to DeMiranda and Folkestad (2000) a central theme resonating across cognitive sciences literature that is applicable to technology education is that when instruction and instructional materials are designed, they should help students acquire and integrate cognitive and meta-cognitive strategies for managing knowledge. This implies that all students must be active, collaborative participants in framing technology-related questions, designing and participating in data collection and analysis procedures, and free to predict and inquire about observed outcomes (Brown, 1985).

6.5 Utilisation of the Environment in the Subject delivery

The aspect	Degree of agreement/ disagreement				
		Teachers		Supervisors	
		A	DA	A	DA
Utilisation of the environment facilities in delivering the curriculum content.	F	143	1	13	0
	P	99.3	0.7	100.	0.0

Having a glance to the objectives of PVE, particularly the twelfth objective (see Section 1.2.3 pp. 25-33) that is concerned with the students sense of responsibility towards environment show that PVE has many implications for the environment, more than any other school subject in Jordan, simply because it deals with all life issues. To utilise the environment is vital in the teaching of PVE, particularly at the medium stage (grades 5-7) since the majority of the exercises are life-relevant activities, and they are not very complicated (Nasrallah and Al-Nabtiti, 1995). Teachers, however, need certain abilities to do that since, sometimes, exercises need to be modified so that they can use environment facilities (MoE, 1990a). Therefore teachers need to understand the principles governing the phenomena in order to apply the same principles through modified exercises (Rawaqah, 1994).

As most of the interviewees mentioned, training teachers to utilise the environment can encourage them to use low-cost and no-cost materials to achieve curriculum objectives. This has another advantage of familiarising the students themselves with the environment, in addition to the financial advantages of preserving the facilities, especially if these facilities are not already available in the schools' workshops. Vocational establishments in the surrounding area could be utilised as a source of experienced people, waste materials and tools (see Section 7.4, pp. 222-228).

6.6 Continuous Assessment of the Student's Progress

The aspect	Degree of agreement/ disagreement				
		Teachers		Supervisors	
		A	DA	A	DA
Necessity of continuous assessment of the student's progress, and documenting of this assessment to utilise it in identifying the students' attitudes and aptitudes to help them to select their future careers.	F	139	6	13	0
	P	95.9	4.1	100	0

The aspect of continuous assessment and recording of the students' progress, requires the teacher to have a clear idea about the curriculum he/she delivers from the general objectives up to the specific skills and attitudes desired to be achieved. To utilise the students' assessment in the future, this assessment needs to be specific, accurate, continuous, accumulative, and standard in form to enable the teachers in all grades to utilise it. So this assessment should be structured in standard forms measuring all the performance dimensions (theoretical, practical and affective). Standard forms are not yet provided for the teachers to perform this task. Cumulative recording of the students' progress may not be practised at schools. Therefore, some teachers (4.1 per cent) disagreed about this aspect although it is obviously not usually needed in other school subjects but mainly in PVE. One of the male supervisors emphasised the importance of this continuous assessment and its documentation. He said:

'It is recommended to have an accumulative record of each student to record his progress in PVE, divided into three stages (grades 1-4, 5-7 and 8-10). It should be used in a way that records the student's progress in each of the curriculum fields, his abilities, inclinations and attitudes towards subjects and careers. The teacher should know the objectives of each stage of education, the abilities required to achieve, and attitudes to inculcate at each stage, and he should insure the extent of the student's achievement of these learning outcomes'.

It is obvious from the above quote that the teacher needs to be accurate and specific in recording the student's progress in terms of each field of the curriculum, each task done

and the attitudes (general and vocational) that the student shows towards specific issues. Accuracy and speed of the student's performance should be clearly recorded since they are critical indicators of the student's abilities. This aspect demands a high degree of commitment and willingness from the teacher. In a similar context, DATA in Britain considered the ability of teachers to construct and complete these records as one of the important competencies of newly qualified teachers of Design and Technology. DATA emphasised that teachers should also be able to use such assessment to inform their teaching and report to pupils and parents on that progress (DATA, 1995). This needs adequate time to develop and complete these forms, and to maintain them in a proper way. This in turn requires training for the teacher in all issues concerning this aspect. Additionally, to have adequate time for such documentation, the teaching loads of PVE teachers should be reasonable (Al-Hadidi, 1994).

6.7 The Affective Dimension of the Curriculum

The attitudinal dimension of the curriculum is one of the main features raised by the interviewees. The curriculum needs to utilise all the activities to establish certain attitudes towards vocational work. This is because of the philosophy of the curriculum that concentrates on the orientation of the students' inclinations towards different careers. This requires the development of respect for and appreciation of the whole range of careers in the students at early ages. This is crucially needed because of the negative attitudes of the majority of the society due to various socio-economic factors such as low employment rates and social values (Rihani et al, 1997).

Relating to this, interviewees stated that measurement of attitude change is very difficult and needs long-term teacher commitment. Also it needs integration and articulation

between the curriculum and other school subjects. A female supervisor who participated in curriculum development stated that:

‘This curriculum, in its three stages, aims to build vocational sense and sensing of vocational inclinations; inculcating of certain attitudes according to the abilities, aptitudes and individual inclinations. All of the aforementioned features that concentrate on the learning outcomes that serve the students’ life, require integration between the five fields of the curriculum itself and between PVE and the other school subjects. Also integration should exist between theoretical and practical sides of the curriculum’.

It could be concluded that vocational attitudes in addition to general attitudes are required to be inculcated in students at short and long-term levels of the subject delivery. This implies that teachers should count attitudes as learning outcomes of specific lessons (short-term) and of the entire PVE subject (long-term). As interviewees stated, this also requires an evaluation of the achievement of these attitudinal outcomes in both short and long-term, which requires a high degree of commitment of the teacher to these learning outcomes in parallel with theoretical knowledge and practical skills (see Section 7.1.1, pp. 210-211). Briefly, the affective side of the curriculum requires much work by the teacher in terms of planning, organising and evaluation of attitudes as learning outcomes of the teaching/learning activities, on both short and long-term levels and across all curricula through integration between the different school subjects. Activities of developing appropriate attitudes towards work should be undertaken according to the intended level. At least learners should have opportunities to see the world of work in its real situation and discuss perceptions of experts of such work (EURYDICE, 2000) (for more details see Section 12.3, pp. 347-361).

6.8 The Relationship with Social and Vocational Establishments

The aspect	Degree of agreement/ disagreement				
		Teachers		Supervisors	
		A	DA	A	DA
Necessity of building relationships with the society, the social and vocational activities to serve the curriculum objectives.	F	139	4	13	0
	P	97.1	2.8	100.	0.0

To achieve its objectives in vocational awareness, and its social and economic objectives, PVE delivery requires the building of relationships with vocational establishments and with community activities (Nasrallah and Al-Nabtiti, 1995). Most of the respondents agreed on the necessity of these relationships. As one of the main aims of basic education in Jordan is to enable students to adapt to life (Jaradat and Tuffaha, 1995), PVE is the main school subject that deals with the students' daily life. This demands that the students participate in community activities (Nasrallah and Al-Nabtiti, 1995). As interviewees stated, teachers of PVE are required to build relationships with society and vocational establishments. They could utilise the vocational field experts by presenting their experiences to the students through arranged meetings, field visits and the media and by obtaining some supportive educational materials from vocational establishments. This could help to expose the students to a real vocational atmosphere, in addition to linking with the local community to create awareness of the necessity of PVE by students and their families (more details in Section 7.4, pp. 222-228).

6.9 Vocational Guidance

The aspect	Degree of agreement/ disagreement				
		Teachers		Supervisors	
		A	DA	A	DA
The main role of the PVE teacher in vocational guidance and counselling.	F	114	28	13	0
	P	80.3	19.7	100.	0.0

Eighty per cent of the teachers considered this aspect as one of the factors that distinguishes PVE. The relatively low percentage of agreement by the teachers may be due to the view of some teachers that vocational guidance should not start before grade 10 (the end of basic education stage). However, it was stated (in the questionnaire) that this study is concerned with the teachers who teach grades 5-7. In this sense, vocational guidance aims to guide individuals to take suitable decision with regard to future educational stream and career. This is achieved through helping these individuals to be aware of themselves; to know their abilities and aptitudes; and to understand the world of work in addition to having skills of decision making (Jaradat and Tuffaha, 1995; MoE, 1990a). UNESCO in its recommendations on the introduction of PVE in general education also aimed at such an objective (UNESCO, 1974), see also Section 1.1, pp.14-21. Interview results emphasised the importance of vocational guidance (career guidance) from the beginning of school and through all grades (for details see Section 12.3, pp. 347-361).

6.10 The Long Term Social and Economical Objectives of PVE

The aspect	Degree of agreement/ disagreement				
		Teachers		Supervisors	
		A	DA	A	DA
Existence of long-term social and economic objectives of PVE curriculum.	F	126	18	13	0
	P	87.5	12.5	100.	0.0

The relatively low percentage of the teachers who agreed on this aspect, could reflect the abstract delivery of the subject by some teachers who focus only on what textbooks include in terms of theoretical knowledge and practical skills and neglect the other outcomes intended in building the student's personality in social and professional dimensions. Interviewees emphasised that a focus on areas of interest of the students is an effective way to deliver PVE and to achieve its objectives in social and economical life.

One of the important features raised by the interviewees is the variety of the topics taught in PVE. Five different topics are included in this subject (industrial, agricultural, business, home economics, and health and safety). This variety aims at inculcating positive attitudes towards vocational work and towards workers themselves. One of the curriculum developers who work also in teacher training at the MoE stated this variety and its purposes in the following words:

- 'This curriculum is not like the other curricula. It has been designed to:**
- develop students' positive attitudes towards technology, while it is not technological education.**
 - develop students' positive attitudes towards life, but it is not only life education.**
 - develop students' positive attitudes towards vocations (crafts), while it is not vocational education.**
 - enable students to acquire practical skills in several fields while it is not industrial education.**

Actually, dimensions of this curriculum are many, as are its objectives'.

The wide spectrum of the aims of the subject are summarised in the above quotation. In addition to the variety of the included subject matter fields, the aims are also varied. PVE aims to enable students to cope with life changes, a fact that adds further tasks for the teacher in developing the personal characteristics of students in all dimensions. PVE also aims to enhance students attitudes towards work and technology, a target that

requires teachers to expose the students to real situations in which the included content is applied. This requires teachers to go beyond classroom or workshops in their teaching as far as they can. What seems obvious from the expectations of the curriculum, seen in the above quotation, is that PVE needs an open approach that enables teachers to enhance students' own experiences and build on them to achieve the desired outcomes.

As interviews results indicated, the long-term objectives of the PVE curriculum imply that teachers have a task additional to training in practical skills, which is to relate all the activities in the general objectives of the curriculum. This requires the teacher to train students in skills and to raise the cultural issues related to those skills, and how to employ these skills in present and future life, socially and professionally. Also the teacher should employ all classroom and accompanying activities to serve the curriculum objectives. This requires the teacher to have a broad cultural base and strong professional knowledge in addition to long-term commitment to continuous evaluation of the curriculum delivery (for more details about the teacher's roles in this regard, see Section 7.1.1, pp. 210-211).

The economic long-term objectives of PVE are achieved through the guidance of the students' energies towards useful deeds in their daily life and by guiding them to make a realistic decision regarding a future career. Socially PVE has a direct influence on the students' behaviour through awareness of the necessity of work, appreciation of manual workers, interaction and sense of responsibility concerning family and social issues (MoE, 1990a, Tweisat, 1998).

6.11 The Link Between Academic and Vocational Education

The aspect	Degree of agreement/ disagreement				
		Teachers		Supervisors	
		A	DA	A	DA
PVE represents a link between the academic education and vocational education.	F	138	7	13	0
	P	95.2	4.8	100	0

The high degree of agreement among the respondents indicates that the link between academic and vocational education should be considered in PVE delivery. Pre-vocational education represents a link between academic and vocational education. This means that PVE should be considered to relate to other subjects as well as to vocational education (Jaradat and Tuffaha, 1995). This has two dimensions and places different responsibilities on the teacher. These are:

a) Integration between PVE and the academic subjects

The practical subjects have theoretical and technical bases of different dimensions either scientific or social. In other words, the practical exercises have bases from other sciences like Physics, Chemistry, Biology, Mathematics, Geography and Geology, and need some social values and facts to support the attitudinal outcomes desired (Tweisat, 1998). Teachers should integrate the scientific side with PVE exercises to build on the students' knowledge, and they need to promote social, religious and professional values to motivate the students to undertake exercises and get benefit from them (Batarsah, 1994).

b) To use PVE as a tool to guide the student towards Vocational Education.

As interviewees stated, this requires the teacher to explain the professional dimensions behind the exercise; to discuss the families of vocations related to each single exercise;

to describe the relevant establishments and firms, their market situations and the different types of abilities and aptitudes required for the person to work in such vocations. This could generate and enhance the students' vocational awareness. Jordan has a great need to develop such awareness, since most people, for many different reasons, generally have negative attitudes towards vocations and vocational education (Rehani et al, 1997).

6.12 The Maintenance Tasks

The aspect	Degree of agreement/ disagreement				
		Teachers		Supervisors	
		A	DA	A	DA
Carrying out maintenance tasks on some school facilities and taking care of the school garden.	F	135	10	13	0
	P	93.1	6.9	100	0

6.9 per cent of the teachers disagree with this aspect. This may be because the maintenance of some school facilities and taking care of the school garden is not officially a compulsory task for the PVE teacher, but it becomes so because of the requirements of the head teacher's evaluation of PVE teacher's performance. Because PVE teachers have different background specialties (MoE, 1999), not all PVE teachers are able to undertake maintenance. For example, teachers who have originally specialised in fields like business or home economics (females) or even in agriculture, are not able to undertake maintenance of school facilities. Those who can undertake such maintenance are those who are specialised in industrial fields. However, in the ideal case, the teacher needs to have practical maintenance skills and to demonstrate the exercises included in the curriculum, and he/she can undertake maintenance for school facilities whenever is found suitable to serve the curriculum objectives through students' exercises. Some supervisors interviewed said that a small garden, of about

fifty square meters, should be allocated for the agricultural exercises of PVE, and the teacher should not be responsible for any other parts of the school garden that may exist. Analysis of the activities associated with the teacher's role in maintenance, mentioned by the teachers and supervisors, and interview results showed that maintenance does not require additional teacher training and preparation, provided that the teacher received an adequate training in the relevant curriculum topics (more details in Chapter 7).

Summary

This part of the findings has identified the aspects that distinguish the PVE teacher from teachers of other subjects and discusses the implications of particular tasks of the teacher. Because the respondents were asked to respond about the ideal situation, high percentages of them agreed on most of the aspects. These aspects are concerned with the practical nature of the subject, variety of its fields, flexibility of the curriculum, the required vocational guidance and the long-term objectives of the subject.

Regarding the teacher's task, the implications of technology in PVE, relations with society, utilisation of the environment, the affective aspect of the subject, the required continuous assessment of the students, and the management of the workshop in addition to the necessity of knowledge of safety regulations, have been discussed. Moreover, this part has discussed the link between PVE and academic and vocational education in addition to the marginal tasks of the PVE teacher and the origin of such requirements. Discussion of these aspects was brief since the researcher wished to emphasise only the main aspects that should be taken into account when preparing the PVE teacher. These aspects will be discussed in detail in the following chapter.

Discussion of particular characteristics of PVE, as seen by the curriculum developers, supervisors of its implementation, and the teachers themselves, provides for understanding of the specific objectives that require particular abilities of the teachers. Therefore the teacher education curriculum designers need to take these special features of PVE into account when selecting the content of the programmes. Any particular tasks of the PVE teachers mentioned above are part and parcel of the role analysis of the teacher that is to be constructed within this study.

Chapter Seven

Delivery of Pre-Vocational Education and Teachers' Roles

Introduction

After discussion of the distinctive features of PVE in Jordan, analysis of its delivery will present a clearer picture of the teacher's roles, which could partially provide a basis for the preparation and training of the PVE teacher. This chapter will consider the main tasks of the teacher and analyse in detail the aspects of methodology in PVE. As the PVE activities are derived mainly from the curriculum guidelines, the results will be interpreted in conjunction with the objectives they serve and their implications for teachers' roles and required abilities. Dimensions of curriculum delivery will be discussed in the light of the findings, the available literature and the context of PVE in Jordan. The results regarding the teacher's role in subject delivery were derived from the semi-structured interviews, which were analysed qualitatively through content analysis of the interview transcriptions.

7.1 The Main Tasks of PVE Teachers

The aim of this section and the following two sections is to build a general description of the PVE teacher's job. The PVE teacher has different interrelated tasks. Interview results indicate that the main tasks of the PVE teacher could be summarised briefly as follows, and detailed discussion of these tasks will be presented in the following sections.

a) understanding the philosophy of the curriculum including the general objectives.

Without this understanding, delivery of the subjects will be arbitrary and the intended learning outcomes may not be achieved due to the use of unsuitable approaches.

- b) The PVE teacher has some tasks similar to those of the teachers of other subjects. These tasks include planning and delivery of teaching/learning activities and evaluation. These tasks concern the theoretical, practical and affective sides of all the curriculum fields. These generic tasks imply particular skills for the PVE teacher due to the particular activities of the subject delivery.
- c) focusing on the practical activities in the subject delivery, PVE teachers should consider theoretical information as a basic guide for the students doing practical tasks. This implies that the teacher should explain theoretical information through its relevance to productive work.
- d) encouraging students' positive attitudes towards manual work, building of their vocational behaviour through accurate practical performance. This implies activation of the role of the workshop in serving curriculum delivery.
- e) undertaking preventive maintenance jobs for tools and devices, and ensuring proper storage of workshop materials. This may be extended to maintenance of school facilities wherever this is found useful for curriculum delivery, but it was learned from the official documents that this is not an obligatory task for the teacher and should not be considered so because it may imply a higher level of skills.
- f) The PVE teacher should maintain records within workshop facilities, and organise the entry and stocktaking of the workshop inventory of tools, equipment and materials.
- g) The PVE teacher should encourage the students to develop a commitment to personal and general safety during their training activities. This could also be done by training them in safe procedures for performing their tasks.

- h) The PVE teacher should adapt and modify curriculum activities to fulfil the students' different needs, utilising and activating the intended curriculum flexibility.
- i) The PVE teacher should provide vocational guidance that includes different activities to enable the students to discover their abilities, inclinations and aptitudes so they can make a wise choice of future careers.

7.1.1 The Hidden Agenda of PVE

Pre-vocational education not only aims to train students in practical skills, but also aims at inculcating and changing the students' attitudes (MoE, 1990a). All of the interviewees focused on the attitudinal aspects of the curriculum and the attention that the teacher should pay to this aspect in terms of the activities done to achieve this and to measure the change of attitudes. One of the female supervisors who had participated in curriculum development said about long-term measurement of attitudes:

'The teacher should follow the students' behaviour outside the workshop and he should notice the improvement produced by PVE'.

This emphasises the fact that the role of teachers goes beyond the classroom activities. What they try to achieve through indoor activities with regard to attitudes needs to be followed up outside the classroom. This task requires a great level of commitment and interest in the subject and positive attitudes towards the teaching profession.

The interviewees raised the issue of the social outcomes on which teachers should focus. They include helping students to grow physically, mentally, socially, emotionally and spiritually; enhancing the students' behaviours and traditions to suit continuous social change, and improving good habits to be 'committed to' in the persons' behaviour with

regard to all daily activities. It is intended (as seen in the PVE objectives, Section 1.2.3, pp. 25-33) to encourage awareness of civic provision through training students in the proper ways of using such facilities and taking care of them. In addition PVE seeks to encourage positive attitudes by the students towards the community's public interests, and to inculcate the idea of accountability of the citizen in the students' personalities at an early age. One of the experienced female supervisors expressed the view that:

'The teacher should try to produce an ideal student, teach him behaviours, rules, how to deal with teachers; colleagues and every kind of people... The teacher should teach the students about life. If he focuses on values and ethics, he will succeed and achieve the objectives and perform the role of PVE'.

It is obvious that PVE contributes to the overall role of the school in building the student's personality, and helping him/her to cope with the social requirements of human relations, inculcating ethics and values in addition to practical needs. This requires (as interviewees stated) that the teacher should teach the subject in an integrated way taking into account that life is not only practical work but also human relations supported by ethics and values. Therefore, the subject should not be delivered in an abstract way that focuses only on practical skills and theoretical knowledge neglecting behaviour, ethics and values.

7.1.2 The Nature of the Role of the PVE Teacher

It is obvious that the role of PVE teachers is not only to train in practical subjects. It relates to all learning outcomes that are supposed to be achieved from the school. One of the experts in PVE notes the role of the teacher in the following statements:

'The role of PVE teacher is not fulfilled by training only, his role is also as a facilitator of learning. He is one of the sources of knowledge and not the only source. In my personal opinion, the successful PVE teacher is the teacher who

never uses chalk and the board. The successful teacher is the teacher who extracts from the students' expertise, helps them to meet life requirements, inculcates new attitudes in them and helps them to acquire different skills. The issue does not end at training in practical skills, but students must learn citizenship'.

From the previous views of the interviewee it is clear that PVE teachers are not like teachers of other academic subjects in that these subjects could be delivered through lecturing. The student is at the centre of teaching/learning process. Their experiences and interests should be the determinant of what is taught and how it is to be taught. It is required to build on the students' interests in order to meet their inclinations and aptitudes and, in turn, present and prospective life requirements, which is one of the main targets of the introduction of PVE in the school system.

Relating to the general behaviour of the student is citizenship in all its dimensions (see the above quote), it is one of the main aspects towards which teachers should direct their activities. In PVE, this takes the form of a focus on the general health of society, the environment, the care of public property and co-operation between people to serve the community. Taking this into consideration, it is obvious that focusing only on the content of textbooks and using only classroom activities is insufficient. Teachers and school administrators need to understand this fact in order to change the ways in which PVE is currently delivered.

Aspects raised by the interviewees reflect the integration of all the dimensions of the objectives that PVE is intended to achieve. Responses indicated a hidden agenda behind the PVE activities. Teachers need to understand all the explicit and implicit outcomes

that the curriculum aims to achieve. In this regard, the role of the teacher as seen by the curriculum developers is a 'facilitator' of learning not a trainer (see the above quote). Particularly at the higher basic stage, the teacher is required to take account of the students' inclinations in the selected units. In a similar context, DeMiranda and Folkestad (2000) emphasised that the large number of students and the variety of their vocational inclinations further emphasise that the role of the teacher is a facilitator of learning not a trainer. He/she should organise the teaching/learning activities in a way that gives freedom and responsibility to the students to select and to learn not only through prescribed tasks but also, increasingly, through self-learning. This demands from students a high level of motivation of the students towards the subject.

7.2 The Main Abilities that PVE Teachers Should Have

This section aims to give a brief idea about the required abilities of the PVE teacher, as a background to the detailed discussion. Responses of the interviewees covered different dimensions of the abilities of the teacher. Different points of view appeared about the extent and the levels of these abilities. However, PVE teacher's abilities, as perceived by the interviewees can be summarised as follows:

a) The teacher's belief in the subject that he/she teaches, positive attitudes towards it, and the right understanding of its philosophy. Some teachers feel they have low status because they teach PVE. An experienced male supervisor with long service said that:

'It is very important for the PVE teacher to believe in his job, and find himself in it. Teachers feel a sort of shame in teaching this subject'.

Interviewees focused on this (as an ability required of the teacher) because of negative attitudes at all levels of Jordanian society, including educationalists, towards PVE, a fact that made PVE teachers feel low. Taking into account the interrelated roles of PVE teachers, PVE cannot achieve its objectives effectively if teachers have negative attitudes towards their career or towards the subject. Al-Hadidi (1994) maintained that negative attitudes confront the long-term commitments of teachers, the required integration, or even outdoor activities. In short, negative attitudes force teachers to deliver the subject in an abstract way. It should be noted that people in Jordan have negative attitudes towards all vocational careers because of low employment rates, low salaries and social traditions (Al-Hadidi, 1994; Rihani et al, 1997). The majority of parents in Jordan prefer their children to be doctors or engineers, or to have a non-vocational career. Parents and students themselves do not wish to pursue their studies at secondary stage in the vocational field, and thus do not show enough interest in PVE, an observation that was also made by Tweisat (1998) and Rihani et al (1997). In the researcher's point of view, the solution to this problem will not be achieved through awareness spread by delivery of PVE, or even by greater efforts made by the PVE teacher. What is needed is a long-term national plan to study the problem of vocational education in all aspects, educational, social and economic, and to identify the implications for school education, higher education, and the required social and economic change.

b) Ability to transfer knowledge in both theoretical and practical aspects. This ability implies other related abilities, such as

- having a suitable background in the general cultural and social sciences;

- having a suitable background in the theoretical scientific and technical principles that govern the PVE subjects;

- ability to train in practical tasks. As interviewees mentioned, this requires that the teacher can use different approaches to practical training, by selecting the best suitable approach for the teaching/ learning activities. This ability also implies that the teacher should have all the subject matter competencies of the curriculum with the highest degree of mastery in all of the curriculum fields. One of the curriculum developers who currently works in teacher training said about PVE teacher acquiring the practical competencies of the curriculum:

‘The teacher must acquire (professionally) all the curriculum competencies in order to be able to perform (perfectly) these competencies in learning and teaching’.

Another interviewee emphasised this opinion using the following words:

‘The teacher must be able to make and produce what he wants the students to produce’.

What should be kept in mind, however, is the target of the PVE curriculum itself. The majority of the curriculum specific objectives competencies (Appendix 1) are expressed using the term ‘to be acquainted with’; ‘to realise’ or ‘to practise’ and a minority of them stated that the aim is to ‘perfect’ certain competencies (MoE, 1990a). So the level of practical ability required by the curriculum is not very high and the target is only to ‘acquaint’ the students with practical abilities in the different subjects. An experienced curriculum developer and a former teacher trainer emphasised this fact:

‘One of the main objectives of the curriculum is to ‘acquaint’ students with practical skills. To ‘acquaint’ students with skills is different from ‘bringing perfection’ of skills. There is a danger in this issue because it might happen, sometimes, if you made the student feel that he has brought perfection of skills, this would indirectly help him to leave the school and find a job. But the hidden agenda behind acquainting the student with practical skills is to enable him to

'deal with' equipment safely, and to do some jobs that do not require complicated skills at home. Pre-vocational education is not intended to prepare the student as an electrician, carpenter or blacksmith'.

This explains the intention of PVE, which is to help the students to undertake some requirements of daily life that do not demand complicated skills. It also explains a side effect of equipping the students with high levels of skills, which is to encourage them to leave school early and try to find jobs. Although interviewees emphasised the teacher's 'mastery' of practical competencies, the level of skills itself is not so high as to mean perfection of skills that might render the subject matter preparation to be equivalent, or even near, to the level of 'employment skills' in the vocational sense.

Therefore, as the main intention of the curriculum is to acquaint students with practical skills; the level of subject matter component of teacher education programmes should be a realistic reflection of the content of the curriculum, particularly in its expectations of what level of practical skills the students should acquire. This means that the level of subject matter should be close to the curriculum and not deliver irrelevant content at the expense of other components of the teacher education programme, a shortcoming that was reported in the current programmes (Al-Jawarneh, 1999). In this regard the curriculum is specific in identifying the learning outcomes of each subject of the curriculum (Appendix 1). Thus, it will be easy for the teacher education curriculum designer to determine the level of skills required by the teacher. But the teacher education designer should clearly understand the relation between the content of the curriculum and the required abilities of the teacher (Doyle, 1990). According to Avolas (1991) and Calderhead and Shorrocks (1997) different perspectives on the teacher's role imply

different ways of teacher preparation and have different perspectives on the level of subject matter content of teacher education programmes to serve the teaching/learning process (see Chapter 3).

Interviewees also stated that to transfer knowledge implies the teacher's ability to work with tools, equipment and machines, their maintenance and servicing, in addition to the ability of making students aware of the dangers of machines and tools, and teaching them safe behaviour during practical work (more details are in Chapter 11).

c) Aptitude for teaching and learning; this includes all the abilities of planning, organising, and evaluation of teaching/learning, classroom management, using the official textbooks as one of the sources of knowledge, using appropriate elements of Educational Technology, and encouraging students' critical thinking. As interviews results indicated, this requires the use of the others' expertise since the teacher cannot acquire all abilities to achieve the learning dimensions of the curriculum. Specific competencies in this dimension will be discussed in the following chapter regarding PVE teacher competencies;

d) Ability to undertake vocational guidance and counselling activities (details in Section 12.3, pp. 347-361).

e) The personal abilities of the teacher to deal with a curriculum with a special nature. As interviewees mentioned, the teacher should understand the philosophy of the curriculum and its practical nature, since it is practical and applied, and it aims to show

the function of the other sciences and subjects (putting Science into action): This implies that the teacher should integrate PVE subjects with the other school subjects and requires the teacher to co-operate with other teachers and to have a wide range of knowledge of other topics relevant to PVE.

f) Ability to relate the subjects and exercises to the students' life to achieve the long-term curriculum objectives. This also implies that the teacher should be familiar with modern technology and integrate it with curriculum activities.

The following sections will present some of the technical details of subject delivery.

7.3 Pre-Vocational Education and Technology

One of PVE objectives is to provide the students with knowledge and skills that enable them to deal with modern technology (MoE, 1990a). What are the demands of this objective on the role of PVE teacher?

The main issue raised by the interviewees was that the teacher should be aware of new technology in order to be able to offer training in them for the students. This requires effort from the teacher including more reading and more links with the relevant establishments. It also requires supplying PVE workshops with the new technological devices in order for it to be available for the teacher and the students, in addition to (continuous and modifiable) training programmes that enable the teacher to acquire skills related to the technology being introduced. Interviewees emphasised the linking of the technological topics with scientific subjects; as this could help in explaining the scientific

principles that govern the operations of the technology, and thus show the function of other school subjects. Additionally, one of the advantages of technology mentioned by interviewees was the use technology as educational media to deliver the curriculum. This facilitates the teaching/learning process and familiarises students with technology.

Some of the interviewees raised other issues concerning the problem of technology in PVE including the current teachers' abilities to deal with technology, and the extent of technology included in the PVE curriculum.

7.3.1 The Current Teachers' Abilities and School Facilities

Some interviewees stated that teachers in schools are not competent even in the skills required to deliver the curriculum, so how can they deal with modern technology? One of the female supervisors stated this issue as follows:

'It could be said that this is an ambition to deal with the technology since we do not have the teacher who masters the curriculum skills. He should follow the new technology? This requires providing the workshop with the modern technology. The role of the PVE teacher is to bring mastery in using these devices. This needs a budget and continuous training of the teacher'.

From the above quote, in addition to the necessity of in-service training of teachers who have different background specialities, it is required to provide 'technology' in the school workshop. What is meant by 'technology' in this context is the daily life requirements of technology. It is desirable to familiarise students with the use of technological products, rather than to undertake complex maintenance or to understand technical issues of the manufacture of these products.

7.3.2 The Nature of Technology in the Curriculum

Some interviewees raised the issue of the level of technology in PVE, stating that it is not very complicated technology. It is just how to use and how to deal with technology as stated in the curriculum objectives. Therefore, it does not need complex training of the teacher, and it does not include high level skills because it is easy to train in use of modern technology. An expert in the PVE curriculum working in in-service teacher training expressed this in the following statements.

'In relation to providing students with skills and knowledge enabling them to deal with modern technology UNESCO experts refer to the 'maintenance culture' and the 'device use culture'. We import devices, but we do not import the culture of their use. That is we do not deal with devices as civic provisions, so they are broken rapidly. This is reflected on the role of the PVE teacher since he should provide the students with both skills and the culture accompanying skills, simultaneously. He should be a practitioner. The PVE teacher should be very accurate in his work since he is a role model in doing the curriculum exercises'.

Therefore, it can be concluded that the technology included in the PVE curriculum is concerned with everyday life and other objectives included in the curriculum. In the context of developing countries this does not exceed the level of the use of simple machines. Training in the 'use' of 'high technological' devices is easier than training in the use of simple manual devices. This differs according to the level of automation in that use of highly automated machines but does not involve complicated manual skills. The role of teachers also involves cultural aspects of the use of such technology concerning the proper use technically, socially, and personally.

The other main issue raised by the interviewees was that PVE is not a purely technological subject, but is a practical approach to preparing for life. It deals with

students from the ages of 6-15. This stage of development does not need complex technology in its curriculum. One of the supervisors said:

'A co-operative qualified teacher can find alternative activities from the environment in order to excite the students' sensitivity towards technology. Therefore, the teacher needs to follow the new technologies, but there is no need for training in complex technological issues since the only need is to develop vocational sense at this early stage of age'.

From this, development of a 'technological sense' in the vocational context requires the students to see the effect of technology on the workplace. Field trips to factories and firms can achieve this sense when students observe the technology used in automated machines and compare that with the traditional manual ways of doing jobs.

From a review of the guidelines and content of the curriculum, it was found that there is a lack of specific content or a clear approach to the introduction of technology in PVE. This made some interviewees suggest that the teacher could find alternatives for technology from the environment, or by asking the students to prepare reports and undertake research on certain technology subjects. In the researcher's point of view, this is diverting from the targets of the curriculum, since one of the objectives states explicitly that it is required to familiarise students with the use of technological devices. Familiarisation cannot be achieved without real use of such devices. What seems clear, from interviewees opinions, is that this objective was only an ambition and the opportunities to achieve it are not available in terms of specific content, a clear approach in the curriculum, required facilities or even the teacher's abilities.

The implications of the use of technology in teacher training could be summarised in the words of one of the key persons in the curriculum development team. He said:

'The pre-vocational education teacher must be trained in the use of the modern technology, and how to deal with this technology. We do not need this task to be loaded only on the teacher's neck since he may practise it spontaneously in a non-planned or guided way. He should be adequately trained on what he is required to do'.

One of the teachers who of PVE for the grades 8-10 commented that,

'We need training in technological devices relating to the units of the curriculum in order to utilise them in training'.

In order to fill the gap in the curriculum of 'how to introduce technology' it is very important to train teachers and to familiarise them with technological change related to daily life. This training should be continuous and adaptable in order to fulfil the change of technology that continuously takes place. This cannot be successful without supplying the school workshop with appropriate equipment for the students to use.

7.4 Utilising and Serving the Local Environment in the Teaching of PVE

The responses to the interviews revealed that the teacher should utilise the local environment in the delivery of the curriculum activities. This is because it is one of the main dimensions of the curriculum, as stated in its twelfth objective 'To improve the students' sense of responsibility towards the local environment and society' (see Section 1.2.3, pp. 25-33). Also the interviewees stated an advantage of using the environment in delivery of the curriculum is that it could help in finding alternative exercises to those provided in the textbooks. A female supervisor stated that:

'The curriculum is structured into exercises. The environment can offer alternative exercises to those provided in the textbooks'.

Relating to the aspect of selecting alternative exercises, Tilbury (1993) maintained that the curriculum should be delivered in an open way and restricting subject delivery to textbooks should be reduced. More opportunity should be given to students to interact with the environment during lessons of PVE through outdoor activities. Teachers can guide students' interests towards more individual and group interaction with the environment at both the home and locality levels. To achieve this effectively, the school system must give teachers more authority to deal with PVE. Moreover, students' responsibility towards learning should be improved (Nasrallah and Al-Nabtiti, 1995).

Interviewees stated that the environment could help in solving financial problems that our schools face through using waste materials for training. It was noted previously that one of the hindrances that lessens the effectiveness of curriculum implementation is the shortage of training materials (Tweisat, 1998; Al-Hadidi, 1994). The environment could offer some teaching media for PVE subjects, particularly for the practical exercises in all the curriculum fields. The use of waste materials in curriculum delivery could help towards the cleaning of the environment, particularly when the students' behaviour becomes oriented towards the use of materials found in the environment. Summarising all the aforementioned advantages, one of the interviewees explained the importance of using the environment for the curriculum as follows:

'The successful teacher is the teacher who makes the environment serve the curriculum and makes the curriculum activities serve the environment'.

Regardless of the proportion of PVE curriculum content that might have an environmental component, the curriculum was found to lack clear implications for

environmental education in the sense that PVE should involve the study of controversial issues relevant to work and consider how local environmental damage can arise from the working practices of industry, agriculture and transport (NCC, 1990). In the NCC (National Curriculum Council) booklet in England, curriculum guidance 6, on career education and guidance, proposes a curricular activity which aims to enable the students to:

‘Argue for and against particular planning proposals in the locality, which may have an environmental impact’ (NCC, 1990, p. 31).

and

‘...demonstrate an awareness of environmental concerns associated with the development of different sources of energy and analyse the environmental impact of the development’ (NCC, 1990, p. 31).

To be effectively delivered, environmental education requires the use of a variety of teaching methods, including imaginative and interactive teaching approaches. Various research studies have found that teachers lack the confidence to try new approaches and to use corresponding resources (Greig et al, 1987; Ross, 1987; Dorion, 1990). They argue that initial teacher training does not adequately prepare students for such tasks, since training predominantly takes place via lectures.

As teacher preparation is the main focus of this study, the teacher education implications of environmental education will be discussed, but the discussion will be brief since environmental education is not the main topic of the study.

The goal of any teacher education programme in environmental education should be to develop environmental education competencies. Wilke (1987) contended that teachers require at least two sets of related environmental education competencies:

- Foundational competencies in professional education;
- Competencies in environmental education content.

Tilbury (1993) constructed a competency-based teacher education model for environmental education to serve Key Stage Two in the British educational system. He classified the competencies into 'the competencies of an environmentally educated person' and 'the competencies of an environmental educator' and advised fusing the competencies into the core studies, subject studies and school experience components of initial teacher education courses.

The competencies of 'an environmentally educated person' comprised knowledge of local, national, international and global environmental issues, critical thinking skills, and environmental values, attitudes and action. The competencies of 'an environmental educator' focused on awareness of the philosophy of environmental education as a cross-curricular issue, understanding of learners' characteristics, and the use of a variety of teaching methods (Tilbury, 1993).

Regarding how the teacher can utilise the environment in teaching the curriculum, the interviewees raised the following aspects in the utilisation of the environment:

a) Waste Materials

The teacher can utilise the waste materials from the local environment especially industrial companies and factories, like wood, metals, cartons, plastics, or textiles. This could help the teacher to train the students in the small scale practical exercises. Also students can bring some materials from home. This idea may help to link the learning activities with their daily life. This further includes the teacher's ability to use the environment waste materials in developing the curriculum content. A male supervisor stated that:

'Using of the low-cost and no-cost materials could help in achieving many of the curriculum objectives'.

b) Field Visits

As PVE aims to develop students' consciousness of the available fields of work, vocations, services and their employment requirements, teachers can organise visits to different vocational establishments, factories, companies, farms, self-employment projects, and social services centres. Interviewees stated that these visits should have specific learning objectives, and should be arranged between the teacher, the head teacher and the relevant personnel at the establishment. This demands certain administrative and communicative tasks of teachers and requires them to be innovative and self-motivated. One of the curriculum developers with a long experience in vocational education gave various specific examples of ways in which the PVE teacher can utilise specialised people and vocational establishments. He stated that,

'The PVE teacher can utilise the health centres to train in the units of first aid and general safety. Hotels and restaurants can be used to train on the subjects of pantry and food preparation. The business sector and banks can be used to train in the financial and administrative issues, printing, and in correspondence. The industrial sector can be used to train in carpentry, blacksmith work, piping and building services. The agricultural sector can be used to train in the units of

vegetable production, decorative plants' production and care, nursing plants' production, tree trimming and the rearing up of animals'.

Consistent with this wide range of public places that can be utilised in PVE teaching, short placements were reported as one of the methods used in pre-vocational courses to achieve better vocational awareness (EURYDICE, 2000). Although it is useful to use vocational establishments for training in certain curriculum subjects, exposing the learners to real situations may be difficult to implement in the Jordanian system. This difficulty arises from the absence of real co-operation between schools and working establishments, also from the absence of organised training programmes in these establishments (Rihani et al, 1997). Moreover, it is not possible to distribute the students to different sites to be trained because of the structure of the school system. That is, different subjects are taught through the school day, and students are prevented from leaving the school by timetable constraints (Tweisat, 1998). Additionally, although less significantly, there will be administrative difficulties in transportation and insurance.

c) The Specialists and Experts

In addition to developing students' awareness of available careers, experts can help the students to perceive values in vocational work and their importance in developing personal behaviour. The teacher can train in certain tasks and undertake guidance activities by inviting professional people from the surrounding area to do that. The teacher can invite specialised teachers from vocational schools and experts from factories, companies, banks, hospitals, health centres or the police.

A major issue concerning the invitation of experts, is the planning of the activities that should be covered. The learning objectives of the lesson should be discussed and confirmed in advance, and activities should not be arbitrary. An experienced male supervisor emphasised this aspect through the following statement:

‘The teacher can use the specialists after studying the learning objectives required to be achieved from the visit. If agreement on the learning objectives and their specifying was not made, then things could get confusing and the specialised person could raise topics irrelevant to the required objectives’.

Interview results indicated that training in certain subjects by an expert could be more advantageous because he/she can train in a more proficient way and could reflect on situational aspects of vocational tasks. However, this method requires the teacher to be able to select appropriate tasks to be taught by an invited expert, in addition to the need for advanced planning of the desired learning outcomes, suitable methods, facilities and the required assessment for a complete learning activity. Interviewees emphasised that the essential issue is to ensure relevance of what the expert intends to deliver to achieve the desired learning outcomes.

Summary

The previous sections have analysed the role of PVE teacher, the activities of subject delivery as implied by the intended learning outcomes, and the main tasks that should be done to achieve the curriculum objectives. The supportive and managerial tasks of the teacher have also been discussed. Investigation of these components provides a general description of the teacher’s role, and analyses the abilities that the teacher requires to deliver PVE effectively. This chapter has also examined some problems in the delivery of PVE at schools and possible solutions. Further analysis of the job of the teacher can make

the results valid for use in teacher education and training. More about the roles and specific competencies of the PVE teacher as perceived by supervisors and teachers themselves will be discussed in the following Chapters (9-12). For example these chapters will consider the demands of the workshop, utilisation of the environment in delivery of PVE, vocational guidance and counselling, special needs students, and the contribution of the teacher to maintenance of the school facilities and purchasing of requirements.

Chapter Eight

Competency-Based Teacher Education (CBTE)

Introduction

This chapter will consider competency based teacher education. Advantages and disadvantages of the approach will be examined, its operational framework will be analysed, in addition to different constructs of competency, and methods of identifying competencies.

8.1 The Concept of Competency

Competency in its latent state is the ability to do a certain task including the skills, understanding, and attitudes required for effective performance. It can be formulated through objectives that describe the required behaviour. In its apparent state, it is the required observable and measurable performance that is the outcome of the task (Al-Naqah, 1997). It is worth mentioning that the competency-based approach to education is not dependent upon following a specific programme of learning but on the achievement of a number of competencies (Jessup, 1991; Whitty and Willmot, 1991). These competency statements are primarily product or outcome oriented and define something a person is or should be able to do.

8.1.1 Differing Concepts of Competence

In short, considering the interrelation between knowledge and skills, a variety of meanings can be derived from the term 'competencies' (Bridges, 1993). There are a number of definitional and theoretical differences between competency advocates. Its supporters are:

'... driven by different but perhaps overlapping- values and purposes, and underpinned by different epistemological assumptions, though with a common interest in highlighting the ingredients of successful practical performance' (Bridges, 1993, p. 3).

Norris (1991) has identified three different 'constructs of competence'

The Behaviourist Construct

The behaviourist construct of competence is the most prevalent (Norris, 1991). Within this interpretation, competencies take the form of behavioural objectives which are primarily skills-oriented. They essentially consist of a description of the performance and the situation in which it is to take place. These skill-based objectives are presented in a form capable of demonstration and assessment.

The behaviourist construct has been subjected to considerable criticism, on the grounds that it supports the 'instrumental vocationalising' of the curriculum (Hyland, 1993a, p. 57). Such competencies are essentially seen as depicting a crude form of behaviourism which stresses performance over the acquisition of knowledge and understanding. The principal objections are that it,

'...artificially separates the mental and physical components of performance and confuses the evidence which we might use to assess a particular skill or competence with competence itself (Bridges, 1993, p. 2).

The Generic Construct

Elliott (1989) has described generic competencies as a list of 'broad clusters of abilities which are conceptually linked'. The successful development of these abilities is dependent on acquiring an 'aggregate' of skills, knowledge, understanding and motivation which is often also defined within the competency (Macdonald, 1987).

Central to the generic construct, is the selection of competencies which will define an educated, as well as a trained individual. These groups of competencies acknowledge the importance of higher order skills and the acquisition of personal, as well as professional goals. In teacher training terms, this construct favours empirical investigation to establish the competencies which discriminate between average and expert teachers, as opposed to determining minimum requirements for teacher qualification (Tilbury, 1993).

The generic construct offers a more sophisticated and thus, more acceptable epistemology than the early versions of crude behaviourist competencies (Bridges, 1993). Its appeal is in the way in which it eschews over-specification of objectives, moving away from a reductionist approach to teaching, towards a model focused, through behavioural events or critical incident interviewing, on the general abilities associated with expert performance (Norris, 1991).

The Cognitive Construct

The basic premise underlying this construct is the idea that competence is about potential not solely about behaviour. It attempts to capture the potential ability of practitioners to internally co-ordinate cognitive abilities with management qualities in a way which will improve performance. Messick (1989, p. 215) summed up this construct by defining competence

‘.... a what a person can do under ideal circumstances as contrasted with performance which is what actually done under existing circumstances.’

The cognitive construct, like the generic, highlights the cognitive structure embedded in an ability but, unlike other constructs, it uses competencies as a developmental framework for enhancing these structures. The effectiveness of this construct is dependent upon a process-oriented approach to the acquisition of competencies. This interpretation is far removed from the arguments over the limitations of behaviourism (Tilbury, 1993).

Competent teaching simply cannot be properly accounted for in terms of a task-analysis model of competence, while elements of competence based on functional outcomes may be a valid and useful feature of a teacher training curriculum. These elements cannot alone represent the complex nature of teaching. They must be subsumed in a more adequate process model (Chown and Last, 1993). Based on this, for the purpose of this study competency will be considered as an ability required for the teacher to undertake a certain task seen in integration with the contextual situation of this task (that explains when and why this task is to be undertaken).

8.2 The Operational Framework for CBTE Programmes

As mentioned in Norton (1987), there are five essential elements that serve to establish the operational framework for any CBTE programme. These essential elements are as follows:

1. competencies to be achieved by the teacher are carefully identified, verified and made public in advance (literature about the identification of the competencies of the teacher will be discussed in section 8.6, pp. 245-250);
2. criteria to be used in assessing achievement and the conditions under which achievement will be assessed are explicitly stated and made public in advance;

3. assessment of competency takes the teachers' knowledge and attitudes into account, but depends upon actual performance as the primary source of evidence;
4. the instructional programme provides for the individual development and evaluation of each of the competencies specified;
5. trainees' progress through the instructional programme at their own pace, by demonstrating the attainment of specified competencies.

The statements of the competencies expected of the teacher do not purport to provide a complete syllabus for teacher training programmes. They specify issues and outcomes on which the case for approval will be considered (Norton, 1987). In order for adequate diagnosis and explanation to be afforded by teachers, additional knowledge and skill in curriculum content areas, and in interacting with individual pupils is required. Teachers need to be knowledgeable about schemes available, their different content assessment procedures and implications for the management of learning. Crucially they need knowledge of how a wide range of pupils typically respond to this content, their common errors and misconceptions. On the basis of such knowledge they need to develop a range of strategies to overcome them (Oslo, 1998).

8.3 Competency-Based Teacher Education and its Advantages

To be effective, the PVE teacher education programme should be directed to effective performance at schools. Avolas (1991b) emphasised that the effectiveness of teacher education programmes can be judged by their ability to equip teachers with skills and knowledge to meet the educational requirements of teaching the curriculum of schools. Performance-based teacher education (PBTE) is an approach to teacher preparation, in which the training programme is based on the competencies (specific job tasks) required

by a successful teacher. The teacher must not only obtain certain knowledge but is also required to demonstrate the essential teaching skills in an actual instructional situation (Norton, 1987).

The current international trend with regard to in-service teacher education programmes emphasises the importance of gearing these programmes towards raising the teacher's level of performance at schools. Based on this idea, a performance-based teacher education (PBTE) programme was developed in the American Centre for Research in Vocational Education in 1986 (Norton, 1987). This programme was based on the requirements of a successful vocational education teacher. The training materials required for the programme were developed as individualised learning modules. The said programme was utilised by several institutions of vocational teacher preparation and proved to have a positive effect on classroom performance at schools (Norton, 1987). For Matthew (1993), Puzio (1987), and Norton (1987) in addition to subject matter knowledge and skills, PBTE is an excellent vehicle for providing a structured, systematic programme the content of which is focused on providing teachers with the competencies needed in actual schools' settings such as techniques for solutions of special problems at schools, knowledge of recent philosophies related to planning and execution of teaching/learning activities, and the use of various instructional materials.

According to Adams et al (1987) PBTE has been especially effective in changing teacher education programmes. It increased the accountability of teacher training programmes, increased instructors' access to teacher training by providing self contained instruction useful in rural and/or isolated areas, increased the flexibility of teacher training in terms of getting the right training to the right instructor at the right

time, and increased the productivity of teacher training programmes by shortening the time required to certify vocational teachers. Moreover, it reduced the variability and added cohesiveness to the content of vocational instructor training curricula through standardisation of the skills vocational instructors are required to master. It also significantly changed the role of the university trainer from a university-based classroom lecturer to a field-based learning facilitator working with instructors on a small-group and one-to-one basis.

The particular effect of CBTE on vocational teachers and instructors cited by Adams et al (1987) are that it increased competency in teaching, especially in the areas of instruction planning; it organised content into units of instruction and introduced learning reinforcement, individualising instruction, and student performance evaluation. It increased instructors' responsibility for their own learning and their ability to be self-evaluative and their convenience in obtaining certification. It also increased instructors' personal contact with the training faculty, and enhanced instructors' confidence in themselves, because they are more certain of what they can do.

Having originated in teacher education in the United States, competency-based approaches to education and training have crossed the Atlantic and in a relatively short period of time have become dominant influence in vocational education in the United Kingdom (Brady, 1995). Competency based education has been shown to be most effective as an alternative to conventional forms of education (Finch and Crunkilton, 1999, p. 241).

8.4 Drawbacks of CBTE as a 'Teacher Training' Approach

Competency-based education is not the answer for every problem in education although many people, especially from the developing countries, see it as such (Brady and Armitage, 1996). CBTE has some drawbacks and incorporates some aspects that should be taken into consideration. 'Teacher training' terminology has become much more prominent in the UK and in several other European and North American countries (Calderhead and Shorrock, 1997). It has become fashionable to describe teaching in terms of a knowledge base (Reynolds, 1989; Bennett; 1993), competencies (DFE, 1992) or a repertoire of knowledge and skills (HMI, 1988). According to Calderhead and Shorrock (1997) the assumption has often been that such terminology enables one to be much clearer about what teachers need to know and able to do, and as a result one can facilitate the professional development of teachers and enable greater precision in the assessment involved in initial certification. Defining teaching in these ways, however, can also present a number of drawbacks. Calderhead and Shorrock (1997) summarised these shortcomings in the following:

First, it risks being overly prescriptive, placing too tight a definition of 'good' or 'acceptable' or competent practice, while what counts as 'good' may be context-dependent: the 'good' teacher in one school with one particular group of children may not be 'good' in a different type of school teaching different children.

Second, lists of competency perspective leaves out of the account those aspects of teaching that are not easily defined (or are not yet defined) in the language of knowledge and skills. For example, the attitudes student teachers have towards children and

towards the task of teaching, are areas in which definition in terms of knowledge and skills seems quite elusive.

Third, the lists of competencies define an end-product in teaching but leave out of the account the process by which each individual teacher achieves competence. Different students may learn different things in different ways, or the same experience may have a different significance for different students.

Fourth, although teaching involves performance, which is perhaps more readily defined in terms of competences, learning to teach also has an existential dimension.

‘Becoming a teacher is not simply a matter of doing what teachers do, it is also a matter of being a teacher. The latter involves a personal investment, a feeling of being at ease in the role of teacher, an acceptance of teaching as being part of one’s identity, being able to reconcile one’s own values with those of the institution and the colleagues with whom one works’ (Calderhead and Shorrock, 1997, p. 195).

Fifth, competencies neglect the contribution that the school as a community contributes to classroom practice. Classroom-based research indicted that teaching is not an individual profession in which the teacher pursues only his or her own ways of working. Schools accommodate a range of beliefs about children, the role of the teacher, and the nature of the good practice. These beliefs systems help to define the school as a community, and by negotiating their way within this community, the new teachers gain status and acceptance and manages to implement a practice which, for the most part, reconciles their own values with those of the school.

Based on the aforementioned drawbacks of defining teaching around a set of competencies in which teachers can be trained; Calderhead and Shorrock (1997, p. 197) concluded.

‘It is clear that learning to teach involves more than the mastery of a limited set of competencies. It is a complex process. It is also a lengthy process, extending, for most teachers, well after their initial training. The multi-dimensional nature of learning to teach has often not been fully recognised in the design of initial teacher education courses, which are often tightly constrained in terms of both time and human resources’.

Understanding the complex nature of teaching, and taking into account the multi-dimensional nature of the PVE delivery, the researcher tried to confine the identification of the teachers’ competencies to the main tasks that are directly implied by the curriculum guidelines, particularly in the domains of ‘subject application’ (see Chapter 12) that are concerned with the activities required for the effective delivery of PVE. The general situations in which these activities to be undertaken and the general ‘understanding’ required were discussed in order to facilitate the use of the competencies for the pre-service education of PVE teachers. It was named as ‘teacher preparation’ through all the study. In addition to the school-based teaching and the vocational field experience that are required by PVE teachers (pre-service), the term ‘teacher training’ was used to indicate that a certain competency should be taken into account in ‘in-service’ programmes to fill the gap in the teachers’ abilities when a competency was found not to be practised.

8.4.1 Behaviouristic or Interactive?

Some writers criticise competency-based education programmes as usually concentrating on individual competencies and not on group work. This emphasis on individual competencies has been criticised by Ashworth (1992) who draws a

distinction between having competencies relating to an occupation and actually being competent. He emphasised that some competency-based education programmes do not encourage people to be engaged fully in teamwork. Hodkinson (1992) suggested two possible models of competence: the behaviouristic and interactive.

Competence is usually a matter of degree; in practice, we do not always use the word competent in an absolute sense. Hamlin and Stewart (1993) have noted that there is a problem with using 'competent' to mean that a person is fully competent in all aspects of a job. They suggested that it would be more helpful if a notion of 'competence potential' or 'threshold competence', were used. For Brady (1995) and Butroyd (1995) this would accord with the view that overall competence is the result of experience and training, rather than just an outcome to be demonstrated. This could be a problem in the assessment of the competence, but this should not lead to the rejection of the idea of competence-based education.

Norton (1987, p. 14) contested this critique of competency-based teacher education. He maintained that this drawback also exists in traditional training programmes. He said:

'Traditionalists insist that teaching is greater than the sum of its parts and worry that PBTE may reduce teaching to a series of, sometimes, trivial operations. Some say that working with modules is dull and neglects human interaction. Such critics forget that many aspects of traditional training of teachers were dull for both the educator and the student. Some educators prepared lectures and tests in isolation. In their new roles as resource persons they tutor, facilitate, advise, counsel, and assess. They spend less time preparing lectures, writing and grading tests and conducting large-group discussions. Many find more human interaction in a PBTE programme than a traditional one'.

What seems needed to be understood is that CBTE does not imply a certain approach to learning, but that the content of teacher education programmes should be oriented

towards achievement of specific outcomes that enable the teacher to do the tasks associated with his job (Tilbury, 1993).

8.4.2 Competence and Knowledge

Competence should not be considered as performance only since there are certain cognitive aspects of knowledge for the practical performance. The debate concerning the desirability or otherwise of competence-based education to some extent reflects earlier debates concerning the relative importance of 'theory' and 'practical work' in vocational and technical education. One danger of competency-based education is that competence may be interpreted and therefore assessed in terms of outcomes. This leads to a problem concerning what and how often, these outcomes are assessed and interpreted as evidence of competence (Brady, 1995). Atkins et al (1993) note that there is no standard definition of competency-based assessment. In their report they use it to refer to the assessment of the capability of the performance of a defined activity against predetermined standards of criteria. The activity can require intellectual, personal or practical achievement.

It can be argued that if a person can demonstrate 'competence' then he must have the necessary underpinning knowledge. This is the assumption made by those who insist on the demonstration of behavioural outcomes. Such an approach reduces the significance and importance of knowledge (Brady, 1995). Hyland (1993b) observes that there is something unsatisfactory about a theoretical perspective, which apparently recognises knowledge and understanding only to the extent that these are revealed in the performance of occupational tasks.

'It is a gross mutation of the aims of education to suggest either that knowledge is only important to the extent it reveals itself in the performance of certain tasks or that the only understanding worth having is that which contributes to vocational competence' (Hyland, 1993b, p. 19).

Brady (1995, p. 8) maintained that there is a danger that competence-based approach, with its downgrading of knowledge at the expense of action, further exacerbates the academic-vocational divide. He argues that:

'A robot can do; human being can and should reflect on what to do, how and when to do it, and above all they should reflect on why they are doing it. In the U.K practical activities end to be held in low esteem. Is this why competency-based approaches to vocational education have been emphasised? There is an assumption that many jobs do not require much knowledge or thinking; that can be left to managers of one sort or another'.

To overcome the problem of irrelevance and inflexibility of the term 'competence' Fleming (1991) has proposed the term 'meta-competence' to describe a reflective awareness of existing competence. He regards this 'meta-competence', which is particularly important in higher education, as highlighting competencies that work on other competencies. For Brady (1995) this idea can move us away from the behaviouristic approach to competence. In this regard the Council for National Academic Awards (January, 1992) report on competence development in initial teacher training illustrated a variety of approaches from institutions and came to this conclusion:

'The distinction between narrow behavioural objectives-based definitions of competences and the broader definitions, which encompassed knowledge, understanding and attitudes, was noted. It was felt that the use of competence-based approaches should sharpen the focus of teacher but care should be taken to ensure that such an approach did not narrow the curriculum or detract from the importance of cognitive and effective factors' (CNAA, 1992, p. 26).

The association of competence framework with vocational training and its simplistic behavioural objectives, has led to the view that competence-based education is primarily skills-based (Tilbury, 1993). Many reject the concept of competence in teacher

education on the basis of this narrow interpretation, which gives emphasis to skills acquisition and ignores the importance of theoretical underpinnings of performance (Whitty and Willmott, 1991). Hyland (1993b) perceives all competencies in this way, describing them as crude instruments of behaviourism. He objects to what he interprets as a stress on action, because it creates a division between the mental and physical components of performance, and confuses the evidence that might be used to assess a particular skill or competence with a competence itself. His criticisms do not apply to all constructs. Critics like Hyland (1993b) do not recognise the diversity of constructs which exist, but instead assume that all competency approaches are behaviouristic in nature.

‘Those who dismiss a competency framework as a viable model for teacher education seem unaware of alternative constructs or of the favourable features of this approach (Tilbury, 1993, p. 318)’.

Based on that, competency-based approach could be applied to teacher education provided that ‘competence’ is perceived in an integral way between skills, knowledge and attitudes. Therefore, such approach does not narrow the curriculum or undermine the importance of cognitive and affective factors.

8.5 Assessment of Competency in Teacher Education

There is a range of advantages to using competency in planning of the teacher education curriculum and assessment of student teachers. For example they can encourage an active orientation towards practice on the part of the student because they can facilitate a greater understanding of expectations and of the basis of assessing practice. This understanding can initiate an acceptance on the student’s part of responsibility for

professional development. Competencies could be utilised in formative assessment to indicate learning needs more clearly. They could promote involvement in personal professional development and the clarity which competencies offer can encourage reflection on practice (Reynolds, 1995).

But the use of competencies can offer an opportunity for assessment only if the way in which they are used and understood helps to promote the skills, knowledge, understanding and values which are necessary for teaching. As teacher training courses aim to prepare effective teachers,

‘Teaching is a holistic process that involves an interrelated network of abilities and purposes. The combination of skills within specifiable areas of professional activity demands an explanation of professional action in terms of principles that do not simply refer to the employment of individual skills. Learning to occupy the role of the teacher involves the promotion of professional knowledge and skills in addition to personal abilities. Competence in teaching could be said to rely on substructure which is not simply composed of knowledge of subject and methodology’ (Reynolds, 1995, pp. 377-378).

Teaching like all forms of action, is an expression of intentionality, commitment and subscription to values in addition to professional knowledge. These additional factors are expressed in the view of teaching that the teacher has and in competent performance. The functions of the teacher are not separate but cohere in occupying the role; assessment must reflect this so that the student will concentrate on the development of the ability that relates to this. Based on that the assessment procedure would be core criterion-referenced, which means that the components of a performance would not be the focus of assessment, but rather the appropriateness of the performance in the context of teaching (Reynolds, 1995).

8.6 Research on the Competencies of the Teacher

8.6.1 Bases of Identification of Competencies

Identification of competencies could be undertaken in various ways. Hashim (1991) mentioned different bases for the identification of competencies:

a) The philosophical base

This approach conforms with the values and philosophy of society. In the light of these principles the desired outcomes for the educational processes are identified. This facilitates the conceptualisation of the teacher's role and then determines the competencies required to performing this role.

b) The empirical base

This is concerned with empirical conceptions of the rules for the derivation of competencies. Outcomes result from humane; social; and behavioural sciences can facilitate the development of an empirical model for the role. Using this model cognitive competencies could be identified.

c) The subject-matter base

Competencies are identified through cognitive constructs. Competencies identified in this way are specialist competencies mainly based on knowledge. This base is also a source of performance competencies in the field of subject matter that supplement the cognitive competencies.

Therefore, through the analysis of the content of the PVE curriculum, the cognitive and performance subject matter can and will be identified in this study.

d) Practitioner base

This has resulted from the idea that the teaching competencies can be identified through the analysis of what competent teachers do during in teaching. For example,

this includes questioning, guidance, management of discussions and other tasks. Based on this concept, teacher competencies in classroom management are identified in this study such as motivation, questioning, use of different teaching methods and the other generic teaching skills.

8.6.2 Sources of the Derivation of Competencies

According to Al-Naqah (1997) there are various sources from which competencies can be derived. These include:

a) Ready-made lists

Other studies conducted concerning CBTE can be utilised. Lists of competencies provided in such studies should not be utilised unless the philosophical context of them is understood and related to the context of the programme for which it is intended. For the purpose of this study, other research that investigated the competencies of teachers in similar contexts, was utilised to construct the list of competencies of PVE teachers that was used in the questionnaire (see Section 5.5, pp. 157-179). These studies were mainly concerned with teacher competencies in vocational and technical education, the preparation of trainers and instructors, teachers of design and technology and other relevant subjects. Among others, the following studies were utilised in terms of the lists of competencies they include:

Osion, J. Susan (1998). Competencies of Two-Year College Technical Instructors and Technical Trainers: Similarities and Differences.

The Design and Technology Association (DATA) (1995). Minimum Competencies for Students to Teach Design and Technology in Secondary Schools.

Salamah S. Khamis (1994). *Training needs of Pre-vocational Education Teachers as Perceived by Supervisors, Principals and Teachers Themselves in Jordan.*

International Board of Standards for Training Performance and Instruction (IBSTPI) (1988). *Instructor Competencies: The Standards.*

The Centre of Vocational Education (1972). *Model Curricula for Vocational and Technical Teacher education.*

Rawaqah, G. (1994). *Perceptions of the Student Teachers of the Extent to Which the Pre-vocational Education Courses in the Certification Programme Satisfy Their professional Needs in the First Basic Stage.*

Davi, L.; Suessmuth, P. and Thomas, A. (1986). *A Review of the Literature and Field Validation of the Competencies of Industrial and Organisational Trainers and Educators.*

Balogh, S. P. (1982). *A Comparative Study of Business and Industry Trainers as Adult Learners.*

James, J. H. (1988). *An Investigation of Factors and Competencies Utilised to Assess the Performance of Trainers in Private Industry.*

The context of each study was taken into consideration, as was the particular programme that it was intended to serve. The competencies included in these studies were utilised to build the list of competencies that was piloted through a questionnaire to study the perceptions of teachers and supervisors (see Section 5.5.1, pp. 158-162).

b) Interpretation of subjects and investigation of the current programmes

In order to change a programme into a competency-based one, subjects are modified into competency-based statements. This can be undertaken through the analysis of the content of the subjects including the general and specific teaching objectives. Then, the analysed content can be expressed in competencies identified by behavioural objectives and skills.

c) Views of experts

Views of experts can be used to determine the competencies required for certain careers. Such views should include information about the objectives and competencies that are intended to be achieved, the need for practical experience and future expectations concerning the requirements and development in the career under consideration.

Utilising this concept, semi-structured interviews were conducted with people in key positions of PVE in Jordan concerning the nature of PVE teaching, activities of its delivery, the required teachers' abilities and the need for practical field experience for PVE teachers (see Section 5.4, pp. 154-156).

d) Views of graduates and students

Graduates and students can reflect about the problems that face them in the real practice of the teaching profession. Students also can express their views on their emerging needs and affinities towards the learning of specific subjects. Both graduates and students' needs facilitate the identification of the competencies. Utilising this advice, views of teachers who are certified in-service through a

university degree in the university of Jordan were elucidated. They were asked to comment and add on the list of competencies included in the questionnaire at the stage of piloting. In this context, these teachers can play the role of both students and graduates (see section 5.5.7, pp. 167-168).

e) Programmes and research done at other institutions

Programmes developed at other schools and colleges can be utilised (not by transferring, but through understanding and improvement in the light of the philosophy of the programme under consideration). Studies that are based on analysis of experiments and implementations of roles and tasks can lead to an effective determination of knowledge, skills, and attitudes required for such tasks (Al-Naqah, 1997).

f) Guessing and induction

This is an important source in preparation of vocational and technical specialities with regard to future expectations of them. Graduates of competency-based programmes should be able to work in a diverging (changing) atmosphere through self-professional development. Forecasting of future change could add more competencies to preparation and training (Al-Naqah, 1997).

g) Recording and analysis of the effective performance

Observation of the performance by experts in the field of work and recording the results of such observation could identify the desired behaviours and competencies (Al-Naqah, 1997). However, the effective performance could be different according

to different people particularly in teaching. Therefore observation could not be effective in the environment of a holistic process like teaching.

h) Job analysis

Analysis of jobs, roles, tasks, activities, subjects and their associated skills is one of the sources of derivation of competencies. This analysis usually results in characteristics of the behaviours of individuals. Thorough analysis and evaluation of such characteristics results in teaching competencies. However, Cohen and Last (1993) argued that task analysis by itself could not be used to produce competencies in teaching due to the complex nature of teaching. Therefore it should be supplemented by contextual analysis.

8.7 The Competencies of the Vocational Teacher

Generally, the main components of the competencies of the teacher in vocational education context are:

8.7.1 Subject Knowledge and Understanding

This dimension includes the skills, knowledge and understanding of the subject that the teachers deliver, the philosophy and the content of the curriculum. In the vocational context this includes the application of the subjects to serve the learning objectives of the target learners' group.

Masri (1990) discussed these competencies in greater detail. He stated that they include the following abilities:

1. to perform practical skills that are included in the programme with the desired level;

2. to apply the relevant scientific and technical information, utilising this information in practical applications;
3. to use technical drawing, and interpret drawings;
4. to apply economic principles to reduce waste during work.
5. to serve, keeping and maintain the machines and facilities of the workshop.

8.7.2 Pedagogical Abilities

Competencies related to this dimension include abilities of the teacher to facilitate the learning process of the students in order to achieve the learning objectives. This includes all the classroom activities in planning to execution and assessment, in addition to subsidiary activities like guidance and counselling.

Masri (1990) discusses these competencies in greater detail. He states that they cover the following dimensions:

- ability to transfer knowledge to the students effectively with the desired level. Teachers not only have to have personal knowledge of subject matter, but also they need to know how to represent that knowledge for others (Lewin, 1992, p. 147);
- ability to discover the individual differences among students and to consider this aspect in the teaching/learning activities. This may imply the use of different teaching methods and approaches to deliver a specific subject to different learners in the same class;
- ability to develop in students positive attitudes to work, such as self-learning, scientific approach and group work;
- ability to use approaches and media that make teaching effective and efficient;

- ability to afford guidance and counselling services to students in the technical field and in the fields of work and employment using both collective and individual activities;
- ability to assess the performance of students and evaluate their levels, using applicable, objective, valid and accurate approaches including all dimensions of teaching/learning (skills, knowledge and attitudes);
- ability to plan and organise training and workshop management;
- adopting educational approaches to enhance affinity of the students towards learning, and orienting the students' aptitudes towards achievement of the training objectives.

The aforementioned pedagogical abilities enable the teacher to do the following:

- creation and maintenance of a classroom environment in which learning can take place effectively;
- construction and interpretation of the syllabus, which is one of the main tasks of the PVE teacher due to flexibility of the curriculum that requires the teacher to select and develop training materials, in some cases where the use of textbooks only cannot achieve the desired learning objectives;
- selection and clarification of the teaching objectives;
- selection of appropriate modes of instruction;
- class motivation and control;
- delivery of instruction;
- assessment of students' performance;
- provision of informative feedback to students;
- ensuring retention and transfer of knowledge; and

- orienting the students towards the achievement of the general objectives of the curriculum.

Additionally Masri (1990) stated that vocational teacher should have certain personal abilities. These abilities include:

- health appropriateness: when doing practical exercises in different environments, teacher needs to be healthy and physically fit. This gives him/her the required confidence when dealing with students;
- ability to speak and express ideas clearly and use language effectively;
- promotion of a general culture that enables the teacher to enrich practical training;
- willingness to teach that contributes to arousing and maintaining attention.

Gordon, cited in Lolley (1980), found that the competencies needed by technical vocational teachers in the two year college in America include the abilities to use a variety of instructional techniques; communicate effectively with students and colleagues; and cope with a wide variety of students' abilities and interests.

Other authors suggest that more technical competencies are needed (Cohen and Brawer, 1989; Rouche, 1983 and Wattenbarger, 1982). Although knowledge of teaching is seen only as desirable (Glenn and Walter, 1989) industrial and business experience continues to be seen as essential for the technical instructor. Lasota (cited in Callahan, 1990) identified the following topics found in train-the-trainers workshops for technical trainers: learning styles and theories, needs' analysis, learning objectives, training methods, selecting content, dealing with complexity, arranging materials for the best results, activities and timelines, presentation skills, appropriate use of visual aids, individual training plans, evaluation tools, and transfer of learning strategies. Of these,

Losata felt the most important skill for vocational-technical teachers is breaking down complex content and designing easily usable training materials. Birnbrauer and Tyson (1985) suggest that when selecting technical trainers, candidates must have technical experience, training experience, job knowledge, appropriate behaviour, ability to relate well with people, loyalty and ethics. Other researchers emphasised core competencies like presentation and communication skills, group facilitation skills and teaching skills.

Christinsen (1976) also studied the competencies of the technical education teachers in five states of America. Christinsen designed a questionnaire including 75 competencies of the teachers classified into eight categories that include programme planning, development and evaluation; instruction planning; instruction execution; instruction evaluation; shop-laboratory management; student-teacher relationships; school-community relations; and professional development.

A questionnaire was addressed to teachers themselves to determine their perceptions of the importance of each competency and the extent of use of each competency. In the justification of investigating the degree of use of the competencies in addition to the degree of importance, Christinsen said:

‘Much of the research designed to identify competencies considered essential for technical education teachers has focus on perceptions of the importance of the selected competencies. Little efforts seem to have been devoted to the determination of the extent to which competencies perceived as important are actually being used’ (Christensen, 1976, p. 2).

Investigation of the degree of use (practice) of the competencies helps in determination of training needs of the teachers who are currently in post. It also helps in assessment of consistency of the actual delivery of subjects with the intents of the curriculum. But it

should be used carefully, since teachers may respond to such a question in a defensive way to reflect that they use all the required competencies in their work.

The study concluded that technical education teachers tend to use the competencies that they perceive as important. The influence of a number of factors on perceptions of competencies was also investigated. A respondent's technical speciality and state had the greatest influence. Regarding use of competencies, the greatest significant differences were noted for the factor of technical speciality and type of teaching certificate held. It recommended using findings in revising technical teacher education programmes, and certification requirements for the development of competency-based technical teacher education materials. Conclusions in studies like Christensen (1976) make it necessary for this research to study the effect of factors that are assumed to be relevant in terms of the subject and the characteristics of respondents with regard to their effect on practice of the competencies. This can indicate perspectives of the involved personnel on the delivery of the subject.

8.8 The Competencies in the Context of Design and Technology

Teachers cannot acquire all the teaching competencies by pre-service programmes. They can have some of the competencies through in-service development programmes. In Britain, the Design and Technology Association (DATA) (1995, pp. 11-20) published the minimum competencies for students to teach Design and Technology in secondary schools. In addition to 'subject knowledge', DATA identified some competencies in 'subject application'. In them, teachers demonstrate the ability to take into consideration the philosophy of the subject and objectives of its introduction. Design and Technology is the most similar subject in the British school system to PVE in Jordan (Tweisat,

1998). As published by DATA, competencies included recording of pupils' assessment, further professional development, and classroom management in addition to subject knowledge and subject application. DATA also published the sub-competencies of each competency in the five categories (see DATA, 1995). The aspect of recording pupils' progress was not found in any other study with regard to teachers' competencies. This competency is implied by the aims intended from introducing the subject that is to 'orient students towards future careers' at an early stage. Recording of pupils' progress is recommended to be used in PVE delivery to ensure aptitudes and inclination of students.

8.9 Basic Skills of the Teacher in the Vocational Context

There are some basic skills needed by people in an occupation; in turn, they should be available to the vocational teacher. Tannenbaum et al (1994) studied these skills as a transportability study (skills of workers as learners should be available in teachers and trainers). A list of 55 skills was given to the teachers and they were asked to indicate their perception of importance of each skill for their job as teacher of vocational education. Skills were categorised in reading, writing and mathematics. Although these skills are intuitive as teacher skills they have their own implications for preparation and training of vocational teachers. This is particularly the case when the quality of the intake of teacher education programmes is not assured in advance regarding these basic skills. A problem in Jordanian teacher education programmes developed from students holding GCSE directly entering such programmes, sometimes with low grades.

Summary

This chapter has considered competency-based teacher education. It has discussed the principle of the approach, its operational framework, and the advantages and shortcomings. Additionally, different constructs of competency in teacher education have been presented, in addition to consideration of teacher competencies, and the theory of their identification.

**Part C: Towards A Competency-Based Model
For Teacher Preparation and Training For Pre-Vocational Education**

In the following four chapters the study will identify the competencies required for PVE teachers and assess the level at which these competencies are practiced in schools. This introduction includes definitions of the concept of 'model' in the context of this study and of the concept of competency. In addition to an explanation of the approach to the analysis of perceptions regarding the competencies, a justification of the use of competency-based teacher education for PVE will be discussed in the light of the respondents opinions.

What is a Model?

According to the Oxford Dictionary (Tulloch, 1995) a model may have different forms of 'the representation of a working structure or exemplary framework'. For the purpose of this study, a model is understood as a framework, which may take the form of a structure for planning educational programme, or as a theoretical approach to curriculum considerations that can be constructed through identification of the intended competencies.

Why Use the Competency-Based Approach?

One of the questions of the interview (see Appendix 6) was about the preferred teacher-education approach that could be used to prepare and train PVE teachers, the researcher listed three different approaches: the time-limited teaching courses with wide base of knowledge; the competency-based approach; and the curriculum based approach. Although these approaches are related and could be used together, the researcher listed them separately since competency-based teacher education is widely used around the world, but generally, teacher education in Jordan is delivered via time-limited courses with a theoretical approach and a wide base of knowledge. School-based training is

undertaken only at the end of the teacher education programme. Also community college programmes are mainly curriculum-based, concentrating on subject knowledge and teaching methods.

In response to this question, the majority of the interviewees preferred the competency-based approach. According to their justification, this is because it is based on what the teacher should do, and this could reduce the problem of incompetence of some of the teachers who currently deliver the curriculum. Also PVE is structured as a competency-based curriculum. This could simplify identification of the subject matter competencies that should be delivered to the teacher during preparation and training. Interviewees stated that before adopting this approach the competencies should be specified accurately and analysed into measurable skills to be delivered, and they should include all the tasks of PVE teacher in all dimensions of teaching and training. One of the interviewees, who has a long experience of education and training of PVE teachers and has been a member of the team for PVE curriculum development, stated the suitability of the competency-based approach and defined its prerequisite procedures in the following way:

'The best approach to preparation and training of the PVE teacher is the competency-based approach. This approach takes into consideration all the aspects of the teacher's job and his/her roles, but all the basic competencies should be specified clearly and accurately from the tasks that the teacher should do. After specifying the competencies, they could be analysed and distributed into branch competencies that cover all the tasks required from the teacher during his/her treatment with the curriculum, the students and the school'.

Despite the behaviouristic view of competency that appears in the above quote, which is not usually accepted for teacher education (Whitty and Willmot, 1990) it could be concluded, from responses of the interviewees, that the competency-based approach is

the most suitable for preparing and training the PVE teachers. This approach requires identification of the competencies of the teacher, which is one of the major parts of this study. However, identifying the teacher's roles, tasks and competencies and the features of the subject that are provided by the results of the study, establish the structure of the outcomes required from the teacher education programme. Then the curriculum designer of teacher education can choose a suitable approach according to the structure and facilities of the institution.

Identifying the teacher's required competencies is at the core of the construction of teacher education and training for competency-based programmes (see Section 8.3, pp. 234-237). One of the methods of identification of competencies is based on the views of the job-holders and experts (see Section 8.6.2, pp. 246-250). If a majority of the respondents in the sample considered the competency as relevant and important, then it can be considered as one of the required competencies for the teacher. But perceptions of a minority of the respondents who considered the competency as irrelevant or unimportant could indicate a lack of such a competency in these teachers or other conditions that prevent the use and development of that competency. This is the framework of analysis of perceptions regarding the competencies. Therefore, these perceptions could suggest a need to consider these competencies in the in-service training or to take other kinds of corrective action concerning another component of the PVE provision.

Introduction to the Competencies of PVE Teachers Identified in this Study

This part of the findings aims to answer the following questions: what are the competencies of PVE teachers as perceived by the teachers themselves and by the

supervisors? What are the implications of these competencies for teacher training and the other components of the PVE provision? It will examine the perceptions of teachers and supervisors of competencies related to PVE and their levels of importance to the teacher's work. It will consider general trends regarding each field of competence. Details of each competency will be utilised to investigate the quality of subject delivery and the implications for in-service teacher training.

Most of the competencies included in the questionnaire achieved a high degree of consensus among the respondents regarding their relevance to teachers' work and their importance. It was indicated to the respondents that the results of the study would be used to design teacher education programmes and not to assess current teacher performance. However, perceptions of supervisors reflected their perspectives of what the teacher ideally should do to deliver the subject. Therefore all supervisors perceived every competence as relevant to the teacher's work. Teachers, on the other hand, reacted to the real situation at school and reflected the tension between what they are asked to do and what they are able to do. The constraints of the educational environment in terms of their understanding of the philosophy of the subject, their specific subject knowledge and practical abilities, the available facilities, the work conditions and demands of school administration, all impacted on their answers. Therefore, the perceptions of the teachers have been analysed and interpreted in relation to these constraints, an approach to analysis that indicates any problems areas in the subject delivery.

It is worth mentioning that not all the competencies presented in this chapter are particular to the PVE teacher. Some are common to teachers of different subjects, for example planning, organising and assessment of teaching/learning activities. However,

although common competencies, they have particular relevance to the PVE teacher due to the nature of its delivery. Examining these competencies in relation to the activities of the curriculum delivery and teacher's role, discussed in chapter 8, will reveal the associated special skills required for PVE. There are some particular competencies required by the PVE teacher, implied by its philosophy, its practical nature, flexibility of the curriculum and variety of its fields. These competencies include the fields of the use and management of the workshop, the required enrichment of the curriculum, vocational guidance, and personal abilities of the teacher necessary to undertake the curriculum activities effectively. Studying both generic and particular competencies related to PVE will provide a comprehensive framework from which to build a teacher education model.

The abbreviations that are used in the tables have the following meanings: 'F' represents the frequency, 'P' the percentage, 'Teach's' indicates teachers' and 'sup's', supervisors' corresponding perceptions. The total number of the teacher respondents was 145, and the number of supervisors was 13. As stated in Chapter 6, respondents were asked to give data in two parts. The first was concerned with the relevance of the competency to the teacher's work 'either relevant or not relevant'. The second part gives the degree of importance of the competency (where it has been assessed as relevant). When calculating percentages of respondents who perceived the competency relevant, the number of respondents who perceived it relevant was divided by the total number of respondents in the sample (either 145 for teachers or 13 for supervisors). Regarding percentages of degrees of importance, the number of the respondents who perceived the competency important was divided by the number of respondents who originally considered it relevant. This is because respondents who perceived the competency

irrelevant were asked not to respond to the part of the question regarding the importance of the competency. This explains why percentages regarding 'importance' were relatively high. Where two competencies were rated equal, the competency that has a greater number of respondents judging it as 'very important' was ranked first.

Competencies were categorised into seven fields in the questionnaire: planning of teaching/learning; organising of teaching/learning; assessment of teaching/learning; enrichment of the curriculum; organising and using the workshop; personal abilities of the teacher; and vocational guidance and counselling. Although there is no sharp distinction between generic and particular competencies in the case of PVE, the researcher considers it useful to denote as far as possible whether the field or the competency is generic or not. This facilitates the design of the content related to the particular competencies. Because many competencies are included, they are presented in four themes divided into four chapters. These themes are teaching skills, subject matter, use of the workshop, and subject application.

Chapter Nine

The Teaching Skills Required for Pre-vocational Education Teachers

Introduction

In this chapter the perceptions of teachers and of their supervisors concerning the teaching skills required for the PVE teacher will be analysed in order to identify these skills. These perceptions will be utilised to analyse the current situation regarding the delivery of the subjects. Teaching skills are included in the planning, organising and assessment of teaching/learning.

9.1 The Competencies of PVE Teachers in the 'Planning of Teaching and Learning'

This field included main and associated (branch) competencies; discussion will focus on perceptions of the main competencies, and views on associated competencies will be discussed where they have a direct bearing on teacher preparation and in-service training.

Designing the Scheme of Work:

No	The Competency	Relevant to work		Important		
		Teach's	Sup's	Teach's	Sup's	
1	Designing the Scheme of Work to achieve the curriculum objectives	F	145	13	133	13
		P	100.	100.	97.2	100.

A few teachers (2.8 per cent) considered this competency as unimportant. This is due to their view that there is no need for a long-term plan for teaching. This issue raises a debate between teachers and supervisors in Jordan (Salamah, 1994). However, most teachers and supervisors considered this competency as very important. Supervisors

usually emphasise systematic planning of the teaching process (Salamah, 1994). Their supervisory role leads them to ask teachers to have their short and long-term plans ready and to apply them in teaching/learning activities.

Interview results revealed some additional components and particular activities to be included in the teacher's term plan: the required facilities to be identified and based on the content that the teacher intends to deliver (quantities and specifications of these facilities should be clearly identified). Field visits and invitations to expert speakers in terms of selection of the topics to be covered should be specified. If maintenance of school facilities is intended to be used to equip students with certain skills, their projects should be identified in advance, analysed for their associated skills, and agreed between the teacher and the head teacher.

Designing lesson plans:

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
2	Designing a lesson plan	F	140	13	132	13
		P	97.2	100.	94.1	100.

Teachers believe that systematic written plans become less essential as the teacher gets more experienced in teaching. This was reflected in the 5.9 per cent of teachers who considered the competency of 'preparation of lesson plan' as unimportant. However, most of the supervisors emphasised in the interviews that planning of teaching/learning activities enables the teacher to control activities and to ensure that the desired learning outcomes are achieved in the time allocated. Planning prevents the teaching/learning activities from degenerating and becoming random. It also facilitates the teacher's task

in re-planning of each lesson or each semester since the teacher can update his/her previous plans taking into account feedback notes that he/she gets concerning all components of the plan after implementation.

For PVE, the designing of a lesson plan involves sub-competencies. These may be summarised as follows:

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
2.1	Formulating the educational objectives in the form of learning outcomes in knowledge.	F	130	13	120	13
		P	90.9	100.	93.1	100.
2.2	Formulating the educational objectives in the form of learning outcomes in attitude.	F	120	13	110	13
		P	85.1	100.	93.2	100.
2.3	Formulating the educational objectives in the form of learning outcomes psychomotor (practical) skills.	F	131	13	125	13
		P	94.2	100.	96.9	100.
2.4	Identifying the prerequisite behaviour (learning aptitude) that relates to the objectives.	F	132	13	126	13
		P	92.3	100.	94.8	100.
2.5	Selecting assessment methods suitable to the outcomes.	F	137	13	132	13
		P	95.8	100.	98.5	100.

All supervisors in the sample considered the above competencies as relevant and important. Supervisors usually recommend teachers to formulate learning objectives into behavioural learning outcomes since this emphasises the function of the teaching process, but some teachers believe that they can control the teaching process without such formulated objectives. Moreover, teachers believe that learning objectives relating to knowledge and attitudes are less important than those relating to practical skills because of the practical nature of the subject and because the theoretical knowledge only

supports the acquisition of practical skills. But this may be an indicator of limited awareness of learning outcomes in attitudes and understanding. Therefore, a significant percentage of teachers (14.9 per cent) considered the competency of 'formulation of the learning objectives in the attitudes' irrelevant, and 6.8 per cent of them considered it unimportant. This reflects a need for greater awareness of attitudes as learning outcomes when planning the teaching/learning activities. According to Jaradt and Tuffaha (1995) this is an essential competency of the PVE teacher since attitudes are major parts of the desired learning outcomes at the level of short-term professional attitudes and long-term attitudes towards general manual work, vocational education careers, society and the environment.

Selection of the content material:

Because PVE has a flexible curriculum, the teacher is responsible for the selection of the suitable content material through which the objectives can be achieved and to match the selected content with students' needs and available facilities (MoE, 1990a).

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
2.6	Selecting suitable content material for the objectives	F	119	13	116	13
		P	83.2	100.	98.3	100.

Teachers' perceptions of the relevance of this competency were relatively low. This may be due to the fact that teachers use textbooks as the only source for the teaching process, and that they are asked by their head teachers to finish certain subjects in the textbooks during the term. The problem of using the textbook as the only source of knowledge raises many issues not just for PVE, but also for other subjects. For PVE, there is the

problem of the availability of facilities suitable to deliver the textbook content, since some schools do not have all the facilities required for the exercises. More fundamental is the effect of educational administration on delivery methods (Al-Hadidi, 1994). Although the ERP emphasised the importance of teacher motivation towards the flexibility in the curriculum and the use of textbooks as only one of the learning resources, some head teachers and supervisors have not moved in this direction. Supervisors often force teachers to follow a certain teaching sequence and even certain teaching methods (Tweisat, 1998). After a certain period of the semester, the teacher should have covered certain subjects (measured as a portion of the content of textbooks). This makes the teacher use teaching styles that take a shorter time and neglect some desired learning outcomes (especially on the affective side) and concentrate only on the theoretical and practical sides. Teachers also tend to use teacher-centred methods, which help to deliver more content but without adequate attention to the outcomes of learning process. Additionally, using textbooks as the only source of knowledge limits the learning horizon of the students. According to the views of the curriculum developers in the interviews, this is a contradiction to the philosophy of the curriculum that aims to build on the experiences of students and to guide their interests towards better vocational awareness.

Based on the aforementioned problems, another aspect that should be emphasised is the need to train the administrators (head teachers and supervisors) in the ways in which they can implement strategic decisions about teaching styles that should be applied in schools. In this regard, a change of mentality of the head teachers and supervisors concerning the relationship with the teacher is urgently needed in order to give the teacher more freedom and trust in the implementation of the curriculum and in the

selection of suitable teaching approaches. Moreover, educational administration should take the responsibility for the design and implementation of effective training programmes that enable teachers to act consistently with the new orientations of education in Jordan regarding knowledge acquisition and transfer, and to change their approaches to their teaching. Since the working conditions usually contribute to the quality of work, Al-Hadidi (1994) stated that one of the main corrective actions that should take place is to reduce the teaching load of the teacher (currently more than 25 lessons a week) which results delivery only of the content of the textbooks. There is also a need to enhance the salaries of teachers to motivate them to devote more time to preparing their teaching rather than working in an outside employment.

Identifying the required facilities:

One of the main components of the lesson plan of PVE is identification of the required facilities that have an essential impact on the selection of the exercises used and the delivery methods required to achieve the objectives.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
2.7	Identifying the necessary facilities required for objectives (materials, tools and equipment).	F	125	13	123	13
		P	87.4	100.	97.6	100.

The perceptions of the 12.6 per cent of the teachers who considered this competency to be irrelevant to their work could reflect the confining of delivery of some of the fields of the curriculum to theoretical information only. This was strongly reported because of the lack of the teacher's capacity to perform practical exercises in some of the curriculum fields. Confining the delivery of PVE subjects to theoretical knowledge will never

achieve its target of breaking the psychological boundaries students' fear of the practical activities, which is one of the main targets of introducing the subject at the basic education stage (Tweisat, 1998, MoE, 1990a).

Because one of the main aims of the plan is to organise the activities of the lesson, the teacher should identify, in advance, the approach to follow towards the achievement of his/her specific objectives.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
2.8	Identifying the most suitable instructional approach to achieve the teaching/ learning objectives.	F	114	13	107	13
		P	81.4	100.	91.5	100.

Teachers' perceptions were relatively low regarding the competency of 'identifying the suitable educational approach to achieve the objectives'. This may be due to the stereotyped approach which depends on demonstrations that teachers used to adopt in their teaching, followed if possible by making students practise the skills. The use of this stereotyped approach was also reflected in the teachers' relatively low perceptions of the use of other teaching/training approaches that will be discussed in the fields of 'organising of teaching/learning' (Section 9.2.2, pp. 278-281) and 'the use of the workshop' (Chapter 11).

Perceptions of the competencies of this field indicate that supervisors have more interest than teachers in the preparation of short and long-term plans to govern the teaching/learning process, and to give much attention to all components of these plans. Some teachers believed that such plans are not necessary. Teachers usually prepare the term and lesson plans as requirements for head teachers and supervisors, and not

because of any belief in the necessity of planning. Such a finding was also reported by Salamah (1994). Moreover, results indicated that some teachers do not pay sufficient attention to changing attitudes. Some teachers stick to the content of textbooks and some teachers confine the delivery of the subject only to theoretical information. Since a lack of the teachers' abilities in these concerns was reported, these problems need to be solved through effective and guided teacher training aiming at better understanding of the philosophy of PVE and the required teaching practices that can lead to effective teaching of the subject.

9.2 Competencies of PVE Teachers in 'the Organising of Teaching/Learning'

Competencies included in this field are mainly concerned with the execution of teaching/learning activities. The majority of them are generic competencies of the teacher, but have particular implications for PVE. This field includes,

Relating knowledge to life:

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
3	Relating knowledge to life	F	134	13	134	13
		P	97.1	100.	98.5	100.

This is a large task for the PVE teacher, because a major aim of the subject is to make students realise the importance of work in everyday life (Jaradat and Tuffaha, 1995).

This explains the high percentage of teachers who perceived it relevant and important.

To achieve this aim, the teacher is required to select exercises relevant to the students' daily life in its different dimensions, and to deliver knowledge and skills that have a practical function in the students' life. However, there are some teachers who

considered this competency as irrelevant and unimportant. Such perceptions indicate an abstract delivery of the content that does not relate the content to real life requirements. According to Chown and Last (1993) measurement of the achievement of such a competency could be difficult without the exposure of the teacher to real situations of teaching that shows the teacher's ability to relate the knowledge delivered to the learners' life and indicates the suitability of 'action' done by the teacher in such situations. Therefore, in-service teacher training can achieve this competency effectively if activities of such training are directed towards better teaching practices and if undertaken in real teaching situations.

Classroom management:

Like any other teaching process, PVE teaching demands a variety of competencies in classroom management to deal with learners effectively. These competencies could be summarised as follows:

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
4.1	Using suitable motivation approaches.	F	143	13	140	13
		P	98.6	100.	98.6	100.
4.2	Exciting the aspirations of the students towards learning.	F	142	13	133	13
		P	98.6	100.	96.1	100.
4.3	Managing the classroom/workshop and keeping discipline.	F	140	13	137	13
		P	96.6	100.	99.3	100.
4.4	Using the type of questions suitable to the teaching/ learning activity	F	138	13	133	13
		P	95.2	100.	97.1	100.
4.5	Adapting verbal and non-verbal communication skills.	F	125	13	123	13
		P	90.6	100.	96.1	100.
4.6	Organising creative thinking activities.	F	133	13	123	13
		P	92.4	100.	93.9	100.

Perceptions regarding the relevance of these competencies were relatively high except the competency of 'organising creative thinking activities'. Creative thinking activities are not widely used in the current delivery of PVE. This is the reason why 7.6 per cent of the teachers perceived this competency irrelevant and 6.1 per cent of them perceived it unimportant. Although ERP emphasised the importance of encouraging of creative thinking and making teaching 'learner-centred' (Jaradat, 1989). The tradition of teaching that is adopted in Jordan using teacher-centred methods, inhibits students' creative thinking (Demiranda and Folkestad, 2000). Teacher education and training are widely responsible for the changing of traditions of teaching and for equipping teachers with abilities to adopt approaches to teaching that encourage creative thinking and learner-centred activities. Al-Smadi (1999), Shilling (1986), DeMiranda and Folkestad (2000) argued that active learning methods are very effective in terms of conveying information, stimulating debate, discussion and critical thinking.

Considering that the 'use of verbal and non-verbal communication skills' is considered irrelevant by 9 per cent of the teachers raises a question about how these teachers organise teaching activities. If perceptions of these teachers actually reflect their teaching activities, it could be concluded that these teachers have a very low level of interaction with their students and they might demonstrate skills and leave the students without observation during practice. Another indicator of using teacher-centred methods (of mainly lecturing and teaching theory only) is also reported in the competency of management of the workshop/classroom. In this context, the students' role is only receiving information from the teacher; therefore, management of the classroom is not an important aspect.

9.2.1 The PVE Teacher and Special Needs Students

In the Jordanian educational system, special needs students, up to certain degrees of disability, are taught alongside mainstream students. Students of different types and high levels of disability may be involved in ordinary school classes due to the lack of specialised schools. However, clear strategies or instruction to deal with such students are not yet established or implemented in the educational system in Jordan (Jaradat, 1989).

Pre-vocational education implies certain considerations for dealing with special needs students due to its practical nature and multiplicity of the dimensions of its teaching. As interviewees stated, the PVE teacher should not be considered as a special needs teacher, but the nature of the subject implies particular requirements for the teacher to deal with such students in terms of the practical abilities needed and the particular dangers that the special needs students may face.

Each school has its own counsellor who can deal with the special needs' students, but the PVE teacher has a particular role in working with these students. Interview results indicated that the teacher should be able to identify these students, study and classify their individual cases. The teacher can do that through co-operation with the counsellor. The use of the cumulative progress records of the students could help the teacher to do this. He/she can identify the disabled students through observation of their performance, their pace of accomplishing tasks and the precision of their final products. After identifying the special needs' students the teacher can, if needed, design particular activities for them to suit their abilities. From the interviewees' points of view, the

teacher can design or select alternative activities or give the students more opportunities to achieve the required learning objectives.

The interviewees also emphasised the human dimension of dealing with disabled students and the need for co-operation with their parents, who have a vital role in helping the students to achieve some of the intended learning outcomes outside the school. The interviewees raised the issue of special teaching approaches for the special needs' students, such as an individualised learning approach to allow for individual differences. They also emphasised the necessity of organising the workshop in a suitable way for such students to undertake their activities, since (as they stated) some types of disability need different approaches to teaching/learning. This issue has not been taken into account in the building and arrangement of buildings of schools and other establishments. The design of buildings to serve special needs people is an issue just starting to be considered in standards of building in Jordanian public works (Ministry of Social Affairs, 1993).

Regarding the teacher's ability to deal with special needs' students, one of the female supervisors noted that:

'The basic ability to deal with the special needs' students is to design and implement learning programmes and activities for those students'.

Another female supervisor divided this ability into its component abilities:

- ability to discover disabilities and their types;
- ability to deal with special needs' students;
- ability to integrate the disabled students with their colleagues during training taking into account to take care of them from dangers;
- ability to design and select suitable learning activities for the special needs' students.

Some of the interviewees emphasised that flexibility of the curriculum and the nature of its activities could help the teacher to deal with special needs' students regarding variability and multiplicity of the activities. This could enable the teacher to select what suits each single student's abilities. However, there are limits to what the teacher can do with special needs students due to the practical nature of the subject in terms of the practical ability of the disabled student and the dangers in using certain tools and devices. In addition the teachers themselves have usually been prepared to deal with mainstream students, not disabled ones. A review of the PVE curriculum guidelines (MoE, 1990a) and the syllabus of teacher education programmes (Appendices 3 and 4) indicated that there was an absence of clear instructions in the curriculum to guide the teacher to deal effectively with special needs' students and absence of practical-oriented courses in teacher education programmes to deal with such students. So it is crucial to train school teachers in how to deal with special needs students, and to infuse certain competencies into teacher education to enable prospective teachers to deal with such students.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
5	Considering special needs students.	F	131	13	127	13
		P	91.0	100.	96.6	100.

Nine per cent of the teachers perceived this competency as irrelevant to their work. This may reflect the fact that not all schools include students with special needs, and special needs students have been only recently mixed in ordinary schools. This does not undermine the importance of equipping the teacher with abilities to deal with special needs students.

9.2.2 Competencies in Using Different Teaching Methods

Pre-vocational education requires the teacher to use different teaching methods to deliver theoretical information and practical skills. Perceptions of these methods will be presented in this section and in the section on 'using the workshop'.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
6	Using methods and techniques of lecturing and demonstrating in teaching.	F	130	13	112	13
		P	89.7	100.	86.1	100.

Lecturing could be an irrelevant method to the teaching of PVE due to the practical nature of the subject. Teachers can use lecturing combined with other methods in teaching. However, although teachers widely use lecturing and demonstration as a traditional approach to teaching (Al-hadidi, 1994; Salamh, 1994), more than 10 per cent of them perceived this competency as irrelevant and 14 per cent of them perceived it unimportant. This could reflect the defensive nature of the respondents when they are asked whether they use something 'not recommended for use' like using lecturing in teaching. DeMiranda and Folkestad (2000, p. 7) criticise the use of lecturing in that it lessens the interaction of students. They said:

'The teacher lectures and the students listen. There is little discussion and few opportunities for students to contribute their own feelings, ideas, or concerns'.

There is a need to make students more active in PVE learning, and to enable them to take the responsibility for questioning, inquiring and discovering (Brown, 1992; DeMiranda and Folkestad, 2000).

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
7	Using methods and techniques of discovering and self-learning in teaching	F	115	13	99	13
		P	79.9	100.	86.1	100.

As shown in the table above, more than 20 per cent of the teachers perceived the competency of 'using methods and techniques of discovering and self-learning' irrelevant, and more than 14 per cent of them perceived it unimportant. Although these methods are widely recommended for use in Jordan, teachers do not use them, may be because of large numbers of students in classrooms, and because such methods demand individualised learning by the students. Also, teachers lack the ability to organise activities using these methods because teacher education programmes do not present them in practical ways (Al-Smadi, 1999).

Interaction and collaboration between learners is important in teaching (Resnick, 1987; Boyer, 1995; Brown, 1992). During discussion periods, students offer explanations to observed problems or phenomena. They are encouraged to present counter-arguments to problem solutions and explanations offered by other students. Discussion and interaction also encourage student learning and reflection (Minstrel, 1984).

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
8	Using methods of discussion (interaction) in teaching	F	135	13	124	13
		P	94.4	100.	92.5	100.

Although discussion and interaction are highly recommended for use as teaching/learning activities, it was found that some teachers do not use them. Five per cent of the teachers perceived the use of this method as irrelevant. This is because of the large numbers of students involved in the classes and the shortage of time. Also seven per cent of the teachers who perceived this competency relevant considered it as unimportant. These teachers may confine the delivery of the subject to training in practical skills via demonstrations by the teachers and some practice by students.

No	The Competency	Relevant to work		Important		
		Teach's	Sup's	Teach's	Sup's	
9	Considering the integration between the theoretical information, practical skills and attitudes.	F	140	13	136	13
		P	97.7	100.	97.1	100.

Teachers and supervisors strongly emphasised the relevance and importance of 'considering the integration between the three components of PVE learning outcomes' (theory, practice and attitudes). This is essential for teaching a subject like PVE, where the theoretical knowledge included is used mainly to serve the effective acquisition of skills, and where attitudes are major outcomes of the introduction of the subject (Batarsah, 1994). Taking into account that the time allocated for the subject in the study plan is short, as well as the time for the lesson itself (45 minutes), the teacher will not be able to have separate lessons for theory. Therefore, the teacher needs to integrate theory with practice by using different teaching methods to inject theoretical information before and during the practice of skills. In this regard, Brown (1992) maintained that there is a role for students to play; they should be active, collaborative participants in

questioning in related areas to subjects, and they should be free to predict and inquire about observed outcomes.

Teachers' use of traditional teaching approaches may be an intuitive reflection of the methods used in their teacher education and training programmes (Bramold, 1985). It was reported that these programmes use lecturing as the dominant method in teaching (Al-Smadi, 1999; Al-Jawarneh, 1999). Moreover, the teacher education and training programmes teach the different teaching methods in a theoretical way that is unable to equip the teacher with abilities to use methods in the real teaching/learning environment. Thus, the blame could be put on teacher education and training programmes, because teachers usually use the methods adopted in their preparation and training programmes (Bramald et al, 1995).

9.2.3 Using Educational Technology

Using educational technology could facilitate knowledge transfer and save time to enable students to have more practice by replacing the time used for the teacher's demonstrations and lecturing (Henson, 1996).

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
10	Using the different elements of Educational technology	F	119	13	105	13
		P	83.2	100.	88.3	100.

Regarding the use of different elements of educational technology, only 83.2 per cent of the teachers considered this competency as relevant to the teacher's work. Around 12 per cent of them perceived it unimportant. This may be due to the lack of such technology in schools or the lack of PVE relevant materials that can be used.

Furthermore teachers in schools are not accustomed to using educational technology in teaching, because they have not been familiarised with such technology (Tweisat, 1998). Teacher education programmes have not effectively enabled them to use such technology due to the dominant approach of lecturing (Al-Jawarneh, 1999). According to Al-Hadidi (1994) the equipment for educational technology is usually the responsibility of other teachers in the school, a fact that makes it difficult to utilise them in teaching by the PVE teacher because teachers who keep such equipment under their responsibility usually show some reluctance to give them to other teachers (Al-hadidi, 1994).

9.3 Competencies of PVE Teachers in 'Assessment'

Assessment of teaching/learning is one of the essential generic abilities of the teacher. Competencies in assessment are important for the teacher to ensure the achievement of the desired objectives and to assess the teaching/learning activities that he/she used in addition to assessment of the students' attitudes. Perceptions of teachers and supervisors reflected the current awareness and the level of use of the competencies included in this field. Competencies of assessment of teaching/learning are common for every teacher, but PVE requires certain particular tools in order to assess the achievement of the objectives of the activities.

9.3.1 General Competencies in Assessment

The teacher should have some general competencies in assessment regardless of the subject. These could include the following:

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
11	Preparing the assessment tools of the teaching/learning objectives.	F	136	13	130	13
		P	94.4	100.	96.3	100.
12	Using diagnostic and formative assessment in teaching/learning.	F	128	13	113	13
		P	88.3	100.	89.0	100.
13	Using summative assessment in teaching/learning.	F	133	13	123	13
		P	96.4	100.	84.9	100.
14	Using feedback to amend or enhance the effectiveness of the teaching/learning processes.	F	138	13	132	13
		P	95.2	100.	95.7	100.

Perceptions of both teachers and supervisors regarding the general competencies of assessment of teaching/learning were relatively high, but perceptions regarding the relevance of the diagnostic and formative assessment were relatively low (11.7 per cent of the teachers perceived this competency irrelevant and 11 per cent of them perceived it unimportant). As diagnostic assessment is needed to ensure that learners have the prerequisite abilities to pursue learning of certain objectives, perceptions of the irrelevance and unimportance of this competency indicate that some of the teachers do not check the level of abilities of the learners before starting the teaching/learning activities. This is harmful because prior abilities should be ensured, particularly in the medium basic stage (grades 5-7) where the level of skills delivered in PVE is graduated from one grade to another (MoE, 1990a), a fact that makes it less effective to teach new subjects if teachers do not ensure that students have the required previous experiences.

Although a high percentage of teachers emphasised the relevance and importance of the competency of 'preparation of assessment tools of teaching/learning objectives', more than 15 per cent of them perceived the 'use of summative assessment of

teaching/learning' as unimportant. This means that there is a contradiction in the teachers' perceptions regarding this competency. If teachers really prepare the assessment tools for the learning objectives, they do not use them to assess the achievement of the objectives after finishing the teaching/learning activities. Teachers perceive the success of teaching/learning activities based on how much effort teachers make in the classroom/workshop, not on what the students actually learned. According to Salamh and Nazzal (1995) without 'final' summative assessment of the achievement of learning outcomes, there is no guarantee that effort made by the teacher in the planning and execution of teaching are successful. This also indicates the use of teacher-centred teaching methods in which teachers play the role of the source of knowledge, and in which a low level of student interaction takes place.

Evaluation of Examinations and Their Results

The teacher prepares the examinations for the students in order to measure the achievement and to make improvement and corrective plans based on individual and collective results. Thus, according to Obali (1990) teachers should analyse the results of the examinations that they set. Moreover, the teacher should ensure the validity of the examination itself and each question in it. In this regard teachers need the competencies included in the following table:

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
15.1	Using the principles of descriptive statistics to describe the tests' results.	F	98	13	83	11
		P	68.1	100.	84.6	84.6
15.2	Using the principles of analytical statistics to analyse the tests' results.	F	98	13	64	10
		P	68.5	100.	65.3	76.9
15.3	Taking suitable decisions in the light of the description and the analysis of the exams' results.	F	111	13	81	11
		P	76.6	100.	72.9	84.6

The competencies, of evaluation of examinations and their results, were perceived relevant by low percentages of the teachers. Teachers may see these terms as strange for them. The MoE did some trials to make teachers use these principles to describe and analyse the examinations' results, but these trials did not exceed the use of simple principles (Salamah and Nazzal, 1995). This also may indicate that teachers are not familiar with these principles, particularly teachers who are not educationally qualified. These competencies should be carefully delivered to the teachers, since they enable teachers to study the results of examinations, and take decisions regarding the teaching/learning activities, the validity of the examinations and ensure the students' levels of learning (Salamah and Nazzal, 1995): This will enable teachers to improve their teaching/learning activities based on individual and collective cases, assess their design of exams and take decisions about 'corrective plans' for some situations.

Regarding the importance of these three competencies, they were perceived as unimportant by some supervisors (see the table above). Teachers were in agreement with supervisors. As mentioned before, this refers to the fact that principles included in these competencies are rarely used currently by teachers at schools in Jordan, and even supervisors do have neither the ability to use them nor an awareness of their necessity. Based on that, this requires the decision makers and planners in the MoE to disseminate the awareness of the concept of 'examinations' analysis', and to enable teachers and supervisors to use its principles and techniques in order to receive valid feedback about their teaching/learning activities.

Assessment of cognitive knowledge in PVE:

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
16	Preparing suitable examinations to measure the cognitive objectives (verbal, written and objective).	F	135	13	131	13
		P	93.8	100.	97.0	100.

Cognitive knowledge is not a main part of PVE. There should be a concentration on the acquisition of practical skills. This was indicated when 6.2 per cent of the teachers perceived the preparation of examinations to measure cognitive objectives to be irrelevant and 3 per cent of them perceived it as unimportant. This might be logical because of the practical nature of PVE. However, according to Salamh and Nazzal (1995) although practical skills are the core component of PVE teaching, the understandings and knowledge associated with practical abilities should be given adequate attention. Delivery of PVE in a 'behaviouristic' way that focuses only on skills would undermine the knowledge and understanding desired to render PVE activities useful in the students' general and personal life, and would reduce the motivation of the students towards self-learning outside the classroom.

9.3.2 Particular Competencies in Assessment

Pre-vocational education may require particular skills in assessment of teaching/learning activities. Those could be included in the following competencies,

Assessment of the acquisition of practical skills:

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
17	Preparing and using suitable tools to measure the acquisition of practical skills.	F	137	13	130	13
		P	95.1	100.	89.7	100.

Although there are some teachers who focus only on practical skills in assessment of the competencies of the curriculum, there are others who, on the contrary, deliver the curriculum using largely a theoretical approach. This was indicated when 4.9 per cent of the teachers perceived the competency of 'preparation and using of tools to measure the acquisition of practical skills' to be irrelevant and more than 10 per cent of them considered it as unimportant. As discussed elsewhere in this chapter, some teachers confine the delivery of PVE to theoretical knowledge because they lack the practical ability to train students in skills beyond their background speciality. Moreover, some teachers lack the specific ability to undertake assessment for practical skills in a proper way (Salamah and Nazzal, 1995). Relating to this, it was generally reported in Jordan that even in public examinations, assessment tends to be more theoretical than practical, a fact that indicates that the quality of graduates is not ensured (The Ministry of Planning, 1994, p. 53).

According to Obali (1990) it is essential for the PVE teacher to assess practical skills because such practical skills are the direct learning products that indicate the achievement of the curriculum objectives. This competency requires the teacher to analyse the tasks as skills and to determine the specifications of the final product. This

analysis is the basic ability to build the tools of assessment for practical skills' acquisition.

'There is a strong relationship between career analysis that aims to analyse jobs into skills and assessment. Once the job is analysed into skills, assessment of the achievement of these skills can be undertaken' (Obali, 1990, p. 191).

This assessment can be done through the checklists that test performance in the correct sequence, through a 'scaled test' that measures the specifications of the final product (of the task), or through the 'scaled test and the form of assessment and control of the performance' that measure together the skills and specifications of the final product (Obali, 1990; Salamah and Nazzal, 1995).

Formative and summative assessment of the acquisition of practical skills demand the assessment of associated simple skills. Assessment of the performance during practice requires the use of observation and checklists that measure the performance of each associated skill. They help the teacher to provide specific retraining for individuals (if needed) during the practice of the exercise. Also checklists help the students to assess their own performance (Obali, 1990).

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
18	Preparing assessment checklists to help students to practise self-assessment.	F	134	13	118	11
		P	92.4	100.	88.7	84.6

Perceptions of some teachers and supervisors reflect that checklists are not traditionally used in PVE teaching in Jordan, since more than 7 per cent of the teachers perceived this competency to be irrelevant and 11 per cent of them perceived it unimportant.

Surprisingly, two of the supervisors in the sample considered it unimportant to the work of the teacher. Maybe, supervisors know the reality of the lack of practice of the exercises in PVE delivery due to shortage of time and teacher's abilities to design and use such lists. Such a problem of the lack of practice, if takes place, makes the entire provision of PVE useless because the practical skills are the main part of the content through which the objectives are to be achieved. In the researcher's point of view, the problem of the shortage of time can be overcome by either increasing the lessons allocated for PVE in the study plan, or moving some of its content to other relevant subjects like science, arts, and mathematics.

Assessment of attitudes:

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
19	Preparing and using suitable tools to detect the origination and change of certain attitudes.	F	113	13	90	13
		P	79.0	100.	79.0	100.

The competency of 'Preparing and using of suitable tools to detect the origination and change of certain attitudes' was perceived relevant by only 79.0 per cent of the teachers, and perceived important by only 79.0 per cent of them (those who considered it relevant). This is another indicator of the lack of the attention paid to attitudes in delivery of PVE curriculum 'as learning outcomes' that should be taken into account in planning, organising and assessment of teaching/learning at both short and long-term levels. A glance at the general objectives of PVE, indicates that majority of these objectives are affective in nature. If teachers do not ensure the achievement of these objectives, then the entire provision of PVE is unlikely to succeed. Moreover, these attitudes need assessment at the short and long-term levels (Jaradat and Tuffaha, 1995).

One of the male curriculum developers working in teacher training emphasised that this is a problematic area. He said:

‘One of the main aims of PVE is to enhance the students’ attitudes. It is very difficult to inculcate new attitudes particularly concerning work and vocational education, since these issues are related to many factors like parents and families. These attitudes need a very long time to assess’.

It is obvious from the above opinion that the relationship between students’ attitudes and those of their families raises the need to open communication channels with families and the community. In addition this provides the opportunity for teachers to have more observation and pursuing of the students’ attitudes; this can contribute to enhancement of the attitudes of families towards PVE, a fact that helps teachers in the task of improving the students’ attitudes.

Generally, it could be concluded from the perceptions of teachers on the competencies of this field that some tasks (like attitude measurements) are not given adequate attention by teachers, and some other competencies are rarely used despite their importance for teacher’s work, such as using descriptive and analytical statistics to analyse the examination results and taking decisions based on the results of such analysis. The most important conclusion from the perceptions regarding the competencies of assessment is that some teachers focus only on practical skills of assessment, while others deliver the subject using a largely theoretical approach because they lack the ability to deal with practical skills in teaching and assessment. This basically requires an improvement in teachers’ abilities in training and assessment of all components of the desired outcomes of PVE. Better understanding of the importance of each component and of the contribution that it makes to the curriculum objectives is crucially needed.

Summary

This chapter has identified the teaching skills required for PVE teachers as perceived by supervisors and teachers themselves. Although these skills are generic for teachers, their particular implications for PVE were analysed. This analysis did not include all the skills, some will be considered in later chapters regarding the competencies of PVE teachers. Subject matter competencies that PVE teacher should have will be analysed in the following chapter.

Chapter Ten

Subject Matter Competencies Required for Teachers of Pre-Vocational Education

Introduction

This chapter will analyse the subject knowledge required for PVE teachers according to perceptions of teachers and supervisors. The respondents were asked about the relevance and the level of importance of each competency in organising teaching/learning in each one of the fields of the curriculum. They were informed that the study seeks to identify the competencies that are ideally required for the teachers, and it does not seek to evaluate their performance. This was done to avoid defensive responses. However, there was an indication of the situation of the subject delivery at schools in their perceptions. Some teachers considered the competency of organising teaching/learning in various fields of the curriculum as irrelevant and unimportant. This simply means that they do not teach these fields. Reasons for this will be analysed. The requirements of subject matter knowledge as implied by the curriculum expectations were analysed through examples of competencies included in the curriculum.

Pre-vocational education includes subject knowledge of five vocational fields (agriculture, industrial, business, home economics, and health and safety). For the medium basic stage (grades 5-7), the teacher should expose the students to experiences in all the curriculum fields, but training units in two fields of the curriculum should be selected at the higher basic stage (grades 8-10) (see Section 1.2.4, pp. 33-41). Teaching of these different fields implies subject-matter knowledge in all the curriculum fields. Ability to teach in each field requires a variety of subject matter competencies that can be derived from the curriculum expectations. The curriculum guidelines classified the

competencies into practical competencies, theoretical understanding and social and economical outcomes (see Appendix 1). Practical abilities are primary outcomes while the theoretic knowledge included is mainly to serve other component. However, teachers need deeper theoretical knowledge than the knowledge included in the curriculum (Mullens et al, 1996, p. 139). Perceptions of teachers' competencies in the subject matter are investigated and will be presented in this section.

10.1 The Subject Matter Competencies in 'Agriculture'

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
20	Organising of learning for the curriculum units in agricultural education.	F	129	13	121	13
		P	90.2	100.	94.5	100.

Some of the teachers (9.8 per cent) perceived this competency as irrelevant to their work, because they are not able to teach agriculture since they have a background in a different vocational field, or due to the lack of the facilities where they can apply the exercises included. Some rented buildings of schools do not have gardens that can be used to teach the agricultural subjects (Tweisat, 1998). Facilities required for some units like 'animal husbandry' are also not available except in some comprehensive schools that teach 'agricultural education' at the secondary stage. However, agricultural subjects particularly in planting, are very important to Jordanian society because of its agricultural nature (Tweisat, 1998).

Teaching of agriculture in PVE requires different subject matter competencies for the PVE teacher. The curriculum for grades 5-7 aims to equip the students with practical abilities in different aspects of this field. These abilities include preparing land for

planting, planting of seeds and nursery plants, preparing buds for planting, practice of grass removal, irrigation, fertilisation, trimming and harvesting of crops, and using spray pumps for insecticides (more details in Appendix 1).

The curriculum units include plant growing; plant maintenance; harvesting of crops and flowers, and animal husbandry. From a review of the curriculum content, the units, mainly in planting, include particular skills and some theoretical information that facilitates the understanding of the processes. However, with regard to the unit of 'animal husbandry' the curriculum aims to give only an 'idea' about such jobs. Therefore, it is recommended in the curriculum guidelines to use field visits, discussions, and video to organise teaching/learning activities for this unit. Such a unit cannot be delivered with practical training in Jordanian schools since they are not supplied with the required facilities to undertake their associated processes (Tweisat, 1998). Also teachers are not equipped with the required abilities due to difference in their background specialities. However, relating these factors to the general objectives of PVE, the recommended methods could achieve the objectives of vocational awareness and appreciation of careers.

For grades 8-10, the curriculum aims to equip the students with practical abilities in different subjects in this field. The included units are vegetable production, nursery-plant production, interior decorative plants, flower gardens, tree surgery, tree maintenance, raising of chickens and rabbits, dairy produce, food storage, crop grafting, and making lawns (see Appendix 1). These units include the practical skills that are required, and the associated theoretical knowledge. An overview of the theoretical

knowledge that is included in the curriculum indicates that it is only the required knowledge for the performance of skills.

For example, it is expected in the unit called 'rabbits rearing' that the students be able to raise rabbits. The theoretical information includes a variety of issues such as the economic importance of raising rabbits, specifications of rabbits' hutches, their facilities and the main processes of rabbit rearing, and the successful breeds of rabbits in Jordan. Deeper knowledge is included concerning diseases and parasites that infect rabbits and their prevention, but not the biological and chemical bases. Teachers need to have deeper knowledge in the subjects (Mullens et al, 1996). This could be extended to knowledge of biological and chemical related bases of the agricultural subjects. Including units like 'rabbits rearing' in the curriculum could face a problem of the lack of facilities in schools. This hinders its teaching in a proper way. The requirement of deep theoretical knowledge in the subject makes it difficult to prepare teachers who can teach across all five fields of the curriculum.

10.2 The Subject Matter Competencies in 'Industrial Education'

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
21	Organising of learning for the curriculum units in industrial education.	F	129	13	113	13
		P	89.6	100.	88.3	100.

More than 10 per cent of the teachers perceived industrial education as irrelevant to their work. This is simply because teachers of some specialities are unable to teach this field since there was a significant difference in perceptions of relevance of the competency of teaching 'industrial education' due to the field of speciality of the teacher at significance

level $\alpha = 0.05$ (the significance level produced was $p = 0.045$, less than α). Also 11.7 per cent of the teachers considered it unimportant because some of the female teachers do not teach the units of industrial education since they believe that the content of this field is suitable only for male students (Tweisat, 1998). This is contrary to the aim of the curriculum since it aims to expose the students to a wide spectrum of vocational experiences regardless of gender. This makes it essential for teacher education and training programmes to make teachers understand this philosophy, and to train teachers in the curriculum fields that they are not currently able to teach in.

To teach the curriculum units of industrial education requires a certain level of competency in the subject. For grades 5-7 the curriculum aims to equip the students with practical abilities in different subjects in this field. The included units are the using of manual tools, industrial drawing, painting and carpentry, metalwork, plumbing, and electricity systems (more details are in Appendix 1). The content included in this field is mainly practical (see the curriculum content in (MoE, 1990a). The units describe the required performance and involve only the theoretical information required directly for effective performance. For example, a unit concerning 'metalwork and plumbing systems' requires for the students to shear and plane metal pieces, and to maintain sinks, taps, floating valves and the sewer system of a house. Theoretical information addressed only types of tools required for such processes, and the main failures of the sanitary systems. Although teachers need deeper knowledge in these subjects (Mullens, 1996), the required knowledge is still simple and is not more than types of tools and failures of such systems.

For grades 8-10, the curriculum aims to equip the students with practical abilities in different subjects in this field. The curriculum includes different training units including industrial drawing, carpentry, building and construction, painting, decoration and curtains, finishing of buildings (coating and paving), metalwork, glass work, welding, electrical circuit connection and maintenance, plumbing and sanitary systems, and reading of architectural and industrial drawings (maps). The level of the skills included is high in that students can accomplish full tasks. For example, in the units on 'metalwork' the students make metallic products through which they are trained in the use of shears, folders, drills, and assembling pieces using rivets. The included theoretical knowledge includes the design of dimensions of products, the construction and principles of operation of the devices and equipment. Deeper theoretical knowledge in mechanical principle is not included (see Appendix 1). However, based on the opinion of Mullens (1996), it can be concluded that teachers need deeper knowledge that could include specifications of materials, principles of operation of devices and types of the components used in them.

10.3 The Subject Matter Competencies in 'Business Education'

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
22	Organising of learning for the curriculum units in business and trade education.	F	121	13	102	13
		P	83.4	100.	85.8	100.

It is obvious from the above table that a relatively high percentage of teachers (16.6 per cent) do not teach the units of business education included in the curriculum. Reasons could include the lack of abilities, since only a minority of PVE teachers is equipped

with the abilities required for such units. From an analysis of their syllabus community college programmes of PVE teacher education were found neglecting this (see Appendix 3). Moreover, some teachers believe that this subject is irrelevant, particularly for students in rural areas that have stronger vocational interests in fields like agriculture (Tweisat, 1998).

To teach the curriculum units of business education requires a certain level of subject knowledge. For grades 5-7, the curriculum aims to equip the students with practical abilities concerning financial and administrative issues. These abilities include organising of leisure times according to working times, keeping files in proper ways, and using business forms and banknotes. It is intended to equip the students with these abilities as general life requirements (MoE, 1990a). Moreover, there is greater emphasis on practical skills rather than theoretical bases. This requires a low level of theoretical knowledge for teachers to teach such topics. However, according to Mullens et al (1996) the level of this knowledge should be higher than the knowledge required in the curriculum.

For grades 8-10 the curriculum aims to equip the students with practical abilities in different subjects in this field. The curriculum included units of Arabic and English typing, commercial correspondence, commercial forms and banknotes (vouchers), accounting and bookkeeping, and sales. The content in this stage is more job-oriented than that of grades 5-7. The theoretical knowledge that is included differs according to the type of the subject. For example, units of Arabic and English typing include the types of typewriters and their components, while commercial banknotes include theory of 'how such vouchers work in the financial markets' (see Appendix 1).

10.4 The Subject Matter Competencies in 'Home Economics'

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
23	Organising of learning for the curriculum units in Home Economics education.	F	124	13	116	13
		P	85.5	100.	93.6	100.

14.4 per cent of the teachers in the sample considered the teaching of home economics as irrelevant to their work. This may be because Home Economics tasks are traditionally perceived as female tasks (Tweisat, 1998). This usually makes the male teachers neglect these subjects when delivering the curriculum. Taking into account that none of the male teachers is a home-economics specialist, it could be concluded that these male teachers lack the ability to deliver exercises effectively. So teacher training should pay attention to changing the perspective of teachers about the traditional tasks of males and females, and to equipping the teachers with subject skills in this field regardless of the gender of the school. What seems crucial is the need for decision makers and designers of teacher education to understand the philosophy of PVE. Even for PVE in grades 5-7 teacher education content for male teachers is currently different from that of female teachers in the respect of subject matter (see Appendix 3). This is a dangerous contradiction of the curriculum philosophy which needs to be investigated and corrected.

To teach in the curriculum units of 'home economics' requires certain abilities of subject knowledge. For grades 5-7, the curriculum aims to equip the students with practical abilities in different subjects in this field. The curriculum includes the units of food and nutrition, domestic management, and sewing and dressmaking. The curriculum

in this stage focuses on practical performances. The included theoretical information is only a description of procedures, tools, and equipment in addition to the importance of the subjects for the students' life. For example, in the subject of 'cleaning of clothes', the only knowledge included is to describe the materials used for cleaning, cleaning equipment, methods and general advice concerning the process. Although the included theoretical information is simple, teachers need to have deeper knowledge in the subjects. Moore (1986) mentioned different abilities in subject matter required for home economics, such as science, mechanical and applied science ability.

Consistent with the curriculum objective of equipping students with a wide range of life skills, the content for grades 8-10 includes the following units:

dough and pastries, domestic management, preparation of cleaning materials, home nursing, washing and ironing of textiles, manual weaving, auto textile work, making toys, food planning, preparation and serving, flower arranging, manual embroidery, oblique embroidery, dressmaking without plans, dressmaking for new born babies, care and safety of children, spot removal from clothes, care of home facilities, care of pregnant and breast feeding mother and baby, beauty work, automatic embroidering, curtain making, and home furnishing.

Home economics has its theoretical bases of sciences, mathematics and artistic abilities (Moore, 1986). The level of the required information differs according to the type of the subject. For example, food preparation is related to biology, chemistry, mathematics and other subjects, while dressmaking has basics of material sciences and measurements. However, the curriculum focuses on practical skills. For example in food preparation units the only included information is that concerning description of the processes:

Teachers need to know more theory about the subjects that are included in the curriculum (Mullens et al, 1996). Based on that some background information in the relevant sciences should be given to them.

10.5 The Subject Matter Competencies in 'Health and Safety'

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
24	Organising of learning for the curriculum units in the field of health and general safety	F	132	13	131	13
		P	91.9	100.	100	100.

All teachers considered the competency of 'organising health education teaching' important. Considering it the most important among all curriculum fields may be due to the teachers' awareness of health and safety to the students' life. Tweisat (1998) noted a social preference for health education from a choice of careers, since working in the field of health is ranked the highest in Jordanian society. However, there are some teachers (8.9 per cent) who consider this competency irrelevant. This may indicate that some teachers do not teach the subject. The main factor according to the statistical data was the gender of the teacher. In this regard, results indicate that there is a statistically significant difference in the means of perceptions of relevance and importance of this competency (at significance level $\alpha = 0.05$, relating to the gender of the teacher to the preference of male teachers), ($P = 0.015, 0.016$ respectively). This also reflects the belief of task difference according to gender difference tradition mentioned before.

For grades 5-7 the curriculum aims to equip the students with general life skills in different subjects in this field. It includes units of personal health and home nursing, health and general safety, first aid, and road safety. Health subjects have their related

knowledge in medicine, biology, chemistry and others. Some of the topics are completely theoretical. However, a very low level of theoretical content is included that is concerned with the importance of the included skills and how to undertake them. For example, for the included infections, diseases, and accidental health problems, the included theoretical information concerns the reasons, symptoms, protection, and description of first aid for such problems. As teachers should have deeper knowledge in such topics (Mullens et al, 1996) they should be aware of scientific bases relating to them.

For grades 8-10 the curriculum addresses the general life problems of first aid, safety in using medicines, beneficial uses of medicinal plants, and management of common and accidental health problems. In addition to skills, information is important in health issues. It included the information required for effective understanding of the subjects without going further into the scientific bases in biology and chemistry. For example, in the units of 'safety in using medicines' the knowledge includes the pharmaceutical types of medicines, how to store medicines, arrangement of the box of medicines, damaging of medicines and how to dispose them, dangers of medicines and how to avoid them, instructions for prescriptions, out of date medicines before and after use, and bad uses and practices regarding medicines and their dangers. Nevertheless, teachers should have a certain level of scientific knowledge of subjects related to health education in order to enrich the teaching of such topics. Bani Khalaf (2001, p. 259) emphasised both practical and theoretical abilities of teachers to deliver health education subjects:

'A teacher should be well prepared, both theoretically and practically'

Different methods and educational aids could be used to deliver health education effectively. Bani Khalaf (2001, p. 259) also stated:

'A teacher must be able to prepare effective health activities that involve student participation, interaction with family and local community if appropriate, and in response to a particular health need. A range of teaching and learning aids such as video and audio tapes, posters, health brochures, school radio and exhibitions should be used for this purpose...The health content should be presented in an approach that is based on a range of methods, styles and strategies. The health topic should be presented by emphasising the various dimensions of health education in an integrated, interactive, consistent and interesting way. The objective is to broaden students' perceptions, develop their ideas, and emphasise the concept of exercising health practices, as well as the positive or negative effects produced by health practices at the level of the individual and the community'.

Obviously, what is required to deliver subjects of health education effectively is not only subject matter knowledge. In the activities mentioned by Bani Khalaf (2001) the most important is the motivation of teachers that encourages them to use interesting, integrated, and community-related activities including student participation and exercising of health practices. This requires more than classroom activities. Improving students' attitudes towards different health practices requires long-term observation and co-operation with others like teachers of other subjects and parents.

Generally, competencies that are concerned with the organising of teaching/learning in the different fields of the curriculum (agriculture, industrial, business, home economics, health and safety) were perceived relevant by relatively low percentages of teachers. This is due to the fact that male teachers tend to teach curriculum units that are traditionally considered suitable for male students and female teachers tend to teach units considered suitable for female students. Also teachers tend to teach subjects in which they find themselves confident, according to their original field of speciality (Tweisat, 1995).

Each of the competencies that are concerned with the organisation of teaching/learning of different fields of the curriculum is composed of a number of branch competencies (practical and theoretical). The minimum competencies required of the teacher to teach the competencies of the curriculum are to master the practical skills and to have the theoretical understanding desired for the students (Mullens et al, 1996). A full list of these competencies in practical skills, associated theoretical understanding and the desired attitudes and social and economical objectives are in Appendix 1. One interpretation of these lists indicates that practical abilities are the main core component of the subject outcomes and their level is only intended to acquaint students with practical abilities to do these tasks at the level of daily life requirements (not to be employable). The theoretical knowledge included is only to serve the effective acquisition of the practical skills, and the overall social and economical outcomes have a moderate contribution to the subject, so they need to be taken into account in the subject teaching both in the short and long-term.

There are different factors that contribute to the depth and breadth of the teacher's subject knowledge. One of these factors is the tradition adopted to prepare the teacher (Avolas, 1991b). In some approaches the teacher is equipped with a broad spectrum of knowledge and skills that enable him/her to work in teaching and other careers (Doyle, 1990). Because of the variety of curriculum fields, and the multiplicity of skills and knowledge included, the interviewees emphasised that the most convenient way to prepare the PVE teacher is to make the students decide in advance (before entry to teacher education programmes) that they want to be teachers, and to identify the subject knowledge and skills delivered to the candidates based on what the PVE curriculum expects the teacher to master in order to be able to deliver the curriculum. Also, because

PVE is divided into two stages of basic education (grades 5-7 and 8-10) and the MoE (1990a) states that each of these two stages should be taught by a different teacher, the teacher education and training designers should be aware of which stage the teacher under consideration is being prepared for, since the higher basic stage implies deeper level of competencies than the competencies required for the medium stage (grades 5-7). Therefore, the researcher separated the competencies included in each stage in order to make this distinction on the basis that this would make the requirements clear and would reduce the irrelevance of the subject matter knowledge included in the current teacher certification programmes emphasised by the interviewees and reported in other research (Al-Jawarneh, 1999; Al-Smadi, 1999). One of the interviewees who is a key persons in the design of the PVE curriculum said:

‘The teacher certification programmes have too much theory in their subject knowledge courses. The knowledge and skills included in these programmes are irrelevant to what the teachers need in order to teach PVE. Therefore, our teachers suffer from the difficulty of these courses, and even if they pass, their level is still weak. What we need is relevant content that will enhance the teacher’s abilities to master the curriculum competencies’.

The reason for the irrelevance of the content of subject matter knowledge included in these programmes may be that all of these courses are delivered by subject matter specialists in faculties other than the faculty of education. These courses have been originally designed for students other than student teachers. Based on this factor, it is now essential to review the content of the subject matter knowledge included in the certification programmes and to ensure the appropriateness of its level, the weight of its components (theory and practice), and its overall relevance to the curriculum. In the researcher’s point of view, this review should be done in co-operation between the MoE, the faculties of education in the universities, and the specialists who design and teach the subject matter.

Summary

This chapter has analysed some teachers' roles and identified the subject matter competencies required for PVE teachers. The perceptions of teachers and supervisors were utilised to examine whether subjects were being taught at schools. If a subject is considered as irrelevant or unimportant, the reasons for that have been analysed. The lack of the teachers abilities and the lack of facilities were found to be the main reasons for neglecting some curriculum subjects in addition to the teachers' perspectives of gender specificity in relation to some subjects.

Taking into account curriculum expectations, content analysis of examples of competencies included in the curriculum has taken place. It provided examples of the level of theoretical knowledge and the practical skills included. This will facilitate the selection of subject matter content required in the teacher education programmes. Through the analysis of examples of curriculum competencies, it was found that PVE teachers ideally need wide range of both theoretical knowledge and practical skills. This makes it difficult or even impossible to prepare a teacher with sufficient subject knowledge taking into account the multiplicity of the curriculum fields.

Teaching PVE requires not only subject matter and teaching skills, but also other competencies that support the effective delivery of the subject. These competencies will be included in the following chapter.

Chapter Eleven

Competencies of Pre-Vocational Education Teachers in

‘Organising and Using the Workshop’

Introduction

This chapter examines the necessity of the workshops for PVE teaching, and analyses the competencies required of the teachers to use them. Many of the PVE objectives have implications for training in practical tasks. Pre-vocational education aims to enable students to acquire practical skills with useful economic and social advantages, to inculcate in the students positive attitudes towards manual work, and to provide the students with an opportunity to practise vocational skills that enable them to utilise their time in useful work (see Section 1.2.3, pp. 25-33). All of these objectives require the practice of vocational skills. Taking into account the nature of the subject fields, this requires the use of a suitable workshop. This workshop should be supplied with all basic tools, equipment and training materials used in all the curriculum fields.

11.1 The Importance of the Workshop Activities for the Teaching of PVE

As part of this research a question was designed to reveal the extent to which the PVE teacher needs the workshop to implement the curriculum, and to obtain a clear picture of the type of workshop that is actually needed for the purposes of curriculum implementation. All of the interviewees emphasised the importance of the workshop activities for the implementation of the PVE curriculum, simply because it is designed as practical exercises in order to reflect the vocational dimension of the subject, which is the real objective of PVE. Also it is important to integrate the cognitive and practical

sides of the curriculum with further emphasis on the affective side. An expert male supervisor stated that:

'The teaching of pre-vocational education should not be confined to classroom activities, as some teachers do. Students should be exposed to practical vocational atmosphere through individual or collective work in the workshop. Also it is one of the bases of PVE that there are certain specific practical skills the student should acquire'.

The confining by some teachers of subject delivery to theoretical knowledge may be due to the lack of practical ability to perform the skills and use the workshop tools and devices. The reason for that is the appointing of teachers from different background specialities irrelevant to the subjects of the curriculum. Also one of the reported shortcomings of the teacher education programmes for PVE is the lack of practical training in both teaching skills and subject matter (see also Tweisat (1998) and Al-Jawarneh (1999)). This may result from the theoretical way of teaching used in teacher education programmes that is a sequence of the lack of teacher educators and trainers practical ability, or to the large number of students involved in classes and workshops, or even to the lack of facilities and workshops in the teacher education institutions.

Regarding the current situation relating to PVE teachers' use of workshops, some of the interviewees raised the problem of the size and facilities of the current existing workshops. These workshops occupy a large floor area and extensive facilities. This renders the workshop a burden on schools particularly if the lack of the teachers' competence to use and manage the workshop is taken into consideration. One of the teacher trainers, who had a long experience in PVE and its workshops, explained this problem as follows:

'The question of the workshops raised a lot of argument. Do we need a workshop to implement the PVE curriculum? Actually we need a workshop for PVE, but without those complex devices and large areas. Previously, there have been workshops, established in some schools with very large areas and huge amount of facilities, but after evaluation those workshops have been found to be an extra burden on schools. Schools were found using these workshops in the easiest way, but not the actual required use. This is only to show the responsible persons that they (the schools) use the workshops. This is due to the fact that there is a weakness and shortage of the teacher's abilities in this issue. PVE can be implemented with workshops with smaller areas and fewer facilities'.

This indicates that although workshops are important for the delivery of PVE, they are not being properly used at present. The main reason for this is the lack of the teachers' abilities to use facilities effectively, particularly when taking into account the variety of the curriculum fields, which require a variety of skills from the teacher. This is not the only problem that hinders the effective use of the workshop. One of the supervisors emphasised this and added other problems:

- 1. the multiplicity of the fields of the curriculum, which implies different types of skills to be acquired by the teacher;**
- 2. the lack of the teachers' abilities and competencies regarding the use of the workshop facilities and its management;**
- 3. the lack of the raw materials: devices for the workshop are packed in their boxes due to the lack of the training materials;**
- 4. the large number of students in each class, which demands certain administrative aspects and teacher's abilities to manage to use different training approaches in order to utilise the workshop facilities and the lesson time effectively;**
- 5. the shortage of time, so the teacher cannot achieve the objectives, because the number of lessons allocated for PVE is insufficient to achieve its objectives'.**

The lack of consumable materials in the workshops raises the problem of budget limitations and the portion of the school budget (15 per cent, as interviewees mentioned) allocated for PVE to buy its requirements. This amount needs to be increased and the MoE should supply the school with materials and devices based on realistic plans of what can actually be implemented in schools, since some of the

facilities have never been used while the subjects implemented face a lack of materials. Moreover, the large number of students in each class is one of the main problems that hinder the effective implementation of PVE in terms of effective practical training. It is intuitive that the most effective way to train in practical skills is to train students individually and to give each one of them the opportunity to practise the skills (MoE, 1990a) but having a large number of students requires the use of 'group training' methods. Group training may be hindered by the lack of facilities if a large number of students is to be trained simultaneously in the same skills. This forces the teacher to train different groups of students in different skills using different facilities (workstations), but this demands the existence of more than one teacher to help in organising, observing and demonstrating different skills to the different groups (Obali, 1990). According to Obali, this is the most convenient solution if actual training is to take place, and the other problem of shortage of time has to be taken into account in solving the problem of large number of students in the workshop, but it is essential to report that practical training cannot be done if PVE is delivered through separate lessons of forty-five minutes each, since skills need a long time to be demonstrated, practised and then evaluated.

The results revealed that a teacher's lack of ability in use of the workshop is one of the main hindrances that lessen the efficiency of the workshops, see also Section 1.2.10, pp. 51-56. The interviewees focused on the aspect of awareness of the importance of the workshop for the delivery of the curriculum content, which indicates that the teacher must not confine the subject delivery to the theoretical content. Provided that the teachers are aware of its importance, they need a wide variety of abilities to use and manage the workshop.

Relating to all the aforementioned problems, it is obvious with regard to teacher training that understanding the workshop in its relationship to the curriculum is important. Then, systematic training of teachers for all specialities based on actual needs should be conducted. Without this, workshops will remain as a burden on schools and 'their materials and devices will remain in their boxes' as some of the interviewees emphasised.

11.2 The Competencies Required of Teachers to use the Workshop

Teachers need a variety of competencies in order to use workshops effectively. They include the use of particular teaching skills and methods required for training in practical skills, in addition to supportive competencies in using and managing workshop. The following sections will analyse perceptions regarding these competencies.

11.2.1 Training Abilities

Training in practical skills using the PVE workshop requires particular abilities of the teacher. Interviewees mentioned the following abilities:

- the ability to use the workshop facilities effectively and efficiently. This means, at least, the teacher should be able to train students to achieve the required competencies using the workshop tools, equipment and materials;
- the ability to deal with students taking into consideration their individual differences, and helping them in decision making and problem solving;
- awareness of safety precautions in the workshop. This ensures the teacher's ability to train the students in safe methods;

- the ability to manage the area and schedule of the workshop, distributing students into groups, using the work-station approach to train different groups in different tasks simultaneously, in addition to the individual training methods;
- preparing products to be taken as models for the students, because seeing the final products of exercises (according to the interviewees) motivates the students, at this early age, to perform the exercises.

Therefore, PVE teachers and supervisors perceived the competencies included in this field to have high degrees of relevance and importance. Moreover, teachers face many difficulties because of the required ability to use and manage workshops. The quantitative data emphasised the aforementioned competencies and added more competencies of the teacher to use and manage the workshop. These competencies include the following:

Utilising the local environment:

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
25	Utilising the local environment to enrich the facilities of the workshop.	F	136	13	129	13
		P	93.8	100.	95.6	100.

Because PVE is a subject that deals directly with the practical requirements of the student's life, and because of the flexible nature of the subject, in addition to the inability of the MoE to supply the workshop with all the required facilities and materials, the teacher is required to manage and use the local environment to deliver practical exercises. Students can provide some of the requirements from their homes; waste materials of the local vocational establishments could be utilised in addition to

low-cost and no-cost materials (MoE, 1990a). This could be the most effective way to provide training in subjects like agriculture, some of the first-aid tasks related to environmental dangers, and food preparation and storage. The perspectives of teachers and supervisors on the effectiveness of environment utilisation were reflected in the high percentages given to the relevance and importance of this competency. However, 6.2 per cent of the teachers perceived this competency as irrelevant and 4.4 per cent of them perceived it as unimportant. Confining the delivery to theoretical information only could be indicated from such perceptions.

One of the requirements of the teacher regarding practical skills is to use the tools, devices and training materials effectively.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
26	Using the workshop tools, devices and materials effectively and efficiently.	F	143	13	136	13
		P	99.3	100.	95.7	100.

It is worth mentioning that tools and devices of the workshop for teaching in the medium basic stage (grades 5-7) are simple and mostly manual (see Appendix 2), but requirements for training units in the higher basic stage (grades 8-10) are complicated and differ according to the selected training units. This should be carefully considered when training the teacher (pre-service or in-service) in using tools and devices. Also the level of skills included in the curriculum should be taken into account, where the aim of the entire PVE provision is to acquaint students with practical activities not to equip them with employable skills (MoE, 1990a). This does not mean that the skills that are included in the curriculum are the only needs of teachers. They need deeper practical abilities. However, this should be carefully designed in accordance to the period of the

teacher training programme and the expectations of the PVE curriculum. Teachers and supervisors concentrated on this competency, which implies many competencies in the different fields of the curriculum. Therefore, the teacher education and training should realistically reflect the demands of the curriculum in equipping the candidates with practical abilities to use the facilities of the workshops. Supervisors complained about the teachers' abilities in this regard. A male supervisor said:

'...The workshop is an extra burden on the school because teachers are not able to use its facilities'.

Teachers' perceptions have been affected by the educational environment. They find themselves in difficulty regarding the use of the workshop. So a high percentage of them perceived this competency relevant and important.

Using different training approaches:

To train in practical skills, the teacher should use different training approaches, and choose between these approaches according to the type of skills, the available facilities, and the number of students. The different approaches could be summarised in the competencies 27-30,

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
27	Using the workshop, adopting the individualised training approach.	F	110	10	66	13
		P	77.5	76.9	60.0	100.

Interviewees emphasised that the effective training in practical skills demands individual practice of these skills. This individualised training is not widely available in Jordanian schools. Competency of the 'use of individualised training approach in the workshop' was perceived relevant by only 77.5 per cent of the teachers and 76.9 per

cent of the supervisors. These relatively low percentages may be due to the rare use of this approach because of the large number of students in classes in the Jordanian schools (Al-hadidi, 1994). This makes it difficult to practise skills individually within the only two lessons (forty five minutes each) allocated to PVE in the school week, and the lack of facilities and training materials (Tweisat, 1998). The absence of the individualised training in PVE could mean that students do not effectively acquire the desired skills, or even a degree of acquaintance with the activity. In such cases, the teacher should find alternative methods of training to enable the students to acquire the desired practical skills. Surprisingly, only 60 per cent of the teachers who considered it relevant perceived this competency (of using individualised training) as important, which might mean that the teachers make the students practise skills collectively (in groups) or do not practise skills at all. However, supervisors were highly aware of its importance, and all of the supervisors perceived it relevant and important. Interviews results confirmed this when interviewees emphasised the importance of training the students in skills. An experienced supervisor participating in curriculum development said:

‘There is a range of skills to be acquired. Students should be trained in them *individually or collectively*’.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
28	Using the workshop, adopting the group training technique.	F	137	13	130	13
		P	98.6	100.	94.8	100.

Because of the lack of facilities, large number of students in workshops, the shortage of time allocated for the subject, and maybe the target of PVE which is only to acquaint students with practical skills, teachers are forced to make the students practise skills in groups, not individually. But (as interviewees stated before) the teacher needs the skills

of group management to ensure that all members of the group have the chance to practise skills and to be able to use individual assessment of the students' work. This method of training is widely used in PVE. All supervisors and 98.6 of the teachers perceived it as a part of the teacher's work, and it was perceived as important by a high percentage of the teachers (94.8).

Although it is difficult to ensure that all members of the group have acquired the required skills (Obali, 1990) group training has a range of advantages in that it enhances collaboration between students and the exchange of expertise among them. This makes students partially responsible for creating, monitoring, and evaluating their progress (Boyer, 1995).

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
29	Using the workshop adopting the work-stations approach (Using certain facilities to train students in specific tasks then to transfer them to another work-station to be trained in another task rotationally).	F	124	13	107	13
		P	88.6	100.	84.9	100.

If groups in the workshop cannot practise the same tasks (skills) simultaneously, the teacher can make the different groups practise different tasks using different facilities (work-stations). This could increase the effective utilisation of the workshop (Obali, 1990). Competence in the use of the approach of work-stations in the workshop was perceived irrelevant and unimportant by relatively high percentages of teachers (11.4 and 15.1). This may be due to the impossibility of using work-stations in the school workshops because of the lack of another teacher to help to manage the workshop and train students at different work-stations simultaneously. Using this approach, students

are divided into groups; each group is trained in a separate task on a rotational base. This requires different managerial skills for the teacher and other teachers to contribute to training (Obali, 1990).

Whatever the requirements are, the most convenient solution to the problems of 'short time allocated to PVE, lack of facilities and large number of students' is to use the 'work-stations' approach. Teacher education and training programmes should equip the teacher with the skills to use this approach. These skills include the way to classify the facilities according to the subjects they serve, divide students in groups, schedule the training based on the size of groups and the required time to do each task in each work-station, and how to manage the different groups during training (Obali, 1990).

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
30	Carrying out demonstrations of different types of practical tasks (exercises).	F	135	13	127	13
		P	94.4	100.	94.0	100.

According to Olaimat (1991), in most of the approaches used in training the teacher needs to demonstrate skills in front of the students. This requires the teacher to perform these skills confidently, since the teacher is the exemplar in his/her performance. It also demands the preparation of the demonstration in advance. This helps the teacher to be sure that the required results will be achieved with the available facilities. Also, the teacher should master the rules of demonstration, its specific procedures and class management during the demonstration. This is the reason why 94.4 per cent of the teachers perceived it as relevant and 94.0 per cent of them perceived it as important. Demonstration is usually used in conjunction with other methods; however some

teachers were defensive. 11.3 per cent and 14.9 per cent of them perceived it as irrelevant and unimportant when demonstration was combined with lecturing in competency number 6 in Chapter 9.

Demonstrations are widely used in PVE training (Salamh, 1994). However, students should practise the exercises by themselves, and the teacher should not consider the demonstration that he/she does as the whole training process, because this would not be sufficient to break the boundaries between students and practical skills. Due to the lack of time, overcrowding of the classroom/workshop, and the lack of adequate facilities, some teachers considered that demonstration of skills for students is sufficient to achieve the objectives. This factor may be one of the reasons that prevent PVE from achieving its objectives in equipping students with skills and motivating them towards more individual practice outside the workshop.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
31	Managing workshop time and space with the number of students.	F	131	13	124	13
		P	92.9	100.	94.7	100.

The workshop is usually used for different methods and approaches, so the teacher should be able to effectively manage the time and the space of the workshop according to the approach used and the number of students. This competence is essential for PVE teachers in Jordan because it was reported that large numbers of students are usually involved simultaneously in the training process. Also the time allocated for the subject is too short, and the structure of the workshop is divided between different fields of the curriculum (Salamah, 1994; Al-hadidi, 1994). So the teacher should be flexible in

managing the time and space of the workshop using different methods to make sure that all learners have the chance to practise the required skills.

11.3 Applying the Safety Rules in the Workshop

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
32	Applying the general safety rules (guards) in the workshop	F	140	13	140	13
		P	99.3	100.	100.	100.

The most important competency in the field of the workshop, perceived by PVE teachers, was the 'applying of the general safety rules in the workshop'. This perception is logical since PVE is a practical subject, which requires dealing with tools and machines. In this regard, the teacher needs to draw the students' attention to safety rules about using the workshop regarding movement in the workshop, use of tools and materials, and to teach the students the safest ways of doing the exercises. Moreover, the teacher is responsible for keeping the conditions of the workshop area safe for training in terms of light, ventilation, temperature, fire fighting systems, cleanliness and avoidance of slippery materials on the floors. Derived from the interviewees responses, safety has two main dimensions to be taken into consideration

a) Safety of the workshop and its facilities in terms of:

- keeping up the building in good condition;
- storing devices in proper ways to guarantee their proper life-spans;
- storage of the materials in proper ways to guarantee performance within the desired specifications, and safety from damage by heat, fire, moisture. This also includes the measures taken to avoid serious accidents.

b) Safety of the students during training

This implies the following tasks for the teacher:

- **knowing how to maintain hygiene in the workshop, in terms of ventilation, tidiness and light intensity and distribution;**
- **knowing how to train students to be careful in their behaviour in the workshop and how to use the workshop facilities like electricity, water, pressurised air sources and other facilities;**
- **knowing how to train students to use tools in proper ways to guarantee that they will not injure themselves especially when using sharp-edge tools and moving or rotary machines;**
- **knowing how to train students in dealing with and handling materials in a safe way.**

Zaitoon (1988) reported that a lack of safety provisions in science laboratories is one of the hindrances to practical laboratory work. This factor is important for PVE teachers delivering a practical subject, where there is a need for safety in the workshop and for training teachers in maintaining safety. DATA (1995) identified the competency of 'maintaining a safety working environment and to teach pupils the safe use of machinery' as one of the competencies of new qualified teachers of Design and Technology.

11.4 Maintenance of the Workshop Facilities

All of the interviewees stated that the PVE teacher is the only person responsible for the maintenance of the workshop equipment, devices and tools. At the same time, they said that the teacher is responsible for the routine preventive maintenance and repair of simple faults in the equipment in order to maintain the desired life span of the workshop tools. However, the interviewees stated that high technical maintenance is not the

responsibility of the PVE teacher. The results of the interviews indicated that the current situation of PVE teachers, in terms of their abilities and fields of specialisation, affected interviewees' responses. This appears through the following concerns that they raised:

Some interviewees emphasised that the extent to which the PVE teacher can contribute to the above mentioned maintenance, depends on his/her original field of specialisation, that is the teacher with an industrial background can undertake maintenance more effectively than those whose fields are business or agriculture. This factor was raised because of the variety of the backgrounds of the current PVE teachers.

Some interviewees emphasised the necessity of training courses in maintenance to improve the teachers' abilities to undertake maintenance of the workshop equipment and facilities. This is because teachers maintain most of the non-complicated facilities of the workshop. However some interviewees stated that if teachers are competent in the competencies included in the curriculum, then they are able to carry out the preventive and routine maintenance tasks in the workshop. An experienced male supervisor participating in curriculum development and teacher training said:

'There are some devices that the teacher cannot maintain, and he should not rush himself in the maintenance of such devices if he lacks the required skills. But if the teacher was trained adequately and properly for the requirements of the PVE curriculum, then, I believe, he would be able to do majority of the required maintenance processes'.

This implies that if the teachers are competent in all the requirements of the curriculum, then they do not need any particular courses for the sake of marginal maintenance jobs. This may be true for the perspective teacher who is prepared based on realistic curriculum expectations of practical capacity. However, teachers who currently teach the subject need to be trained to be able to undertake maintenance of workshop

facilities. Moreover, a comparison between the curriculum competencies and requirements of the workshop maintenance will identify the additional training needs of teachers, if these exist.

11.4.1 How Teachers and Supervisors Perceive the Maintenance of Workshops

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
33	Maintaining the facilities of the workshop, its tools and devices.	F	116	13	114	13
		P	81.7	100.	98.3	100.

The most important competency, according to the supervisors' perceptions, was the competency of 'maintenance of the workshop facilities'. This may be due to the views of supervisors of the need to maintain the workshop facilities ready for training. Also it could be due to the chronic failures of the workshop facilities that they observe as supervisors because of the lack of teachers' abilities to undertake maintenance and the ineffectiveness of the school system to correct failures in time because of routine administrative procedures (Salamah, 1994; Al-hadidi, 1994). Only 81.7 per cent of the teachers in the sample considered it relevant to their work. This is due to the lack of the ability of the current teachers to maintain all the workshop facilities. This indicates a rejection, by some teachers, of this responsibility because it adds a further burden on the teacher. However, as mentioned before, the results of the interviews show that the PVE teacher is responsible for the maintenance of the workshop facilities, but not to the extent of maintaining advanced technological devices. The teacher is only required to repair simple faults and to undertake preventive maintenance of the equipment the workshop. However, teachers should be given as much free time as possible to be involved in teaching/learning activities, and it is useful to reduce their marginal

responsibilities such as maintenance. This recommendation was also shared by Al-Hadidi (1994).

98.3 per cent of the teachers perceived 'maintenance of the workshop' to be important. This reflects that without some ability to undertake maintenance of workshop facilities, the training process cannot be continuously effective, because any tool, device or machine used will fail from time to time. So maintenance abilities are essential for the teacher in using the workshop effectively, particularly because no other people are provided in the Jordanian school system to undertake such tasks (Al-Hadidi, 1994). This puts further demands on teacher education and training, to equip the teachers with abilities to undertake certain level of maintenance of the school workshops. However, it was emphasised by the interviewees that if teacher education and training programmes equipped the teacher with the appropriate curriculum competencies, then no particular maintenance training is required.

11.5 Management of the Workshop

In the current situation in schools the PVE teacher is responsible for management of the workshop, because there is no other person in the school who is suitably qualified to do so. To manage the workshop is not an easy task. It has different dimensions and requires different abilities. The interviewees suggested the following managerial abilities needed to manage the workshop.

- the ability to keep acceptable working conditions in the workshop in terms of its lighting, ventilation, heating, and the general appearance;
- organising the workshop benches according to the training methods used;

- classification and maintenance of tools, equipment and materials in proper condition in terms of storage and readiness for use;
- keeping workshop records regarding stock-entry, stocktaking, consumable materials, damaged facilities and updating of these records. This is in addition to undertaking the annual stocktaking and the inventory control;
- organising the distribution of the workshop tools to the student groups using standard forms to document rotation of tools between groups of students.

Regarding the current situation, interviewees stated that teachers usually have problems of stock-control during the annual auditing of the stock by the MoE, Department of Auditing and Financial Administration. So interviewees emphasised the importance of training of teachers in these administrative issues. If not, as interviews indicated, teacher motivation will be affected negatively since penal actions usually affect the teachers' grades in the annual assessment report on their performance. Moreover, if the teacher becomes afraid of a penalty due to mistakes in stock records, he/she will be very cautious about allowing the students to use the workshop facilities, an action that hinders the training process. This suggests adding an appropriate course in teacher education and training, but the content of such a course should be carefully designed to focus on the skills required and not to go far into theory or to give irrelevant skills at the expense of other components of teacher training programmes. In the researcher's point of view, the required knowledge and skills could be integrated with the subject matter of some of the units of business education, as this will prevent unnecessary repetition of some relevant topics.

The teacher should keep the workshop organised and ready for training. In this regard, the teacher needs to fulfil requirements that will be outlined below.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
34	Organising the workshop (to put each of its contents in the suitable place).	F	143	13	140	13
		P	98.6	100.	98.7	100.
35	Keeping up the tools and devices in proper ways.	F	144	13	140	13
		P	99.3	100.	97.9	100.

The high percentages of teachers and supervisors indicating the relevance and importance of such tasks reflect their necessity for effective use of the workshop. These two competencies involve the skills required to maintain the workshop for effective training. The teacher needs to know the divisions of the workshop, facilities of each division, and how to organise these facilities according to their use. Additionally, the teacher should be able to store the facilities of the workshop (tools, devices, materials) in appropriate ways that maintain these facilities in good conditions and ready for use, and to maintain the specifications of the materials through safe storage.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
36	Managing the workshop records, arranging the list of the stock taking of the inventory.	F	133	13	126	13
		P	93.7	100.	94.7	100.

Teachers face many problems because of the mistakes they make in managing the records. Thus, some of them (6.3 per cent) considered this task as not a part of their work. This could indicate that teachers hope to be free from this responsibility. That is because it adds a further burden on them and, sometimes results in penalties for them

since they are not well-equipped with the required skills to manage the workshop records. This hope was also reflected in the view of 5.3 per cent of the teachers who considered this competency as unimportant.

11.6 PVE Teachers' Role in Purchasing of Workshop Requirements

As interviews and documents indicated, some of the material requirements for PVE implementation are not currently available in the workshop, and are not supplied from the central stores of the MoE. To purchase these requirements, schools can use a portion of their budgets that mainly comprise the students' fees. The PVE workshops require various materials for training and maintenance. The PVE teacher is responsible for purchasing some of these requirements. The interviewees summarised the tasks of PVE teacher related to purchasing in the following way: the teacher should prepare the list of the requirements for PVE (quantities and specification) at the beginning of the academic year (this helps in buying them from the school's budget, if not offered by the Ministry of Education); the teacher should also participate in preparing tenders, receiving offers, and selecting between offers (this demands knowledge of the market to decide where to purchase the workshop requirements). Moreover, the teacher is responsible for recording the purchased materials, and dealing with the financial aspects. Although the tasks of purchasing do not imply very special or high level skills, the interviewees summarised the required skills of the teacher to undertake tasks regarding purchasing as follows: skills of communication and human relationships to deal with the other people inside and outside the school; skills of management of committees and meetings; simple skills of bookkeeping and accounting; and simple skills of budget preparation.

11.7 PVE Teachers' Contributions to the Maintenance of School Facilities

In the pilot study, the majority of the PVE teachers mentioned the maintenance of the school facilities as the second task after teaching in the curriculum delivery (see Appendix 5). This demands investigation into the reasons for the origin of this task, the rules that govern its undertaking as a marginal task of the teacher and how it could be utilised to serve the delivery of the subject which is the core task of the teacher.

As interviews indicated, the problem of maintenance of the school facilities has been a matter of debate. In the current situation, PVE teachers are asked (either explicitly or implicitly) to contribute to maintenance of schools facilities. This is usually done either by the teacher himself or by employing the students to do it. According to the opinions of the interviewees, what makes this issue more problematic is the tradition of head teachers, in their evaluation of PVE teachers' performance, focusing on the maintenance efforts that teachers do more than concentrating on teaching performance. Results of the interviews revealed some areas of agreement and others of disagreement. Some interviewees said that it is essential for the PVE teacher to undertake maintenance of the school facilities, while others said that it is not an obligatory task. However, all the interviewees said that maintenance should serve the curriculum activities, and should be part of the long-term and short-term plans of the teacher. They stated that the maintenance tasks should appear in the teacher's annual and term plan, and should be confirmed with the head teacher. Moreover, as some interviewees mentioned, the teacher should construct flexible and rotational student teams for maintenance of the school facilities. It was mainly supervisors who raised this issue, which indicating that they agree on using the students for maintenance. This practice means that maintenance is currently used as 'maintenance for the sake of maintenance' and students are

exploited in doing such tasks. But the right principle and practice is to utilise maintenance to serve the curriculum as a learning activity if the teacher has the required abilities to organise and control such activity.

Some interviewees stated that every maintenance task should be analysed into its branch skills in order to ensure that it will serve curriculum objectives, and students should not be employed for any task that does not have educational objectives. However, maintenance could be a real opportunity for the students to be trained in a more practically-oriented environment. Some interviewees went further in their expectations of maintenance of school facilities in terms of learning and financial outcomes. One of the male experienced curriculum developers said:

‘Pre-vocational education is an independent subject. If we want to maintain the schools facilities, this takes a lot of time. But it is possible to use maintenance as one of the local environment resources to implement the curriculum, and to render maintenance as a learning process not only a service process. We should render PVE as a sort of preventive maintenance to reduce the corrective maintenance, which needs a lot of time and money. This is subjected to serve the curriculum activities and its objectives, and not to affect the time required (allotted) to do the other curriculum activities and objectives’.

Another curriculum developer working in teacher training said:

‘The school facilities could be considered as local environment resources that should be employed to serve the curriculum activities (not the opposite). I don’t want to exploit the students for the school maintenance randomly and blindly... But every project undertaken by the students should be prior planned, and it should have its own specific educational (learning) objectives. This could be done through the analysis of such projects into their tasks and skills. These skills should be explained to the students as required learning-products from maintenance, and the teacher should be aware of the students’ roles and how they can do these projects. In summary, students should not be exploited to undertake the schools maintenance without educational return’.

It could be concluded that to achieve these expectations maintenance is required to be a well organised and planned process, something that is difficult to achieve in Jordanian schools. Although maintenance of school facilities has the advantages of serving curriculum implementation and making a financial saving for the school, the main issue regarding the current situation is the teacher's abilities and teacher's background speciality. Not every teacher can do maintenance or teach it, because some teachers are specialised in fields not relevant to maintenance. For example, some teachers have diplomas in business, home economics (females), and other specialities. It could be said that the only teachers who can do maintenance are those who are specialised in industrial fields. Based on that, to count maintenance as one of the responsibilities of the teacher is unfair, because they are not able to do that and it is not a fundamental component of the curriculum. Additionally, if maintenance counted as a teacher's responsibility (even to serve the curriculum) its dimensions and activities should be identified to make it possible to determine its implications for teacher training. Regarding prospective teachers, it is essential to have a clear job description of the main and subsidiary tasks to be effective in teacher preparation (Avolas, 1991b).

In addition to the practical capacity of the teacher, the maintenance in this sense (as concluded from the last quote) requires different tasks for the teacher. These include:

- planning of maintenance as a service project for the school;
- planning of maintenance as learning activity, which demands analysis of the tasks and skills included, in addition to planning of the maintenance in long and short-term plans of the teacher and time location of its activities in the school time and time allocated for PVE. Maintenance should not be undertaken at the expense of the other activities of PVE;

- execution of maintenance taking into account the students' roles as learners. This requires a careful determination of the activities to be undertaken by students considering their physical abilities, their safety, and the desired skills to be acquired.
- maintenance tasks undertaken in the workshop by students should be recorded in a special record to be monitored, whenever required, in order to be utilised in planning other activities in the future;
- the PVE teacher should be exposed to more training in planning and execution of maintenance tasks. This needs some practical manual skills to be acquired.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
37	Contribution to the maintenance of the school facilities.	F	127	13	117	13
		P	87.4	100.	95.1	100.

Teachers' perceptions indicated a hope of being free of such tasks, because it is not usually oriented to serve the curriculum, and it places greater burdens on the teachers. Therefore, around thirteen per cent of the teachers perceived it as irrelevant to their work. Contribution to the maintenance of the school facilities was perceived as important by a high percentage of the teachers who perceived it as relevant. This may be due to the tradition of the school head teachers in PVE teacher's assessment, that is the head teachers give PVE teachers high marks in the assessment of their performance if they contribute to the maintenance of the school facilities regardless of their teaching performance. The results of the interviews show that PVE teachers would be happy to contribute to the maintenance if this served the curriculum delivery, and was not just for

the sake of maintenance. However, the teacher's background speciality is one of the main factors that determine his/her ability to undertake maintenance.

Summary

This chapter has analysed the importance of the PVE workshop, and the competencies required for PVE teachers to use it. These include how to use the facilities, different teaching approaches, maintenance of the workshop, and applying safety measures in it, in addition to management of its records and purchasing of requirements. Generally, teachers' perceptions of competencies in using the workshop indicate that students do not practise skills individually and teachers themselves are not able to use flexible methods that enable them to utilise the time and facilities effectively and efficiently. But perceptions regarding the importance of the competencies of this field indicate that more attention needs to be paid in teacher education and training programmes to the teacher's abilities in the use, maintenance and management of the workshop.

Chapter Twelve

Competencies of Pre-Vocational Education Teachers in Subject Application

Introduction

Competencies in 'subject application' are mainly concerned with the teachers' abilities and tasks that enable them to deliver the subject in an effective way leading to the achievement of the curriculum objectives. These competencies include the ability to enrich the curriculum, 'personal abilities', and undertaking the vocational guidance activities required for PVE.

12.1 The Competencies of PVE Teachers in 'Enrichment of the Curriculum'

Competencies in this field are, to some extent, particular to PVE teachers, since they are implied by understanding of the PVE curriculum philosophy and its flexibility, which requires the teacher to enrich all the components of the curriculum in a way that helps to achieve the general objectives. The teacher needs to analyse, modify, supplement, integrate and use accompanying activities in order to be able to satisfy curriculum aims to achieve a variety of objectives, sometimes, without prescribed activities.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
38	Enriching the different elements of the curriculum (objectives, contents, media, approaches, and assessment)	F	128	13	120	13
		P	88.9	100.	83.7	100.

The competency of 'enriching of the different components of the curriculum' was perceived as important by 83.7 per cent of the teachers (40.6 per cent of them perceived it very important and 43.1 per cent considered it important). This is another indicator of

the abstract delivery of the subject by some teachers, which mainly depends on delivering the content of textbooks. This tradition of teaching could be attributed to one or more of the following factors: lack of time, lack of understanding of the philosophy of PVE, the demands of head teachers and supervisors for completion of a certain proportion of the content, or the teachers' lack of motivation.

Interviews indicated that the teacher needs this competency because of the flexibility of the curriculum and the variety of the objectives to be achieved. The curriculum provides guidelines, a teacher's book and a student's book in the middle basic stage (grades 5-7), but gives the teacher the responsibility for selection of exercises, teaching approaches, the accompanying activities, and the linkage between the specific and general objectives. Thus teachers should use these to build the experience that could achieve the objectives in all dimensions of learning. Effective enrichment of the PVE curriculum implies other competencies for the teacher. These are included in the competencies 39-45.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
39	Relating sub objectives of the lessons with the general objectives of the curriculum.	F	132	13	127	13
		P	91.7	100.0	96.2	100.

Pre-vocational education aims to achieve a variety of objectives apart from practical abilities. As interviews indicated, the teacher needs to relate the content delivered to the general objectives of the curriculum that aims to contribute to the development of the student's personality, values and attitudes. Some of the teachers considered this competency as irrelevant to their work, a perception that reflects the abstract delivery of skills. Therefore, there is a need for greater awareness of the general objectives of the

curriculum and the ways through which teachers can make the specific objectives serve them. This also demands that teacher education and training programmes should make the teachers aware of their role in achieving these objectives and to equip teachers with the skills of planning, organising and executing this task. According to Chown and Last (1993) such a competency is required should be achieved and assessed in the situation in which it is applied in order to ensure the suitability of action that is taken.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
40	Analysing the curriculum (units and subjects) into its main elements.	F	125	13	114	13
		P	86.8	100.	91.2	100.

A non-prescriptive curriculum, like PVE, needs to be analysed in order to deliver it effectively (Olaimat, 1991). This analysis involves understanding of the details of subjects and units. This enables the teacher to control the teaching/learning activities and to relate them effectively to the general and specific objectives. The teacher should be able to analyse jobs and tasks into simple skills in order to design the teaching activities and to organise them in a logical sequence, and to break down the lessons into simple objectives and skills that can be achieved within a reasonable period of time, particularly because PVE has a relatively short allocated time in the study plan and its level of topics is graduated according to the grade. Obali (1990, p. 202) also argues that teachers cannot design the assessment tools of the teaching/learning outcomes, particularly for practical skills, without such an analysis.

Perceptions of some teachers of the irrelevance and unimportance of the competency in analysing the curriculum (13.2 per cent and 8.8 per cent of the teachers respectively) could reflect the teachers' approach to dealing with the curriculum. This suggests that

these teachers do not analyse the content they teach before they design their activities, an approach that could lead to an unplanned way of delivery that does not take into account the intended learning outcomes.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
41	Identifying and using the references relevant to the curriculum.	F	117	13	102	13
		P	81.8	100.	86.4	100.

81.8 per cent of the teachers considered the competency of 'identifying the references relevant to the curriculum' as part of the teacher's work. This is because teachers use the textbook as the only source of knowledge and believe they should stick to it. This will not work in the case of PVE if different aspects are required to be taken into account in delivering the curriculum (the students' needs, the facilities, the required introduction to technology, the locality and the environmental needs). The percentages of teachers who considered this competency irrelevant and unimportant reflect a misunderstanding of the teacher's role in the context of PVE. This problem demands that in-service teacher training programmes pay attention to such a component in order to make teachers aware of their role in understanding the philosophy of the subject. One of the curriculum developers emphasised that teacher preparation and training programmes should equip teachers with the understanding that the curriculum is open and it is one of their roles to add some topics and to use other sources of knowledge. He said

'The teacher education and training programmes should make the teacher acquire the understanding and abilities implied by the curriculum nature and its philosophy. Teachers should understand that the PVE curriculum is open and flexible, and they should insert new topics or modify others using other resources of knowledge'.

In the context of vocational education in Europe, Kauppi (1997, p. 2) stated that teacher education should guide and support teachers' development into the direction of guiding and supporting students' learning and development taking into account the challenges arising from working life and society in general. Kauppi identified teachers' self reflection and research into their own activities, students' activities, life and society as one of the teachers' tasks.

It is worth stressing that although the ERP identified the role of 'researcher' as one of the roles of the teacher in Jordan (Al-Khateeb and Al-Nabhan, 1996), teaching in schools has not been research oriented even at the level of using references to enrich curriculum content. This is due to the traditional view that teachers have of their role as only to transfer knowledge, because of the heavy teaching load, and the belief that all knowledge needed is prescribed in the textbooks. Also the traditions of teacher education programmes in Jordan have not been successful in changing the thinking of teachers who are currently prepared or certified in the universities (Al-Khateeb and Al-Nabhan, 1996; Al-Smadi, 1999).

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
42	Considering the integration between the PVE curriculum and the other relevant educational subjects.	F	119	13	110	13
		P	82.6	100.	91.7	100.

As shown in the table above, more than 17 per cent of the teachers saw this competency of 'considering the integration between PVE and the other school subjects' as irrelevant to their work, and 8.3 per cent of them considered it unimportant. This could indicate that teachers do not have adequate interest in utilising PVE to show the relevance

(function) of the other school subjects, which is one of the main general objectives of PVE. In this regard, some PVE topics are based on knowledge of other subjects. Perceptions of the irrelevance and unimportance of this competency reflect that teachers do not ensure the students' acquisition of these required experiences. Also it indicates that teachers need to widen their basic understanding of subjects in the curriculum that would enable them to integrate PVE with other relevant subjects, an idea that was also emphasised by Batarsah (1994). This widening of the theoretical understanding of the teacher requires teacher education to be far away from the 'behaviouristic' construct of competency that focuses only on skills and which is generally not acceptable for teacher education (Tilbury, 1993). It could be concluded from these ideas that teacher education and in-service training programmes should equip the teacher with the required understanding of the relationships between PVE and other subjects. Additionally, the teacher should be trained in the provision of examples of integration in a real educational environment. DeMiranda and Folkestad (2000) argued that this requires teacher educators to understand such integration and to be able to train the student teachers in it. Moreover, the teacher should understand the concept of co-operation between different teachers to achieve this target. Guiding students towards discovering the relationship between PVE subjects and the other subjects enhances their motivation towards learning both.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
43	Adopting rational bases to select the subjects to be taught according to the students' needs and available facilities.	F	122	13	113	13
		P	84.1	100.	92.6	100.

Competency in 'consideration of the students' needs and the available facilities in the delivery of the curriculum' was seen as relevant by 84.1 per cent of the teachers. 7.4 per cent of them perceived it as unimportant. This again indicates the over-reliance on textbooks in PVE teaching. Using textbooks as the only source of knowledge will not help to achieve the curriculum objectives. There is a hidden agenda of PVE (see Section 7.1.1, pp. 210-211), this agenda requires the curriculum to serve the students' life and to contribute to the establishment of desirable personal behaviour and to satisfy students' needs. This requires the use of a variety of activities and skills, and integration of the teaching with other components. Al-Barakat (2001) argued that this cannot be done effectively by depending on the content of textbooks only.

This competency demands the teacher's ability to study and understand the students' needs in the locality and to match these needs to the available facilities to deliver full-integrated exercises that enable them to achieve the specific objectives of the subject in the different fields. If flexibility of the curriculum is to be taken into account in conjunction with the 'locality's needs', the field of speciality of the appointed teacher in certain school areas needs to be considered carefully based on that locality's needs (see the quote below). Also the curriculum might need to be more general in the early stages if this factor is to be effectively taken into account. One of the female members of the curriculum development team emphasised,

'In my opinion, the curriculum should be more general, because what students need in a certain locality is different from what is needed in other localities. Thus, the specialisation of the appointed teacher should differ according to that'.

The basic abilities of the teacher in this sense are the awareness of the students' needs and interests, and the ability to analyse needs so as to identify the appropriate content of the subjects delivered to them.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
44	Selecting alternative exercises to those included in the textbook to be taught to students in certain cases.	F	132	13	105	13
		P	92.3	100.	79.5	100.

The competency of 'selection of alternative exercises to those in the books' was perceived as important by 79.5 per cent of the teachers who originally considered it relevant (92.3 per cent of the sample). This is also because of the commitment to the textbooks, which seems dominant in the curriculum delivery. According to the curriculum guidelines teachers need to select alternatives to exercises included in the textbooks when the available facilities are inadequate for the prescribed exercises (MoE, 1990a), when the students prefer another alternative, and when some students have a special need to undertake these exercises. To be able to select and execute alternatives, the teacher needs to understand the principles of the exercise and specific skills and attitudes required from such an exercise. This requires teacher education and training programmes to go beyond the abstract content of the textbooks in terms of the skills and knowledge delivered to the teachers in order to equip the candidate with the required flexibility in changing and modifying and selection of alternatives. More importantly, methods that are followed in teacher training should provide an exemplar for teachers in the management of curriculum delivery (Bramald et al, 1995).

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
45	Using suitable accompanying activities for the curriculum (field visits, local society activities and exhibitions).	F	134	13	116	13
		P	93.1	100.	87.2	100.

All supervisors considered this competency as relevant and important; such perceptions reflect the greater attention supervisors pay to accompanying activities since these activities have an important impact on the enrichment of the curriculum delivery. 12.8 per cent of the teachers perceived it as not important. This is another indicator that the abstract approach to subject delivery may lead to a neglect of the guidance and social aims of the curriculum. In the case of PVE, accompanying activities could play an important role in achieving such objectives. As interviews indicated, field visits could enhance the students' awareness of real vocational environments and activities in local society could show the function of skills and knowledge learned by the students. In these cases, the teacher can train students in specific skills, either vocational or social, that can contribute to personal development. According to Nasrallah and Al-Nabtiti (1995) exhibitions of relevant products, including those produced by students, could motivate the students to show more interest in PVE.

Perceptions of competencies in 'enrichment of the curriculum' could reflect a difference in the perspectives of the curriculum delivery between teachers and supervisors. This reflects the fact that supervisors focus on the role of the teacher in teaching the subject in a more integrated way and going beyond the delivery of content of the textbooks, while some teachers perceived the subject delivery as only practical training in specific behavioural objectives prescribed in advance. There are many indications that because of this abstract way of subject teaching, PVE does not achieve the aim of improving

attitudes towards vocational education (Tweisat, 1998). Therefore, teacher training must change the belief of the teachers that PVE can be delivered in the same way as any other subject, and should ensure an understanding of the role of the teachers as innovators and key decision makers in the delivery of PVE.

12.2 The 'Personal Abilities' Required for PVE Teachers

Although competencies included in this field seem to be common for all teachers, the hidden agenda of the PVE curriculum and the non-classroom activities required for its delivery imply particular tasks for the PVE teacher. Results indicated that the teacher needs personal abilities that will be discussed below.

The Teacher as a Researcher

The teacher usually needs to research in the sense that this research is used to improve the performance of the teaching/learning process in the environment of the classroom and school (AlKhateeb and Al-Nabhan, 1996; Attwell, 1997).

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
46	Undertaking the study and research that is relevant to improve performance.	F	94	13	81	13
		P	66.2	100.	84.4	100.

Competency of 'undertaking the study and research that is relevant to improve performance' was perceived as relevant by only 66.2 per cent of the teachers. The perceived this low relevance of this competency to the teacher's work is due to stereotyping of the teachers' work in Jordan, in which teachers have a belief that their role is only to transfer knowledge. This idea has been reinforced by the high teaching load of the teacher (Al-hadidi, 1994) and the concentration by education managers on

the delivery of the content of textbooks. Research is one of the roles emphasised by the ERP (Al-Khateeb and Al-Nabhan, 1996), but work conditions hinder the teacher from performing this role. However, the meaning of 'research' in this competency is related to the performance of teaching, which implies small scale studies conducted on the students, the school or the locality. For a long time, school teaching in Jordan has not been research oriented (Halawani, 1990). Making recommendations for vocational education in Europe, Attwell (1997, p. 264) stated:

'There is a recognised need for VET (vocational education and training) professionals to be able to undertake research activities in their field. New programmes (of teacher education) should develop the skills and abilities of students as practitioner-researchers'.

Professional Development

Teacher education programmes cannot equip the teacher with all the requirements of a successful teacher. Teachers need to develop their abilities utilising their own experience. Reflection on the teaching/learning activities, subject knowledge, and new pedagogical and curricular strategies is essential for self-development of the management of learning. Without that, the longer the experience of teachers the narrower their horizons will be (Attwell, 1997).

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
47	professional development in subject knowledge and education	F	131	13	109	13
		P	91.0	100.	90.7	100.

91.0 per cent of the teachers perceived the 'professional development' competency as relevant, and 90.7 per cent of them perceived it as important, while supervisors considered it as the most important competency among 'the personal abilities' of the PVE teacher. The perceptions of teachers who considered professional development as

irrelevant and unimportant indicate the way in which such teachers behave at school. They use the same stereotyped activities in their teaching and do not try to improve their abilities or reflect upon their experience. From the researcher's point of view, PVE delivery cannot be effective without a teacher being able to undergo professional development, because the curriculum is flexible and variable in its contents, philosophy and objectives. This implies that the teachers should learn from their experience and try to improve their abilities as they become more experienced.

General Personal Abilities

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
48	Maintaining positive relationships with the people working in the school.	F	141	13	134	13
		P	98.6	100.	95.7	100.
49	Co-operating with parents in the issues relevant to their children	F	132	13	126	13
		P	92.3	100.	94.0	100.

For both teachers and supervisors, the competency of 'maintaining positive relationships with the people working in the school' was perceived the most relevant to the teacher's work. This competency has a direct impact on the success of the teacher in his/her job and, in turn, has a great effect on general performance and the teacher's acceptance among people in the school. Co-operating with parents is a requirement of the teacher, since parents should contribute to the teaching/learning of their children. However, the PVE teacher has a special contribution to make in this regard, particularly in the issues that concern attitudes of students and their parents towards PVE (but some of them undermine this aspect, see the table above). Schools should arrange for communication with parents. As interviewees emphasised, it is the responsibility of the school to

provide systematic communication channels with parents to monitor the progress and general behaviour of students in the school, but parents in Jordan are generally careless about the situations of their children in the school because of the attitude that the school is responsible for everything at the stage of schooling (Al-hadidi, 1994). However, among other components, the value-added components of parental involvement as an educational intervention area comprises the specific experiences and skills of parents that bear upon the learning process and learning outcomes of methods and techniques acquired by parents, and the combining of parents as tutors and teachers into a teaching dyad (Wolfendale, 1996).

Personal Abilities Relevant to the Curriculum Delivery

Teachers of PVE need certain personal abilities that enable them to deliver the subject effectively, and to mobilise the curriculum to serve the students' general life. Those abilities could be summarised in the following abilities.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
50	Opening communication channels with the establishments related to PVE.	F	113	13	97	13
		P	79.0	100.	85.9	100.

More than 20 per cent of the teachers perceived this competency as irrelevant to their work and around 15 per cent of them considered it unimportant. This may be because of the lack of co-operation between schools and vocational establishments, possibly due to the lack of teachers' motivation and the hindrances from the administrative system. It requires a lot of procedures to undertake activities in co-operation with such establishments, (for details of necessity of these relationships Section 7.4, pp. 222-228).

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
51	Practising the role of the mediator teacher to help the teachers in the lower educational stages.	F	106	13	85	13
		P	75.7	100.	79.4	100.

The competencies of 'practising the role of the mediator teacher to help the teachers of the lower educational stages' was perceived of low relevance and importance by teachers. This low percentage indicates that each school subject is taught separately and there is a lack of integration between them, and co-operation between teachers is not widely practised. This may be due to the strict management rules in Jordanian schools that hinder real co-operation and teamwork between teachers, which, if it took place, would affect positively integration between school subjects (Demiranda and Folkestad, 2000). Also the teachers may not have time to co-operate in teaching subjects because of the lack of suitable time in the school day.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
52	Organising seasonal collective activities related to the curriculum.	F	121	13	107	13
		P	84.6	100.	87.0	100.

To achieve the target of vocational awareness, the teacher needs to organise collective activities in co-operation with establishments relevant to PVE, like vocational sites and guidance establishments. These collective activities may be attended by students and parents. The teacher needs administrative abilities and a degree of authority to undertake such activities. Lack of motivation, authority, time and administrative abilities may be the reasons behind the irrelevance and unimportance perceived by a relatively high percentage of the teachers.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
53	Adopting student activities with financial return	F	92	13	58	13
		P	65.2	100.	62.4	100.

This competency of 'adopting student activities with financial return' had the minimum relevance (65.2 per cent) and importance (62.4 per cent) among the personal abilities of the teacher. The low esteem given to this competency may be due to the fact that during the educational stage under consideration, grades 5-7, the curriculum includes a wide spread of subjects with no specialised skills. Students may not be able to complete tasks to obtain financial return. However, this competency is more relevant to the work of teachers who teach the grades 8-10, since the curriculum for these grades is composed of specialised training units that enable students to complete vocational tasks. Teachers at schools do not orient the curriculum exercises towards such activities, maybe due the lack of training materials taking into consideration the financial situations of the students' families. For instance, in many cases, students cannot afford the training materials if they are asked to bring them from their houses or to buy these materials from their budgets (Al-Hadidi, 1994).

If teachers required the students to do something to yield a financial return, they would need to be aware of the level of skills required. Some students might leave the school and try to find jobs at an early stage. This is one of the aspects that make it necessary to preserve the general character of PVE exercises and not to go more deeply in tasks delivered at the higher basic stage (MoE, 1990a).

Teachers and supervisors were in agreement on the need to open communication channels with vocational establishments relevant to PVE. At the same time, supervisors emphasised professional development. Competencies included in this field were perceived as less relevant to the teacher's work by teachers themselves. Also their degrees of importance were perceived as low by both teachers and supervisors. The reason may be that all the competencies are subsidiary to the delivery of the curriculum taking into account the mechanical way of the delivery of the subject traditionally adopted in the schools, a way that perceives these competencies as a matter of innovation in teaching career. Perceptions of irrelevance and unimportance of some competencies (personal abilities) could indicate that the teachers deliver PVE in a mechanical way which cannot achieve its objectives. From the researcher's point of view, the personal abilities of the teacher could, to a great extent, be a matter of motivation and personal characteristics, although they can be developed through well-oriented training. Thus, it is concluded, these abilities should be taken into consideration during the admission processes of the teacher education programmes and prior to employment. In this regard, the MoE is the only governmental establishment that does not test the suitability of the candidates for teaching jobs (people are employed based on their marks of their university degree only).

12.3 Vocational Guidance and Counselling

One of the main targets of PVE is to 'provide the students with an opportunity to discover their affinities and aptitudes to facilitate their prospective careers based on informed and realistic bases' (see Section 1.2.3, pp. 25-33). This implies a very important role for the PVE teacher in guiding the students and helping them to be aware of their aptitudes and inclinations in order to inform their decisions regarding future

careers on a rational base of knowledge. Some interviewees mentioned that some educational personnel think that vocational guidance and counselling should take place only at grade 10, which is the end of basic education stage. These people have a very narrow view of the vocational guidance. The results of the interviews revealed that PVE has many dimensions of guidance. An experienced male curriculum developer and teacher trainer stated that there is some misconception of vocational guidance and counselling. He said:

'Maybe, the Arabic phrase has come as a mis translation of the English concept (vocational guidance and counselling), but I consider that vocational guidance and counselling required in PVE is Careers Education that can be built on:

- appreciation and respect of all careers and their holders;
- introducing careers, characteristics of each career, the requirements and abilities required for working in it, its labour market and society situation;
- helping the students to know their abilities and to focus on them so as to take a correct career decision'.

Therefore, what is needed in PVE is training in practical tasks related to 'real life' situations in terms of economic, social and labour market considerations. Training will help the students to understand the life of the society, and this will help them to achieve the required appreciation of manual workers and a real understanding of life.

In short, the interview results emphasised that vocational guidance in the context of PVE as perceived by supervisors and curriculum developers includes:

- using guidance and counselling to help students to discover their abilities, aptitudes and inclinations and improve them towards making a right decision regarding future career;
- considering the individual differences between students during the implementation of the curriculum;
- improving the students' attitudes towards work, particularly manual work;

- improving the positive professional and life characteristics of the person, like objectivity, patience, accuracy, speed, perfection, organising, and time utilisation.
- encouraging the students to co-operate, work in teams, and to respect the others' opinions;
- helping the students to acquire the skills of planning and organising, and to realise their necessity for accomplishing tasks;
- relating the learning experience to the community and its activities. This could help in producing good citizens, who use their abilities to serve the community;
- understanding careers and their influence on the environment.

Obviously, supervisors and curriculum developers were very ambitious in their expectations of PVE with regard to the outcomes from vocational guidance. Based on the overall situation of the subject delivery, it seems difficult to achieve the whole range of expectations, particularly if taking into account the short time allocated for PVE in the study plan, the negative attitudes of students and parents towards the subject, and the activities followed to teach the subject (teacher-centred) and the teachers' motivation towards their career.

12.3.1 Teachers' Roles in Vocational Guidance

To achieve this kind of vocational guidance, the interviewees emphasised the following activities and roles of the teacher: The teacher should enjoy his/her career, and should not feel in a low position because he/she is a PVE teacher since motivation of the teacher is essential for creative activities that help the students to understand the hidden agenda of PVE. It is necessary to make the students like PVE and manual work. This could be achieved by being an exemplar in respecting this type of work and doing it.

The teacher should make the students feel the life benefits that they get from PVE lessons by making products and undertaking activities related to life requirements.

Pre-vocational education in the first seven grades aims to expose students to a wide base of skills in order to appreciate vocational work and the people who do it. Therefore, the first step in vocational guidance at this stage is to teach them these skills in proper ways, focusing on all dimensions of learning (cognitive, psychomotor and affective). In summary, to train students in practical skills in proper ways is, by itself, a form of vocational guidance. One of the main objectives of PVE is to help students make a correct decision about a future career related to their abilities and inclinations. The PVE teacher is capable of measuring these abilities and inclinations because he/she knows the students' expertise. As interviews indicated, to get the benefit of that, the teacher should make a cumulative record of the students' progress in the curriculum fields. This will be of great help in the assessment of the students' abilities and deciding their particular expertise. However, this requires a high level of commitment by the teacher in considering the aspects of vocational guidance at the long-term level of the curriculum delivery both at the collective and individual level. This also underlines that the motivation of teachers towards the teaching of PVE is crucial.

Interviewees stated that the relationship between PVE and other vocational establishments should be utilised to achieve the objectives in vocational guidance and counselling by field visits to the sites where careers are actually practised, including vocational schools. Expert people can be invited to vocational guidance meetings and lectures about careers; these meetings could be attended by the students and their parents. This could help in changing their attitudes towards vocational education.

12.3.2 The Required Teacher Abilities in Vocational Guidance

Discussion of these abilities will be brief since further analysis will take place in the following section on the teacher competencies. However, to guarantee the teacher's success in vocational guidance and counselling, the interviewees summarised the required abilities as follows:

- a) awareness of the whole curriculum, its philosophy, its general objectives and contents;
- b) ability to communicate with students, and help them to discover and improve their vocational inclinations and abilities in order to improve these abilities;
- c) ability to communicate with the surrounding environment, since the teacher needs to build a bridge between the school and the other vocational establishments (like factories, workshops, and companies). To build and maintain such relationships, the teacher also needs management skills and a self-motivated personality.
- d) acquaintance with educational psychology and the characteristics of the age range of the students;
- e) for the higher basic stage, the teacher should have knowledge of the general labour market situation concerning careers, and their required abilities in order to be able to guide the students towards these careers on a rational basis. This requirement for vocational guidance seems to be difficult to achieve, but in-service teacher training should take this requirement into account by supplying the teachers with up-to-date information about groups of careers. As interviewees stated, most of the requirements of this dimension are only knowledge of the situations of careers and how to present information. Seminars, leaflets and memoranda addressed to the teachers would play a vital role in achieving this objective, but teacher willingness

and commitment are essential for effective transfer of information to students. However, the curriculum documents lack guidelines for the teacher on how to diffuse careers guidance information in the curriculum delivery.

From the above views of the interviewees, it is clear that vocational guidance should be considered relevant to all PVE activities, and teachers should do their best to raise this dimension in any activity. It should not be forgotten that vocational guidance, as one of the hidden dimensions, requires teacher willingness, which in turn demands good working conditions. The interviewees emphasised the importance of the school committee in vocational guidance. This committee is usually composed of the PVE teacher, the head teacher and the school counsellor. In terms of tasks and abilities required for an effective participation in this committee, the interviewees stated that the PVE teacher usually participates in planning of the committee's work in terms of objectives, procedures, activities and results. Preparing exhibitions of the products produced by the students during PVE activities is an aspect of motivation. Organising collective activities by co-operating with the community contributes to dissemination of awareness of PVE.

12.3.3 The Competencies of PVE Teachers in 'Vocational Guidance'

The majority of the abilities included in this field are dimensions of outcomes required from different teacher activities, rather than specific teacher competencies. It was difficult to separate them into specific competencies, because there was a need to make sure that these outcomes are really required for PVE according to perceptions of the key decision makers, supervisors and teachers themselves who have reflected about what is achievable in the current situation and what is needed to get the situation right.

Therefore, the researcher attempted to direct the discussion to perceptions of the dimensions of PVE necessary to achieve the subjects targets. Wherever data were found helpful, the researcher tried to specify activities and relevant teacher abilities, but specific detailed competencies could be an area for further research building on the main dimensions established by the results in this field.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
54	Knowing the bases and principles of vocational guidance and counselling.	F	134	13	127	13
		P	92.4	100.	95.5	100.

To provide effective vocational guidance, the teacher should be aware of the principles of vocational guidance and counselling. This requires a wide range of abilities including co-operation with other parties. Vocational guidance and counselling, in educational establishments of a similar context, usually offers a range of services (Al-Sghayer, 1990). These include collecting information about the students' aptitudes, inclinations and attitudes, using different methods such as interviews, observation and case study. It also provides the students with the necessary information about the available learning and job opportunities, in addition to the social and personal skills required for daily life in order to help the students to select their field of specialisation and field of work. Additionally vocational guidance provides teachers, administrators and parents with advice regarding the problems of students and their treatment. In the context of vocational education, it provides the students with collective and individual counselling in order to make a change in behaviour or to help in decision making and problem solving (Conger, 1994).

In the analysis of content of the current teacher education programmes, it was found that no specific courses are allocated to vocational guidance, but general psychological courses are delivered to the teachers. It was emphasised by supervisors and curriculum developers that teacher education programmes should give vocational guidance adequate attention.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
55	Identifying students' problems related to PVE.	F	137	13	124	13
		P	94.5	100.	93.2	100.

Identifying the students' problems relating to PVE was also perceived as relevant by a high percentage of teachers (94.5 per cent) and all the supervisors, whose perceptions ranked it the first important competency in vocational guidance. In this regard, the teacher is responsible for identifying the students' problems either in doing practical exercises, where they might be hindered by certain physical disabilities, and attitudes towards the subject or certain specific topics within it. Plans for dealing with such problems are also associated with this competency. Therefore, this competency is very important to the teacher, particularly when dealing with dissatisfied or special needs' students (Conger, 1994).

Perceptions of some teachers regarding the irrelevance and unimportance of this competency (5.5 per cent and 6.8 per cent, respectively) may be due to the abstract delivery and the teacher-centred methods of teaching used in the delivery of PVE. Such methods do not enable the teacher to probe the problems that face individual students. DeMiranda and Folkestad (2000) and Shilling (1986) argued that what is crucially

needed is to make students more active in the learning activities, a way that enables the teacher to identify their problems.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
56	Enhancing students' positive attitudes towards the different vocations and to manual work generally.	F	139	13	137	13
		P	96.5	100.	98.6	100.

High percentages of the teachers and supervisors perceived the competency of 'enhancing students' positive attitudes' as relevant to the teacher's work. Awareness of this aim of the curriculum was clear in that 98.6 per cent of the teachers and all the supervisors perceived this competency as important. This was the highest percentage in this field. But enhancing students' attitudes, as a target of the curriculum, needs certain activities to achieve it. Conger (1994) argued that the teacher should show the relevance of PVE subjects to the students' life, which demands careful selection of skills, in addition to paying attention to general attitudes as learning outcomes of teaching activities. This could be done by relating the exercises done to the social situations of the families and individuals showing the importance of the relevant careers for the financial and the social life of people as families, communities and individuals. More importantly, students should be exposed to real work situations (Conger, 1994).

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
57	Helping the students to plan for selecting their future careers.	F	135	13	128	13
		P	93.1	100.	96.2	100.

The task of 'helping the students to plan for selecting their future careers' was perceived the second most important competency by both teachers and supervisors. This competency represents the spirit of vocational guidance required during PVE delivery, thus it achieved this high importance. However, some teachers perceived it as irrelevant and unimportant. This may be due to the perspective of those teachers that orientation towards the selection of future careers can be postponed until the end of the stage of basic education.

Conger (1994) emphasised that the teacher needs to have a good general knowledge of careers available in the market, employment prospect in these careers and the aptitudes required for these careers. Updating of knowledge regarding these aspects is also required. Therefore teacher training programmes, and the relevant departments and establishments, should play their role in continuously providing the teacher with the required information. Also the teacher should give this dimension adequate attention by integrating career awareness requirements with the practical training in specific exercises associated with particular careers. Conger (1994, p. 31) emphasised the importance of the introduction of occupational and labour market information to the students and identified the kinds of such information. He said:

'Students do need information about occupations and about the labour market in order to establish appropriate preferences, and to make decisions in the face of education, training and employment opportunities. The kind of information that they require includes: descriptions of the work in occupations, composition of occupational families; education and training requirements for certification, registration, etc.; salary and wage information; working conditions; characteristics (aptitudes, interests and personalities) of people normally successful in the occupations; physical activities; inter-occupational mobility; employment rates and numbers; seasonality; and occupational forecasts'.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
58	Helping the students understand the relationship between PVE and other vocational establishments.	F	125	13	119	12
		P	87.4	100.	93.7	92.3

Pre-vocational education aims to help the students to have realistic expectations of future careers (MoE, 1990a). This requires that the students understand the relationship between PVE and vocational establishments, and are aware of the objectives that PVE aims to achieve. The teacher should have a good knowledge of vocational establishments, their fields of specialisation, their market status and the relationship between PVE objectives and vocational education (Conger, 1994). This also demands a long-term commitment to PVE objectives by the teacher. Perceptions of the irrelevance of this competency by 12.6 per cent of the teachers, and its unimportance by 6.3 per cent of them draws attention to the need to deliver the subject in an open way that explains the broader objectives of PVE and its philosophy. Also there is a need to give the students a broader idea about where careers are practised and their status. This dimension implies that teacher training programmes should keep the teacher aware of PVE philosophy (Sghayer, 1990).

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
59	Co-operating with vocational establishments to organise vocational guidance meetings.	F	118	13	104	13
		P	81.4	100.	88.8	100.

The task of 'co-operation with vocational establishments' was perceived as relevant by 81.4 per cent of the teachers, and perceived important by 88.4 per cent of those who considered it relevant. These percentages could reflect the absence of communication

channels between teachers and the local community. This co-operation is vital in vocational guidance. It helps in acquainting the students with real experiences in vocational fields. This competency achieved the least relevant percentage among vocational guidance competencies, because (as interviewees stated) teachers think that vocational guidance is just to guide the students to enrol in the vocational education stream at the secondary stage, while the actual concept of vocational guidance is to guide the students in choosing a future career based on informed knowledge of the employment market (Sghayer, 1990).

In order to co-operate with vocational establishments in organising vocational guidance activities, the teacher should be familiar with the relevant establishments and the specific roles they play in vocational guidance. Also, such activities should be planned in advance including the specific objectives to be achieved. The teacher needs to co-operate with the head teacher and the relevant departments in the local educational directorate to arrange such activities (Jaradat and Tuffaha, 1995). As noted by Conger (1994) the partnership between schools and business could take different forms in the case of PVE such as:

In-class participation: Employees of the firms assist with certain instructional and tutoring tasks;

Mentoring: Company volunteers work with students as mentors on technical projects at the mentor's work site. (The volunteers may be required to attend a one-day orientation on the educational system);

The establishment of a summer institute for teachers with monthly in-service components during the school year;

Promotion: The school should choose the promotional strategies that seem to be the best suited for the type community and the message of the programme. Van Zandt et al (1992) listed several of the many methods for promotion of programmes. Those include flyers and brochures, bulletin boards, feature articles in school newspapers, feature articles in school newspapers, public service announcements, bumper stickers and T-shirts, videos, information nights or public forums, and guest speaker events.

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
60	Exploring the students' vocational interests.	F	135	13	126	13
		P	93.1	100.	94.0	100.

Because the students select one of the various alternatives of education at the end of basic education, their interests and inclinations should be taken into consideration. As interviewees emphasised, the teacher should continuously assess the students' performance and observe their progress in the different fields of the curriculum. If teachers find students have a particular interest in one field or another, they should try to develop this interest by orienting the students learning activities towards this interest. In this way, the teacher can mobilise the provision of PVE to serve the students' decisions regarding future careers. Because teachers and supervisors are aware of the necessity of this task, all supervisors and a high percentage of the teachers emphasised its relevance and importance. But the irrelevance and unimportance of this competency, perceived by 6.9 per cent and 6.0 per cent of teachers respectively, may reflect a mechanical way of the delivery of subject content that does not pay attention to students' interests. As curriculum developers think, to explore the students' vocational interests, the subject requires to be delivered in a learner-centred approach in which learners select the

content (see Section 6.3, pp. 191-194). In such a method, students practise what they prefer and the teachers' role is a facilitator of learning (more about how to explore the students' interest can be found in Ontario Ministry of Education (1994).

No	The Competency	Relevant to work		Important		
			Teach's	Sup's	Teach's	Sup's
61	Constructing and keeping up the students' records regarding their progress in PVE	F	127	13	91	13
		P	89.4	100.	71.1	100.

Competency in 'constructing and keeping up the students' records regarding their progress in PVE' was perceived as relevant by 89.4 per cent of the teachers (10.4 per cent perceived it as irrelevant) and important by only 71.1 per cent of those who perceived it as relevant. This perception of comparatively low importance may be due to the non-familiarity of teachers with such records. Because decision making about a future career is one of the objectives of PVE, there should be a documented long-term assessment of the students' progress. This helps in the determination of the students' aptitudes, abilities and inclinations. Interviewees suggested that these records should be comprehensive, accurate and specific in monitoring the student' progress in each of the curriculum fields and in all the required dimensions of learning (see Section, 6.6, pp. 197-198). However, no such records are currently used in the Jordanian schools, a fact that explains why some teachers perceived this task as irrelevant to the teachers work and why some of the teachers perceived these records to be unimportant (for more details, see Section 6.6, pp. 197-198).

Some teachers and supervisors believe that vocational guidance should start at the highest basic education stage (grades 8-10), which is the stage of exploration of the

students' inclinations and aptitudes (Olaimat, 1991). However, PVE activities should be oriented towards the correct decisions about future careers, and to widen the horizon of careers awareness of students at an early stage (MoE, 1990a). This will provide a realistic background for the students in deciding to select the stream of education in which to pursue their secondary education.

Teachers' tasks in vocational guidance are integrated and overlapping. Analysis of these tasks into specific competencies is difficult unless the teacher has understanding of the requirements and can practise such tasks in an integrated teaching/learning situation. Teacher education and in-service training programmes should therefore take these tasks into account in an approach that considers the understanding and knowledge and should equip teachers with the abilities to use such knowledge and understanding in different educational situations.

12.4 Teachers' Overall Perceptions of Their Role: Implications for Preparation and Training

Despite the relatively high level of consensus among respondents (teachers and supervisors) on the relevance and importance of the competencies included, it was appropriate to identify the reasons that some teachers had for disregarding the relevance of some tasks to their role.

It was obvious from the high consistency of the supervisors' perceptions that they perceived these competencies in an 'ideal' frame of the required abilities of the teacher for effective delivery of the subject (which was the core intent of the questionnaire).

They did not take into consideration the constraints of the educational environment at the school, perhaps because they are less involved in the limitations of the school environment since they are located in the educational directorates and they only make visits to schools. However, teachers' perceptions do reflect the constraints and limitations of the educational environment of the school. These constraints include, as examples, the teachers' understanding of the philosophy of the curriculum, the available facilities, the abilities and background specialities of the teachers, and the traditions of teaching to which they are accustomed. Additionally, there is a tension between the curriculum demands and the requirements of the educational administration (the system, the head teachers and the supervisors). This puts more constraints on the teacher's work by asking them to undertake prescribed activities that hinder innovation in teaching and undermine the flexibility needed to deliver the curriculum effectively.

Moreover it was indicated from the teachers' perceptions that the requirements of subject delivery (as perceived by curriculum developers and supervisors) demand the teacher to be a proactive and innovative person. For example, the teacher is required to:

- plan and organise teaching and training in all the curriculum fields;
- enhance the attitudes of the students towards the subject and manual work;
- manage the workshop and undertake related administrative activities;
- provide vocational guidance that implies extra knowledge and skills;
- train in technology (where the teacher is responsible for finding suitable content and materials);
- consider special needs students and select and design particular activities for them;
- use educational technology to facilitate teaching/learning and to make it more effective;

- undertake many accompanying activities such as field visits, visiting speakers, exhibitions, utilising and serving the environment and the locality.

However, the working conditions of teachers in terms of teaching loads, salaries and incentives do not motivate them to be so innovative and proactive, and their previous preparation and in-service training were not effective in equipping them with the required abilities to satisfy all these requirements, a point also made by (Tweisat, 1998). Additionally shortage of time allocated for the subject in the study plan, and the shortage of time in lessons in conjunction with crowded classroom/workshops with large numbers of students do not enable them to perform all the activities, not even just the practical training.

The difference in perspectives between teachers and supervisors reflects a difference in understanding of the teacher's role and tasks. As mentioned before, supervisors are idealistic in their perspectives while teachers are at the centre of constraints arising from the educational environment. However, teachers' perceptions reflect a level of misunderstanding of key issues in the philosophy of the curriculum and its entire delivery. For example, some male teachers believe that some of the subject areas are particularly for male students, so they neglect other fields of the curriculum. Also some female teachers believe that 'home economics' is the main target that they should equip the female students with, so they neglect the other subject areas of the curriculum.

It was also found that some teachers undermine the hidden agenda of PVE for vocational guidance, social and personal development of the students and the roles of the teacher implied by these dimensions. Some teachers reject their role as a facilitator

of learning and focus on knowledge transfer. They perceived as irrelevant the competencies of doing research to improve performance, selection between alternatives, and using different teaching methods other than lecturing and demonstration. All these were indications of the mechanical approach adopted by such teachers to deliver the subject. In addition to constraints of the school environment and administration, there is considerable criticism by the interviewees regarding teacher education and training programmes (see Section 13.1, pp. 368-372). These programmes were found to be neglecting the understanding of the entire spectrum of targets which are required from PVE. These programmes also build a frame of mind of teachers that PVE is similar to any other subject having prescriptive curricula in that it can be delivered mechanically without selection between alternatives, integration with other subjects, or enrichment of its components to achieve a spectrum of affective objectives. The ability of the teacher to deal with the affective side of the curriculum, vocational guidance, integration between PVE and other subjects, and the personal abilities of the teacher required for effective delivery of the subject, were implicitly found missing in teacher education and in-service training programmes. Moreover, an imbalance of subject matter capability of teachers was found because of the variety of the teachers' background specialities. Teacher-training programmes should not neglect this aspect of the professional development of the teacher.

Finally, teacher-training programmes should take into account the real training needs of the teachers based on individual and collective cases. Taking into account that teacher certification programmes in Jordan aim to enable the teacher to meet the requirements of an academic degree through previously specified courses, other teacher training programmes (in-service) should be more specific in content (knowledge, skills and

understandings) to satisfy the training needs of the teachers. Also teacher education programmes should be reviewed to take into account all the dimensions of teacher's role and to equip the teachers with competencies in all dimensions of the subject delivery. As irrelevance of subject matter content was reported, in addition to the large amount of theory in all the components of teacher education (Al-Smadi, 1999 and Al-Jawarneh, 1999). These programmes should try to equip the teacher with the competencies in a more realistic atmosphere related to the situations in which these components would be used in the teacher's professional life, and should be more practically-oriented in their approaches.

12.5 The Priorities of Teachers' Competencies as Perceived by Teachers

To identify the priorities of the competencies of PVE teacher in order to be organised in teacher education and training programmes, the researcher ranked them according to their level of importance as shown in Appendix 8. This ranking helps to determine the priorities of the competencies of the teacher that should be taken into account in the design of the programmes. Ranking was based on the sum of percentages of respondents who perceived the competency as very important or important. If two competencies have the same total percentage, the competency that had higher percentage of respondents perceiving it as 'very important' was ranked the first (details of the results of the ranking of the competencies can be found in Appendix 8).

Summary

The last four chapters have identified the competencies of PVE teachers and their importance to the delivery of the curriculum. Competencies have been classified in seven fields: planning of teaching/learning; organising of teaching/learning; assessment

of teaching/learning; enrichment of the curriculum; use and management of the workshop; personal abilities; and vocational guidance. They were presented in themes of teaching skills, subject matter, using of the workshop, and subject application.

Perceptions of teachers and supervisors have been analysed. Generally, competencies have a high degree of consensus among the respondents regarding their relevance to the teacher's work and their levels of importance. That was because of the way in which they were introduced to the respondents. They were asked to identify the requirements of the PVE teachers to deliver the subject effectively (ideally). This indicates the validity and reliability of the results to be used in teacher preparation and training. Analysis of the activities relating to the curriculum delivery provides for an understanding of the contexts of PVE and of the situations in which teachers use their competencies. Perceptions of the curriculum developers and supervisors were found to be over-ambitious with regard to expectations from PVE teachers and from PVE generally. This is because they are less involved than teachers in the subject teaching within the constraints of the school situation.

Details of the perceptions of the respondents were utilised to investigate the current situation of PVE delivery, and to study the affects of different constraints in the educational environment, mainly in teacher training needs and implications for teacher training. It was found that some teachers depend only on the content of textbooks, and deliver their content without adequate planning or without taking into consideration the intended learning outcomes particularly in the affective side. It was also found that some teachers use mainly teacher-centred methods in PVE teaching in a way that rendered students passive in PVE learning and hindered their interaction.

Generally, assessment of the students' achievement was found to be neglected by some teachers. There were no cumulative records for students' progress in PVE. More importantly, some teachers confined the delivery of the subject to theoretical knowledge and neglected the practical aspects.

Supportive competencies that include the enrichment of the curriculum, undertaking research, and co-operating with others (teachers, parents, and establishments) were found to be rarely practised by PVE teachers. Vocational guidance, in which curriculum developers and supervisors were found ambitious with regard to their expectations, was found to be neglected by some teachers because of a lack of ability, motivation and authority to undertake outdoor activities, and because of the systems of schools. There is a need to take all these deficiencies into consideration when reviewing PVE provision, mainly teacher preparation and training.

Chapter Thirteen

Issues Relating to Teacher Preparation for Pre-Vocational Education

Introduction

This chapter aims to establish the main features of PVE teacher education and training in the Jordanian context. It includes the perceptions of people in key positions concerning the main components of PVE teacher education and the necessity of practical vocational field experience for the PVE teacher. Shortcomings of current programmes are investigated in order to identify improvements for these programmes based on the findings of this study.

13.1 Shortcomings of Current PVE Teacher Preparation

The shortcomings identified from the teachers' perceptions of the relevance and importance of their tasks and competencies indicated the omission of various important areas of competence and different roles of the teacher. The unsuitability of the current approaches to teacher development was also indicated. In addition, the interviewees emphasised the following shortcomings in the current PVE teacher preparation and training programmes.

13.1.1 The Lack of Practical Training

The interviewees emphasised that the current programmes of teacher preparation lack training in both practical skills and in practical teaching. Graduates of these programmes are usually afraid of training students in practical skills since they themselves are not competent in performing these skills. This could make the teacher confine the curriculum to its theoretical bases, which is a serious mistake in PVE delivery, and means that the

graduates are unsuitable for the job that they are intended to do. One of the teacher trainers at the MoE said:

‘One of the important shortcomings of the current teacher education programmes is the lack of practical training. Thus, the graduates lack practical training in the subject skills and in teaching. This makes teachers afraid of the delivery of practical parts’.

Therefore, to overcome this shortcoming, the practical parts of the PVE curriculum itself should be carefully identified and teachers should be acquainted with the necessary practical skills that enable them to deliver the curriculum. From the researcher’s experience as a teacher educator, the large number of student teachers in the class (usually more than forty) hinders the practical orientation of the teacher education courses at the universities. This was also reported by Al-Smadi (1999) and Al-Jawarneh (1999). Taking into account the time allocated for the course, the teacher educators usually adopt more theoretical approaches in their teaching (mostly lecturing). This makes the students ill equipped with the desired skills since they have not had the chance to practise these skills, and have received mostly theoretical knowledge. Therefore, the number of students in each class at the teacher education institutions should be reviewed since it affects the final learning outcomes of the student teachers (Corrigan and Haberman, 1990). More importantly, the practical abilities of teacher educators should be considered in both subject matter and pedagogical courses.

13.1.2 The Lack of Comprehensive Coverage of PVE Subject Knowledge

The interviewees emphasised that even the teachers who are specialised in PVE are not competent in teaching all the curriculum subjects. One of the curriculum developers who has knowledge of the content of the teacher certification programmes said:

‘There is a concentration on some subjects and a neglecting of others in the certification programmes. This causes a defect in the teacher’s abilities to teach across all curriculum fields’.

Not all the curriculum fields are comprehensively covered during the teacher preparation programmes. Hence a review of all curriculum fields and their relevant contents is needed in order to prepare PVE teachers and train them in all of these fields. Because a high proportion of theory was reported in teacher education (see also Al-Smadi, 1999; Al-Jawarneh, 1999) the review of the subject knowledge content will reduce the delivery of very deep specialised subjects to teachers while leaving them without an ability to teach other parts of the curriculum. As five different vocational fields are included in the curriculum, the content of the teacher education programme should be apportioned carefully, and programme time should be utilised effectively, otherwise, the graduate teacher will not be properly prepared to teach all of the curriculum subjects. It was reported in other research that teacher education programmes in Jordan, as in other Arab countries, devote a high portion of the time of the programmes to marginal courses, while neglecting essential important areas needed for the entry of the teaching profession (Fadheel, 1993).

The teacher education programmes in the community colleges used to teach different subjects for male teachers than those for female teachers (see Appendix 3). Graduates of

such programmes are required to teach PVE for grades 5-7, where the curriculum is common between female and male schools. Teaching of different subjects for male teachers than those for female teachers is a dangerous contradiction of the curriculum intentions. The universities should avoid this difference in the content in their prospective programmes, particularly in practical training of the student teachers in workshops, or even in school placement. If this difference took place, graduates would develop the attitude that PVE is gender specific while it is not.

13.1.3 The Philosophy of PVE and the Implied Roles of the Teacher

Some interviewees suggested that teacher education programmes in Jordan do not pay adequate attention to the philosophy of PVE and the nature of the curriculum, and hence the roles of the teacher implied by this philosophy. Therefore, it was found that many teachers deliver the content of the curriculum in a mechanical way as in any other subject with a prescriptive curriculum. They neglect the 'hidden agenda' of the entire provision of the subject that aims at improving the attitudes of students and contributing to their personal development.

Teacher education has developed a narrow perspective on the PVE teacher's role. Therefore, some of the teachers denied their responsibility for tasks such as using sources of knowledge other than textbooks, considering attitudes as learning outcomes, providing vocational guidance, opening communication channels with vocational establishments, or even using methods of teaching other than lecturing and demonstration (see Chapter 9-12). The absence of understanding of these aspects of the teacher's role in the current delivery of the subject, and their omission by teacher education programmes, makes the

supervisors and curriculum developers emphasise the necessity of equipping teachers with an understanding of the philosophy of the curriculum and the implied roles of the teacher. The interviewees considered this as one of the teacher's abilities that should be given priority by teacher education programmes. One of the curriculum developers said:

'The teacher needs to understand the philosophy of PVE and his roles in its teaching through his pre-service preparation'.

13.1.4 PVE Administrative Issues

The interviewees emphasised that the majority of the teachers suffer from administrative problems relating to PVE, particularly the management of the workshop records and organisation of the stocktaking and reviewing of the inventory lists. These interviewees further stated that if teacher education programmes cannot deal with management issues due to time limitation, then specific in-service teacher training programmes should be conducted for the teachers to enable them to perform such tasks as part of their work in schools. One of the supervisors said:

'The graduates of teacher education programmes do not have any idea about the administrative tasks regarding the workshop because they haven't learnt that. There is a need for simple training programmes to equip them with such ability'.

13.2 The Main Components of PVE Teacher Preparation

Teacher education programmes have different components that include an academic component, a practical vocational component, a pedagogical component, and practical field experience. All the interviewees emphasised that the teacher education and training programmes for PVE should have the following components:

13.2.1 The Academic Component

The academic component is concerned with knowledge of theoretical and technical aspects of the curriculum fields. Also general social and cultural knowledge should be covered in this dimension to enable the teacher to relate the subjects to the general life of the students. One of the curriculum developers who works in teacher training stated the importance of this component for PVE teacher in the following:

‘It is insufficient for the PVE teacher to undertake only practical performances (exercises), but he must be well acquainted with the cognitive aspects relevant to the practical skills and the life aspects they serve’.

This emphasises that teachers should have adequate general social knowledge thus enabling them to relate the curriculum subjects to the specific needs of the learners. Additionally, the teacher crucially needs knowledge of the psychological and growth characteristics of young people in order to be able to deal with them. Theoretical and technical knowledge of the subject matter of the curriculum is vital for the teacher since it is a main part of the curriculum content that should be delivered to the students. Interviewees further emphasised that it also enables the teacher to add, modify and integrate subjects within the different aspects of subject delivery. This ability covers the theoretical issues behind the subjects of PVE. To prepare for this ability, the following dimensions should be covered.

a) The General Cultural Issues

This component of teacher preparation should include some selected topics in the social, human and natural sciences. The aim is to develop the cultural level of the teachers, improve their abilities and broaden their general knowledge. This provides them with an

integrated perspective on the students' needs as human beings and citizens. Interview results indicated that whatever the approach adopted to prepare the PVE teachers, this component should be given adequate attention, since PVE is not only introducing practical training, but also the social and affective objectives that contribute to the general characteristics and personalities of the students. This requires that the teacher should have an appropriate level of general knowledge. One of the curriculum developers said:

'The teacher should be acquainted with the general understanding of the related cognitive subjects in addition to the general cultural knowledge that could help him to develop the students' characteristics (personality)'.

b) The Basic Sciences

The basic sciences provide the foundation of the technical and vocational subjects that the teacher will deliver (Masri, 1990). This component includes a variety of scientific theories and rules. In other words, each main subject of PVE has its scientific base and theories. Interview results indicate that knowledge of these is necessary for the teacher since practical exercises cannot be delivered without their scientific base to achieve the objectives of the curriculum. The theoretical knowledge included in the PVE curriculum is mainly to serve the effective acquisition of skills (see Appendix 1). As interviews indicated, deeper theoretical knowledge is required only to give the teacher an ability to deal with the flexibility of the curriculum and to enrich its components. Although the deep knowledge in the theory of subject matter is an enriching element for the ability of the teacher (Mullen et al, 1996), it should not be delivered at the expense of the other components. Deeper theoretical knowledge in the subjects is considered irrelevant to what teachers actually need to teach PVE. This was reported in the current certification

programmes that are implemented in Jordanian universities. One of the curriculum developers complained about this shortcoming and said:

'The teacher certification programmes have too much theory in their subject knowledge course. The knowledge and skills included in these programmes are irrelevant to what the teachers need for teaching PVE'.

c) Vocational and Technical Bases of the Field(s) of Specialisation

This component covers the basic technical principles and theories that govern vocational concepts and tasks. In this regard, interview results indicated that teachers need to have a higher level of technical knowledge than the level of information contained in the curriculum itself. Interviewees justified this in that technical issues may be matters questioned by the students. Such knowledge would thus help the teacher in problem solving when teaching, particularly in a flexible, non-prescriptive curriculum like PVE. Therefore, deeper technical knowledge should be conveyed to the teachers during their pre-service preparation.

Masri (1990) argued that because the graduates may not ultimately work as teachers, the wide base of technical knowledge required of the teacher contributes to broadening the employment prospects of graduates of teacher-education programmes, enhancing their general abilities and professional development, and upgrading their work related abilities. To equip the vocational teacher with a wide base of technical knowledge is a tradition adopted where graduates are not guaranteed secure jobs in teaching. The wide base of knowledge helps them to work in careers other than teaching, such as employment as technicians (Masri, 1990). However, this could not be applied in the case of PVE teacher education because of the variety of the subject fields, which is a factor that makes it

difficult to deliver a broad spectrum of employment skills and technical knowledge in each field of the curriculum.

13.2.2 The Practical Vocational Component

This component is concerned with the teacher's abilities to perform practical skills in all the curriculum fields (industrial, agricultural, business, health and safety, and home economics). Practical vocational skills are vital for the teacher to be effective in the delivery of the curriculum since practical exercises are the main aspects that have a direct impact on the achievement of the curriculum objectives. Interviewees stated that teachers must be able to do all the required practical tasks effectively and accurately, since they will use demonstrations as a tool to enable the students to acquire these skills. One of the curriculum developers and supervisors justified this as follows:

'The teacher must be able to do the practical performances effectively and accurately. We cannot say it is enough when he can do that with a reasonable level, he should be able to do it perfectly and accurately. The reasonable level is for the learner himself, but the teacher should perform these skills perfectly in order to be able to teach them effectively and efficiently. Also it is not enough for the teacher to be acquainted with the skills, he should be able to analyse these skills into more simple procedures. This could help him to teach these skills according to their proper sequence in tasks'.

It is obvious that teachers need practical abilities of a higher level than the curriculum requires of students. However, in order not to deliver irrelevant content in this component, it should be kept in mind that the level of practical competencies included in the curriculum aims only to acquaint the students with tasks and to serve their daily-life requirements (MoE, 1990a). The ability to analyse the vocational tasks (mentioned in the above quote) implies that the teacher has an adequate knowledge of families of vocations, their associated jobs and simple skills. This component of practical vocational training

also develops the teacher's abilities to use and maintain the workshop facilities; these supportive abilities can contribute to the quality of training, a point that was made by Masri (1990).

The element of practical training in the applied skills of each field of the curriculum should have an appropriate share in teacher preparation. As can be seen from PVE objectives (Section 1:2.3, pp. 25-33), practical skills are one of the main objectives of PVE. These help students in their own lives, improve their attitudes towards work and enable them to discover their abilities to make the correct decision regarding their future career. The teacher should be competent in the execution and demonstration of practical skills. As the interviewees stated, if teacher preparation programmes are not able to cover each specific practical skill in the PVE curriculum then these programmes should provide teachers with the necessary tools to be able to guide the training process in practical skills that they did not practise before. If not, this could be done through in-service practical training. Teachers should be competent in reading and following technical instructions, reading drawings and sketches, preparing exercises with all the necessary facilities, and demonstrating before starting to train students. This will make the teacher sure that the training process will achieve its specific objectives (Masri, 1990).

Interview results indicated that teachers could gain practical skill demonstration abilities through workshop training undertaken in parallel with theoretical knowledge. They can also gain experience through supervised field experience in any establishment related to the practical subject (like factories, farms, companies). However, to send teachers for

placement in vocational sites may need a substantial period of time considering the wide variety of the PVE subject matter.

Taking into account all the aspects mentioned above it could be argued that designers of PVE teacher education programmes should thoroughly study the curriculum and its practical aspects. This will help in deciding what practical skills the teachers should be trained in, at the teacher-education institutions (universities), or in vocational field establishments. These skills are the principal ones without which teachers are unable to deliver the PVE curriculum. It should also be taken into account that teachers would not be able to perform each specific skill included in the curriculum immediately after graduation. Therefore in-service training programmes should include some practical skills based on training needs determination. A large amount of the literature reviewed during this study revealed that both pre-service and in-service teacher training for PVE in Jordan have a shortage of practical training as major shortcoming. Therefore teachers tend to teach the topics that they find themselves confident in, and neglect the other topics that they cannot manage to teach, or confine the process to theoretical issues and neglect the practical skills (Al-hadidi, 1994; Salamah, 1994; Fadheel, 1990; Tweisat, 1995; Tweisat, 1998; Al-Jawameh, 1999).

13.2.3 The Pedagogical Component

Interviewees stated that this component is concerned with different activities of the teaching/learning process such as planning of teaching and learning; organising of teaching and learning including teaching methods, classroom management, and questioning; and the preparation and use of educational media that support

teaching/learning activities. It also includes the enrichment of the curriculum; the use and conducting of relevant research; and offering vocational guidance. One of the supervisors said:

'The required pedagogical courses include the ability of the teacher to plan, organise, and assess teaching/learning activities, and should also include psychology that makes the teacher able to deal with students'.

Although these are general teacher tasks, interview results indicated that they require particular skills from PVE teachers because they require particular activities (see the teacher competencies in the last four chapters). The interview results also emphasised that PVE teachers should gain an understanding of the curriculum philosophy during their training by studying PVE theories and its aspects. This could be done through a deep study of the theories and the aims behind the curriculum guidelines and objectives. Moreover the roles of the teachers implied by the curriculum philosophy should be clearly understood by the teachers before they enter the teaching profession. This was one of the missing dimensions in the current teacher preparation programmes, which led to a mechanical delivery of the subject and neglect of the hidden agenda of PVE. As mentioned before in Section 13.1.3, pp. 371-372, one of the curriculum developers said:

'The teacher needs to understand the philosophy of PVE and his roles in its teaching through his pre-service preparation'.

Some interviewees concentrated on vocational guidance as one of the educational components of PVE, and said that it should be covered during the initial training of the teacher. They indicate that teachers need to provide this guidance independently. It was considered important that they should study this aspect, and have some practical training in vocational guidance in a real teaching environment. Interviewees also noted the importance of studying aspects of careers education in terms of the abilities and aptitudes

required for each career and their in-country labour market situations. This is very helpful for the teacher since, in the majority of schools, PVE teachers deliver the curriculum for most of the grades at basic education (above grade 5), and currently there is no separation between grades 5-7 and grades 8-10, when careers education is crucially needed.

The interview results emphasised that preparation and training programmes should develop the teacher's ability to interact with technology, and to utilise the expertise of others and to work in teams. Also the interviewees concentrated on the necessity of developing positive attitudes towards PVE and PVE teaching during teacher preparation and training. This could prevent the teacher from feeling that they have low status because of teaching PVE (see Section, 7.2, pp. 213-218). At present, as interviews indicated, this problem hinders the implementation of the curriculum since teachers themselves often have negative attitudes towards PVE. This is because the surrounding environment places little value on PVE. This problem needs to be solved at the levels of individuals, families, establishments and the nation.

The educational preparation of PVE teachers could be undertaken either on an integrated basis with their technical specialised preparation, or separately after completing their technical preparation (Masri, 1990). Regarding the content of this preparation of the teacher, article 84 in UNESCO conference number 18, (UNESCO, 1974) listed eight elements, (see Section 4.6.4, pp. 132-135). These eight elements cover all the basic educational aspects that the PVE teacher should have in order to deliver the curriculum. These elements should be integrated with the objectives and special features of the subject under consideration and the national situation in terms of the implications of

additional tasks for the teacher. In the researcher's view, the long list of requirements relating to pedagogical preparation of the PVE teacher indicates the difficulty and complexity of the training process, and the need for a longer period than that usually allocated to teacher preparation for other school subjects.

13.2.4 Practical Field Vocational Experience

The following table shows the level of agreement of teachers and supervisors on practical vocational experience as one of the requirements for PVE teachers. In the table, (F) is the frequency, (P) is the percentage, (A) means 'agree' and (DA) means 'disagree'.

The Ability/ Requirement	Degree of agreement/disagreement				
		Teachers		Supervisors	
		A	DA	A	DA
Practical field vocational experience.	F	128	17	11	1
	P	88.3	11.7	84.6	7.7

Vocational experience is one of the important requirements that contributes to the quality of the preparation and the effectiveness of the vocational teacher (Masri, 1990). As PVE is not vocational in the conventional sense, there is a debate about the necessity of this experience for the teacher to deliver the curriculum subjects. 11.7 per cent of the teachers and 2 out of 13 supervisors disagreed with the proposition that vocational experience was necessary for the teacher. The reason for that, they believed, was that PVE does not aim to deliver employable skills. Thus the level of its skills does not require vocational experience in a work situation. One of the supervisors stated that,

'Pre-vocational education does not aim to prepare students for work places, and its skills are simple and not complicated. Therefore, it is nice for the PVE teacher to have some vocational field experience, but it is not a must'.

However, interviewees emphasised that there is a range of advantages for vocational experience in relation to teacher's effective delivery of the subject. Such experience could broaden the teachers' understanding of the practical aspects of their field(s). Also teachers' vocational field experience could break the boundaries between the real world of careers and vocational education at all stages.

Although practical vocational experience is not very important element in the PVE teacher preparation in the Jordanian case, it is vital for the effective teaching/learning of such practical subjects. Tweisat (1998, p. 169) stated that

'The practical capacity of PVE teacher is of great importance for the delivery of PVE. Thus, some work experience will be of great influence in the capacity of the teacher to deliver PVE more effectively and efficiently'.

This was emphasised through the interviews with the curriculum authors and the PVE supervisors. Very few of them stated that practical field experience is not necessary, while the majority of them noted that it would be an enriching element for PVE teaching. Taking into account that PVE does not aim to prepare the students directly for vocational work, in addition to the easiness of the exercises included in the educational stage under consideration (grades 5-7), practical vocational experience enriches the teacher's ability to deliver the curriculum contents. Vocational experience helps the teacher to integrate the subjects of the curriculum with real applications in the work environment in order to achieve the curriculum objectives of career awareness. This experience also helps the teacher to determine the aptitudes and abilities needed for the students to enter career training.

It should not be forgotten that teachers should have experience as a teacher of one or more vocational fields as a part of their preparation (Masri, 1990). This experience is usually achieved through school-based training supervised by the teacher education establishment and mentored co-operatively by an experienced teacher from the school. This type of practical education training is undertaken through the practical education programmes (school-based training) at the Jordanian universities in a one semester placement (Diab, 1999). Interviewees stated that taking into account the variety of the subject matter and the required accompanying activities to the classroom teaching, it might be better to train the student teachers for more than one semester. One of the female supervisors with knowledge in the system of pre-service training said:

‘For PVE, if the student teacher needs to practise teaching in all the curriculum fields and to have more understanding of the educational environment of the school, he needs to be trained for more than one semester as is the case in the current implemented programmes of the other subjects’.

Although the interviewees emphasised the importance of practical field experience, they stated that it is not achievable due to the multiplicity of the curriculum fields. They stated that it could be replaced by specific training courses. In the light of this, it could be suggested that vocational field experience mixed with the teaching placement that is usually undertaken at the end of the teacher preparation programmes. This mix could be done in vocational comprehensive schools, which train students in different vocational fields in a more practical field atmosphere. This mix would give teachers more practical experience and enhance their teaching abilities in practical subjects since vocational schools deal with training in more complex vocational specialities. Training in teaching at such multi-disciplinary schools would enrich PVE teacher’s experience in teaching a multi-field subject like PVE, and would train the teacher in specific teaching methods

and approaches applied to the delivery of each different subject of the five different fields of PVE.

All of the interviewees preferred PVE teachers to have vocational field experience before commencing work. The stated advantages were that this experience could help the teacher in relating knowledge and skills to real life, socially and professionally; it could help the teacher in understanding the needs of the labour market; and enhances the teacher's ability to use the equipment of the workshop. In short, this experience removes the teachers' reluctance to perform practical skills, the ability that current teacher education programmes are not able to develop effectively in the teachers. One of the male supervisors with an industrial background said:

'The practical vocational experience is vital for PVE since it takes the teacher closer to perfection of training in practical skills. It increases his abilities of training and using various approaches of enrichment of the professional dimension of practical skills in PVE teaching'.

Teacher education programmes should enable student teachers to use the facilities and equipment required for PVE teaching. More practical training should be included in the courses of universities and a planned practical experience, if possible, should also be included. As it has been reported that some teachers who currently teach the subject are not able to use the facilities and equipment required for PVE teaching, in-service training programmes should be oriented towards practical use of these facilities.

Another supervisor commented about the necessity of experience for effective use of devices and equipment:

'Practical vocational experience is necessary for the PVE teacher especially in using equipment and devices. There are many male and female PVE teachers

who do not know how to use the majority of devices and equipment in the workshop. This makes devices and equipment useless for training in the curriculum units. If there is a teacher with field experience in using devices, this could activate the workshop and enhance its utility for the students' training'.

The problem of the lack of teachers' abilities to use workshop facilities requires the in-service teacher training to take this aspect into consideration. Moreover, in order to make practical experience effective in improving the teachers' abilities in using workshop equipment, the selected work places in which teachers are to be trained should have a good variety of equipment that relate to as many fields of the curriculum as possible.

13.3 The Requirements of PVE Teacher Preparation and Training

To implement a more effective teacher education programme there should be improved facilities and human resources. Responses of the interviewees indicated a shortage in the following human resources and facilities:

13.3.1 Human Resources

The interviews' results indicated that there is a need for competent teacher educators and trainers who have good subject knowledge in the field they teach and adequate teaching skills to build competencies in the teachers. Also, it was indicated that teacher educators should have a sound understanding of the PVE curriculum, its philosophy, objectives, and content in order to orientate the subjects that they teach towards the training of more effective teachers. One of the curriculum developers who was also involved in teacher training in the MoE said:

'There is a need for teacher educators and trainers who have good understanding of the philosophy of the curriculum. Each field of the curriculum requires a specialised trainer with sound subject knowledge'.

Interviewees' responses emphasised what the literature indicated a lack of PVE teacher educators and trainers who are qualified in the subjects they teach, and a relative absence of PVE orientation in their delivery of the subjects. Therefore, it is suggested that teacher educators should be carefully selected before they teach subjects to teachers. Universities, in co-operation with the MoE, should try to prepare suitable teacher educators to teach and train in PVE teacher education programmes and to train PVE teachers in-service. In this regard, as Al-Jawarneh (1999) argued the teaching of subject knowledge courses and, to some extent, the teaching of pedagogical courses by specialists of subject matter (not educationally qualified), leads these programmes to miss understanding of the philosophy of the subject and to deliver irrelevant theoretical content.

13.3.2 Facilities

The facilities needed are laboratories and workshops that should be equipped with all the necessary devices and equipment in addition to the required training materials. One of the teacher trainers said:

'There is a need for vocational workshops supplied with all tools, equipment, and training materials with adequate quantities for all the curriculum fields'.

If these facilities cannot be provided in one school (the school of education), there should be co-ordination between the different schools within the university. This could reduce the facilities needed by utilising the workshops and laboratories of other relevant schools, like the schools of Agriculture, Engineering, Nursing, Medicine, and Business. In this regard, interviews indicated that lecturers and trainers should deliver subjects in an educationally orientated approach, which takes into account that these subjects are

delivered to the students to prepare them to be PVE teachers (to teach these skills, not only to master them). Regarding in-service teacher training, the interviewees emphasised that training programmes should be more practical, and also these programmes should be effective, continuous, and adaptable in order to follow the new issues that developed relevant to PVE subjects.

Summary

Responses in the previous sections have examined the main dimensions that should be covered in these programmes, their levels of delivery and their requirements in terms of facilities and human resources. They have also discussed the necessity of the practical vocational experience, and raised shortcomings in current PVE teacher education and training which should be avoided in the design of future programmes. The findings have also shed light on the basic abilities that PVE teachers should acquire from their preparation and training. If these abilities are integrated with the particular aspects of PVE they give a very clear picture of the role of such teachers, and the abilities that they should have in terms of the scientific bases of the subject matter, basic technical issues, practical skills and personal abilities. These elements could constitute the base for the content of PVE teacher preparation programmes. This chapter has also discussed the necessity of practical vocational experience for the teacher, the practical teaching experience, and the possibility of replacing vocational practical experience with a longer period of vocational teaching experience in multi-disciplinary comprehensive vocational schools. This could expose the teacher to a variety of specific teaching approaches to the different subject matter fields of PVE.

Chapter Fourteen

Conclusions and Recommendations

Introduction

This chapter will present the conclusions of the study and make some recommendations that might be given consideration on the basis of these conclusions. The study analysed the activities required for PVE teaching, and identified the teachers' roles within these activities. The study also identified the competencies required by PVE teachers. The study used the perceptions of both PVE teachers and PVE supervisors with regard to the relevance of the competencies to the teaching of PVE and their level of importance. To provide for the context in which teachers practise their job and the situations in which they need their competencies, the study identified the characteristics of PVE and its special features. The study has indicated the current shortcomings of delivery of the subject, analysed reasons for them, and suggested some recommendations. Moreover, the requirements of teacher education for PVE and its main components have been identified in addition to the shortcomings of the current programmes.

14.1 What are the Outcomes of the Study?

The study has addressed the following questions:

1. What are the special features of PVE that make it different from other school subjects delivered at the same educational stage?
2. What are the roles of PVE teacher in Jordan, the associated activities, and the tasks required for those roles?
3. What are the competencies that PVE teachers must acquire to fulfil their roles effectively?
4. What are the implications of the competencies for in-service teacher training?

5. What are the programme-design issues for PVE teacher preparation and training?

This included the following:

- a) What is the most suitable approach to the preparation of PVE teachers?
- b) What should be the main components of PVE teacher education programmes?
- c) Is practical vocational experience necessary for PVE teachers? (If so in what ways?)
- d) What are the shortcomings of the current provision?
- e) What corrective action could be taken in the light of the results of this study?

This section will list the questions of the study and the major outcomes with respect to each:

The First Question: what are the special features of PVE that make it different from other school subjects delivered at the same educational stage?

The Practical Nature of the Subject: this practical aspect of the curriculum should be taken into account in the preparation and training of teachers. The results showed that the teacher needs to have mastery of the practical skills of the curriculum. There is also a requirement for mastery of methods of teaching them and of methods of the assessment of their acquisition. As training in practical skills requires the use of the workshop, this adds to the responsibilities of the teacher in use of the tools and devices, the management of the workshop, and the application of safety regulations. Additionally, it was found that training of the teachers in the work place can contribute

to the effective delivery of PVE because it improves the practical capacity of the teacher.

The Flexibility of the Curriculum: the curriculum guidelines state that teachers select exercises to train students taking into account the general objectives of the curriculum. As the results indicated, teachers should understand the curriculum philosophy in all of its dimensions (knowledge, skills, and attitudes) and the roles implied by this philosophy. In this regard, teachers should consider the available facilities and learners' needs when selecting the exercises, an issue that implies the addition of some exercises, the modification of others, and integration of the subject with other subjects. The flexibility of the curriculum also requires use of a learner-centred approach in the delivery of the subject, which takes into account the students' inclinations to practise topics that they prefer. In this regard, if it is clearly understood that the teacher's role is a 'facilitator' of learning, then there are important implications for teacher preparation, particularly concerning the breadth of subject knowledge required.

The Affective Dimension of the Curriculum: because of the ages of the students targeted by PVE in Jordan, the majority of the curriculum objectives have affective implications. The curriculum aims to improve the students' attitudes towards work and careers generally. This implies certain tasks of measurement and delivery of the curriculum in terms of attitudes as 'learning outcomes'. Attitudes need long-term teacher commitment in measuring the inculcation and the change of attitudes.

Attitudes to the performance of vocational tasks and other professional attitudes should be taken into account in the delivery of the subject. This also includes values relating to

life. The results emphasised that attitudes should appear as learning outcomes of the instructional activities in all the stages (planning, execution and assessment). There was an apparent neglect of attitudes in the delivery of the subject caused by the teacher-centred methods that are used leading to an abstract delivery of textbook content.

The study has revealed other special features of PVE. These include the variety of the PVE curriculum fields, its long term objectives, the technology education within PVE, the necessity of utilisation of the environment in PVE delivery, the necessity for continuous assessment of student progress, the relationship with the social and vocational establishments, and the link between PVE and academic and vocational education. These special aspects of PVE render it difficult to prepare PVE teachers equipped with all the abilities required for the different dimensions of curriculum delivery. These aspects (see Chapter 6) should be taken into consideration in the design and implementation of the teacher education programmes. They require the use of different approaches from those used in the preparation of teachers of other (academic) subjects. The approach used should enable prospective teachers to understand the nature of their job (as PVE teachers) and the tasks associated with such work. It would be of great advantage if this approach could provide exemplars for trainee teachers to follow at school after graduation.

The Second Question: what are the roles of PVE teacher in Jordan, the associated activities, and the tasks required for these roles?

The Training Task: the teacher is responsible for training the students in the practical skills and theoretical knowledge of the five different fields of the PVE curriculum

(agricultural; industrial; home economics; business; and health and safety). The variety of these fields adds to the difficulty of teacher preparation, particularly in determination of the balance between the subject matter courses and other components of the programmes and the level of knowledge and skills included. Due to the philosophy of the curriculum that seeks to meet the whole range of students' interests, teachers are not required to teach a prescriptive curriculum as in other school subjects, but they are required to select from alternatives, and to modify exercises and to integrate topics included in other school subjects. However, it should be kept in mind, in teacher preparation, that the overall target of PVE is to acquaint students with skills and to enable them to satisfy the requirements of their daily life (not to do paid jobs that require a higher level of skills). The desired teacher's role at the higher basic stage is that of a 'facilitator' of learning for the training units that meet the students' needs, inclinations and aptitudes. Therefore, it is recommended to use a learner-centred approach, and to make students active in the learning of the PVE subjects. This adds to the teachers' task and the complexity of their preparation and training.

Technology in PVE: one of the PVE objectives is to enable students to deal with modern technology. Taking into account that technology in PVE relates to 'daily life technology (not advanced technology), teachers need to be aware of the appropriate technology to train students in order to be familiar with these developments. In addition to the teachers' self-development, they need to be exposed to continuous and adaptable training. Teachers need to be aware of the scientific principles that govern technology in order to show the practical benefits of the other school subjects. Familiarisation of students with technology would not be achieved in any way other than the provision of practical skills dealing with technology.

Utilising the Environment in the Delivery of PVE: to improve the students' sense of responsibility towards the local environment and society is one of the main dimensions of the curriculum. Teachers should try to expose students to a real vocational atmosphere. In this regard, teachers can utilise vocational establishments through planned field visits, and the invitation of field experts to teach certain topics and to reflect their experiences to broaden the vocational awareness of students.

Utilisation of surplus and waste materials in the environment could help in the delivery of curriculum skills and offer alternative exercises to those exercises included in textbooks in certain cases. Obviously, this would help the school to save some of the costs of training materials. In addition to administrative arrangements that should be made by the head teacher and the teacher, the teacher needs to be innovative, flexible and self motivated in selecting the activities, exercises and the ways of utilising the environment.

Vocational Guidance and Counselling: pre-vocational education aims to help students to make suitable decisions concerning their future careers. This requires the use of vocational guidance to enable students to discover their abilities, aptitudes and inclinations in addition to gaining an appreciation of and respect for work and workers. Although it is difficult to separate vocational guidance activities from other dimensions of the subject delivery, the teacher mainly needs to identify the students' problems regarding PVE and consider the individual differences between students to enable all of them to achieve the curriculum objectives. In this regard, the teacher should have cumulative progress records of students' performance to help in the assessment of their aptitudes and inclinations and to guide their training towards the exploration and

growth.. It is required to deliver information about careers, the required aptitudes, and the labour market situation. Teachers need to co-operate with vocational establishments to organise vocational guidance meetings. They also need to construct and maintain records of student progress in PVE to record the specific skills of the students, their attitudes, inclinations and aptitudes.

Special Needs Students: classes in Jordanian schools are mixed. Students with disabilities are taught in the same classes as other students. Special needs students need to be taken into account when delivering PVE. Students should achieve the curriculum objectives. As the interviews results indicated (see Section 9.2.1, pp. 275-277), the issue of special needs students mainly requires co-operation, with the school counsellor utilising the cumulative progress records of the students' performance. In certain cases it is required to design particular activities to suit the abilities of the special needs students. It is also required to use special teaching approaches including organising of the workshop in ways suitable for such students.

The Third Question: what are the competencies that PVE teachers must acquire to fulfil their roles effectively?

To deliver PVE, the teacher needs certain competencies. The study identified and approved these competencies through the perceptions of the teachers and supervisors. Perceptions of these competencies have been quantitatively studied. The study investigated perceptions regarding the relevance of each competency to the teachers work and how each competency serves to achieve the subject objectives. It also identified the level of the importance of each competency for the subject delivery. Mentioning of the investigated competencies in this chapter could produce an

unnecessary repetition; therefore, to see all the competencies ranked according to their perceived importance see Appendix 8 and Chapters 9-12. However, it was found that in addition to the generic teaching skills required for planning, organising and assessment of teaching/learning activities, PVE teachers need other abilities required for the use and management of the workshop. To have effective 'subject application' the PVE teacher needs certain competencies and abilities with respect to enrichment of the curriculum, undertaking vocational guidance, and some personal abilities that contribute to effective teaching of PVE. Competencies are not the only determinants of the content of teacher education programmes, but they establish the structure of the outcomes of these programmes, and based on them and their level of importance, the content and priorities of these programmes can be determined.

The Fourth Question: what are the implications of the competencies for in-service teacher training?

It was found that the supervisors' perspective on the relevance and importance of the competencies reflected their understanding of these competencies as ideal requirements of the effective PVE teacher. The majority of them perceived almost all the competencies as relevant and important for the teacher's work. However, teachers perceived these competencies in a frame of what is actually practised and possible within the constraints of the educational environment in terms of the teachers' understanding of the subject philosophy, their abilities and backgrounds, the available facilities, and the requirements of educational administration. Some of the teachers perceived some of the competencies as irrelevant to the teacher's work and perceived others as 'unimportant'. Details of perceptions of the teachers were utilised to identify

the shortcomings (deficiencies) of current subject delivery and the reasons for these shortcomings.

Among these deficiencies, male teachers considered industrial and agricultural education as more important than others, while female teachers considered home economics and health and safety as more important. This is due to the fact that, in the current situation of the curriculum delivery, male teachers tend to teach subjects that are traditionally considered suitable for male students (industrial and agricultural), while female teachers tend to teach subjects traditionally considered suitable for female students (home economics, health and safety). Teachers tend to concentrate on the subjects that are related to their background specialisation (and give less care to the other subjects simply because they are less confident in teaching such topics). Both the aforementioned facts lead to a contradiction of the curriculum philosophy at the stage of grades 5-7, that aims to expose students, regardless of the gender, to a wide base of vocational skills. Teachers need a better understanding of the curriculum philosophy, and access to needs-based subject matter training programmes to overcome the problem of background specialisation.

Teachers tend to rely on textbooks as the only source of knowledge due to heavy teaching loads and the requirements of head teachers that they should complete all the textbook material in the academic year. In this regard, educational managers (head teachers and supervisors) have negative effects on the delivery of the subject. The requirements of head teachers force the teachers to use teacher-centred methods that enable them to deliver content in short time, a factor that reduces the students' interaction and their interest in the subject. The philosophy of the PVE curriculum

needs to be explained more thoroughly to teachers, and their work conditions should be improved so that they can deliver the curriculum in a way that enables them to achieve the curriculum objectives effectively.

Perceptions of teachers concerning the relevance of competencies identified many deficiencies in the current delivery of PVE that need corrective action. More of these deficiencies are mentioned in Chapters (9-12) and will be referred to subsequently in this chapter (Section 14.2, pp. 401-405)

The Fifth Question: what are the programme-design issues for PVE teacher preparation and training?

The study has aimed to identify general elements and raise fundamental issues concerning PVE teacher education in Jordan. In addition to analysis of the PVE teachers' roles that could be utilised as the frame for outcomes desired from teacher preparation, general aspects of PVE teacher education have been discussed. These addressed: (a) the most suitable approach, (b) the main components, (c) the necessity of the practical vocational experience, (d) shortcomings of current teacher education programmes, and the required human resources and facilities. This analysis will facilitate the process of design of teacher preparation programmes, and identify the main components of such programmes and their content taking into account the priorities in the teacher's work.

a) What is the most suitable approach to the preparation of PVE teachers?

The interview results indicated that competency-based teacher education (CBTE) is the most suitable approach for preparing and training PVE teachers (see part C, pp. 259-

264). According to the interviewees' perceptions, this approach prepares teachers based on what they would do at school, and would remove the irrelevant content of the current teacher education programmes that was reported in this study and other studies with regard to teacher education in Jordan (Al-Samdi, 1999; Al-Jawarneh, 1999). It is recognised that competency-based approaches to education and training is not uncontested but have given rise to considerable debate. Opponents to this approach to teacher education argue that it is reductionist and does not take into account the holistic nature of teaching (see Chapter 8). Based on this fact, competencies identified in this study aimed to present the demands of PVE delivery in terms of teacher 'abilities' rather than in terms of abstract skills.

b) What should be the main components of PVE teacher education programmes?

The study has suggested that PVE teacher preparation should have the following components:-

The General Cultural Issues: general social and psychological knowledge should be delivered to teachers in order for them to be able to utilise the curriculum subjects effectively to serve the lives of the learners.

The Basic Sciences: the basic sciences provide the foundation of the technical and vocational subjects that the teacher will deliver. This component includes a variety of scientific theories and rules.

Vocational and Technical Bases of the Field(s) of Specialisation: this component covers the basic technical principles and theories that govern vocational concepts and tasks.

The Practical Vocational Component: the prospective teacher should be trained practically in the skills included in the curriculum. If teacher education does not pay this

component the required attention, graduate teachers will be ill-equipped to teach practical skills.

The Pedagogical Component: this component includes training prospective teachers in the choice and use of a wide range of teaching techniques, teaching aids and educational technology, and training in how to create and produce appropriate teaching materials utilising the surrounding environment. Teacher education and training for PVE should take into account the role of the teacher in vocational guidance. The teacher needs to undertake vocational guidance and should know the principles and rules of this task and have the necessary skills in this area.

Teaching experience: the teacher education programmes for PVE should include some practical teaching experience. This experience could be achieved through school-based supervised training. Taking into account the variety of the subjects in the curriculum, it is suggested that the student teachers should be trained for more than one semester (as is usually done in teacher education programmes in Jordanian universities).

c) Is practical vocational experience necessary for PVE teachers? (If so in what ways?)

Practical vocational field experience was found to be of great advantage for effective delivery of the PVE curriculum. The results indicated that field experience would improve the teachers' ability to deliver the curriculum in a more realistic way since this experience broadens the teachers' practical experience and their understanding of the practical aspects of the various vocational fields. This experience could reduce the boundaries between actual vocational experience and vocational education. Also vocational experience could enrich the teachers' ability to perform practical exercises and improve their ability to use machines and equipment in the workshop.

d) What are the shortcomings of the current provision of PVE teacher preparation?

In addition to the shortcomings mentioned in the previous sections, the current teacher education and training programmes have shortcomings including the lack of training in both the practical skills of the curriculum and practical teaching. This makes graduates of these programmes cautious of training students in practical skills since the teachers themselves lack the relevant competencies. To overcome this shortcoming, the teacher should be properly trained in the practical skills included in the curriculum. Since teacher education courses were criticised as over theoretical due to the large number of students involved, the first step in making them more practical would be to reduce the numbers of students in each teacher education class in order to enable teacher educators to deliver the practical as well as the theoretical aspects. The content of subject matter courses should be reviewed and redesigned in order to meet teachers' needs in the required practical skills and to eliminate irrelevant theoretical content.

Another shortcoming of current teacher education programmes is the failure to cover all the topics in the curriculum. This equips teachers to deliver only certain subjects and not others. Teachers tend to teach subjects that they feel confident to teach, while confining the delivery of other subjects to theoretical information, or even not delivering these subjects at all. This is a serious shortcoming. Teachers need to be trained specifically and prepared to be able to teach all the subjects in the curriculum. This is an important requirement to help in achievement of the objective of exposing the learners to a wide range of vocational experiences.

The non-addressing of the administrative tasks of PVE teachers, particularly the workshop management skills, is also a shortcoming in the current PVE teacher education programmes. Teachers need to be trained in these skills. If preparation programmes do not deliver such skills to the teachers, they need in-service training courses to train them specifically and properly in these skills.

To implement PVE teacher education programmes qualified teacher educators and trainers are required. These teacher educators and trainers should have sound subject knowledge and appropriate teaching skills to build competency in trainee teachers. Additionally, they need a deep understanding of the PVE curriculum, its philosophy, objectives and content. They also, ideally, need previous school teaching experience. Moreover, suitable workshops are required to train student teachers in the practical subjects of all areas of the curriculum. As these facilities could not be provided in schools of education, the facilities of other relevant schools could be utilised, as is the case in the current programmes. But staff members and trainers should deliver the subject with an educational orientation that takes into account that these subjects are delivered to learners being prepared as teachers. This requires careful design of the structure of these courses and a certain approach to their delivery, which could be subsequently adopted by the teachers themselves to deliver similar subjects.

14.2 Recommendations

This study has revealed the need to take action to enhance current delivery of PVE. In addition to those identified previously, these corrective actions include:

- a) Current teacher education programmes need to be reviewed to meet the teachers' needs in relation to job demands associated with curriculum competencies in all fields, practical teaching abilities, and subsidiary abilities to undertake accompanying activities. These programmes should equip the prospective teacher with an understanding of the philosophy of the subject, and the teacher's roles implied by this philosophy given that teachers are key decision makers in the delivery of the subject. The content of the courses and approaches to the delivery need to emphasise a more practical approach in order to equip graduates with effective tools for doing their job. As a part of their preparation, teachers should understand that, in addition to teaching and training in all the curriculum fields, they are key decision makers in the delivery of the subject, and have other tasks such as:
- using sources of knowledge other than prescribed activities in textbooks;
 - inviting experts in vocational subjects to undertake some activities with the students to enhance their vocational sense and awareness;
 - utilising and respecting the environment in the delivery of PVE;
 - undertaking vocational guidance in order to enhance students' attitudes, and to explore their inclinations and aptitudes;
 - familiarising students with modern technology relevant to their daily life;
 - consideration of special needs students and their differences from others in their learning;
 - integration of PVE with other school subjects to show the function of knowledge achieved through these subjects;
 - undertaking research to enhance the performance of teaching/learning at the level of the class and the school;

- taking responsibility for professional development since initial teacher education programmes cannot equip the teacher with all the required abilities of the effective teacher;
 - satisfying the students' needs and to explore their inclinations, taking into account the large number of students in schools, the variability of the subject fields and the flexibility of its curriculum, teachers of PVE can use a learner-centred approach in which their role is a facilitator of learning.
- b) teachers who are currently delivering PVE need to understand better the underpinning philosophy of PVE and the associated demands. These include the flexibility of the curriculum, the affective targets that PVE aims to achieve, and the non-gender specificity of its fields. It should also be understood that it is necessary to deliver topics in all fields at the medium basic stage and the requirement to consider the needs of the locality at the higher basic stage. Specific training courses accompanied by supervisory support could establish such understanding. It was found that, because current PVE teachers have different background specialities, teachers tend to emphasise the subject fields relevant to their background. If the teachers' background specialities do not enable them to teach in all the fields of the curriculum, specific subject-knowledge training should be provided at either individual or group levels.
- c) Taking into account the variety of dimensions of PVE delivery and its requirements, the teaching loads of the teacher and the numbers of students in the class should be reviewed to provide for effective delivery of the curriculum that would enable the students to practise and develop skills. Without these changes teachers will still

follow teacher-centred methods in PVE teaching that diminish the interaction of students and their interest in the subject.

- d) To enable students to deal with technology, the PVE workshops should be supplied with suitable technology and teachers need to have specific training in the use of them. Moreover, a clearer approach to training in daily life related technology is required in the curriculum.**
- e) Current PVE workshops in schools need to be reassessed in order not to be an extra burden on schools without an educational return. The teachers need to have adequate training in the use of the workshop facilities and in workshop management.**
- f) The maintenance of school facilities, without learning outcomes, should not be undertaken by students. Head teachers should consider the teachers' performance in the curriculum delivery as the main determinant of their performance rather than their efforts in the maintenance of school facilities. If the maintenance is to be undertaken by students, it should have its own learning outcomes and should be analysed and planned in advance and agreed between the teacher and the head teacher.**
- g) Teachers need to be more aware of the vocational guidance and counselling aspects of PVE. More co-operation between the PVE teacher and the school counsellor is required to help special needs students. Standard records of students' progress should be used to monitor students' abilities, inclinations and aptitudes. These**

- records should be accurate and specific. They help in guiding the PVE activities at the level of individuals and lead to appropriate decisions regarding future careers.
- h)** Teachers need to have greater understanding of innovations in teaching, in the use of research and other studies to enhance performance, in the selection of alternative exercises, and of ways of co-operating with other teachers. This requires an improvement in the work conditions of the teacher in terms of teaching loads, salaries and incentives. Moreover, an effective introduction to educational technology elements is required for current PVE teachers.
- i)** There is a need to establish a more systematic relationship between schools and vocational establishments, including the workplace, to contribute to building vocational awareness in the students.
- j)** As the PVE curriculum was found not to be effectively addressing some major aspects and dimensions, the match between its objectives, content of the textbooks, and the available facilities should be continuously reviewed (particularly to consider the time-dependent objectives like training students in the use of technology). Moreover, the PVE curriculum needs to be realistic in demanding what is achievable within the current situation in schools in terms of facilities, teachers' abilities and educational administration. Such a review may involve the PVE curriculum structure and its content. The curriculum could be more general and flexible at the higher basic stage. This would enable it to perform its function in serving the learners' life and in achieving a realistic vocational awareness.

14.3 Areas for Future Research

The results of this study have revealed other areas that need to be investigated regarding PVE:

- a) The possibility of a contribution from non-PVE teachers at schools in teaching of some of the subjects that are included in the PVE curriculum should be considered. In this regard, the structure of the entire school curriculum could be reviewed.
- b) The implications of the activities involved in PVE curriculum delivery, and teacher competencies for the specific content of teacher education courses, should be considered through small-scale studies to improve the utility of teacher education programmes in the satisfaction of teachers' actual needs.
- c) The possibility of co-operation between different establishments in the preparation and training of PVE teachers, particularly in vocationally relevant subjects, could be investigated. In this regard, opportunities for co-operation between community colleges, universities, the Ministry of Education (The Centre of Educational Training), and the Vocational Training Corporation (The Centre of Preparation of Trainers and Instructors) could be investigated.
- d) The gender specificity of PVE subjects needs to be studied more deeply. The intentions of the MoE, the students' attitudes, and the views of society could be investigated. Study of the advantages and disadvantages of having gender specific PVE, in relation to the traditions of society and the labour market situation, could clarify the debate about this aspect.
- e) Attitudes towards vocational education and PVE should be investigated at the national level. The reasons for the negative attitudes and possible solutions to this problem could be studied.

It was found that the name 'pre-vocational education' is usually given to programmes that prepare students at secondary education for the workplace at the 'entry level', or to prepare them for a smooth transfer from schools to the workplace and higher education. The aim of pre-vocational education in Jordan is different; it is to equip students with everyday life skills and to develop their awareness of future careers. Therefore, researchers in Jordan and elsewhere should give careful attention to the literature they utilise regarding the provision of vocational and technological content in schools at the basic education stage. Such provision may have other names like 'manual skills', 'introductory technology', 'manual work', 'Design and Technology', 'Careers Education and Guidance', or 'life skills'.

In conclusion, the main aim of the study was to constitute a rational base for teacher preparation and in-service training relating to PVE in Jordan, in addition to contributing this the study has revealed implications for other components of PVE provision such as the curriculum; the workshop; teaching strategies; and educational administration. These implications should be given consideration to inform the improvement of PVE delivery. As research is a continuous cycle, the study has revealed areas that need further research. The conduct of in-depth studies focusing specifically on these areas would also have the potential to contribute to the better delivery of PVE.

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Appendices

Appendix 1: The competencies of the PVE curriculum.

The general objectives of the curriculum are achieved through the following specific objectives and competencies.

First: The specific competencies for grades 5-7

1. Agriculture

For grades (5-7):

A. Practical competencies

- preparing land for planting in pots and gardens;
- planting seeds, and nursery plants of different plants;
- preparing buds and burgeons of plants for planting;
- practice of grass removal, irrigation, fertilisation, trimming and harvesting of crops;
- using spray pumps for insecticides .

B. Cognitive objectives

- distinguishing between plants in local environment.
- acquaintance with the basic principles of agriculture.
- acquaintance with principles of care of house plants.
- realising the necessity of protection of plants from diseases and insects.

2. Industrial

A. Practical competencies

- use of basic drawing tools;
- preparing drawing for some simple industrial jobs;
- use of simple tools and equipment to make useful products;
- maintenance of simple devices and facilities of the school;
- making some simple toys;
- dismantling and reassembling some simple toys;
- use of personal protection equipment;
- application of safety rules during work;
- use of simple measuring equipment;
- recognition of raw materials used in various vocational jobs.

B. Cognitive objectives

- acquaintance with the characteristics of some industrial careers.
- distinguishing the tools and equipment used in industrial work.
- realising the importance of communicative drawing in presenting ideas.
- realising the importance of safety during work.
- acquaintance with the principles, rules and requirements for accomplishment of industrial operations.
- realising the importance of ability to undertake jobs, and the effect of that on the different dimensions of family and society life.
- acquaintance with characteristics of materials used in various vocational jobs.
- realising the importance of co-operation.

3. Business

A. Practical competencies

- organising of leisure times according to work time.
- keeping files in proper ways.
- using business forms and banknotes.

B. Cognitive objectives

- acquaintance with methods of file keeping.
- realising the importance of money in business processes.
- acquaintance with the post services.
- understanding the concept of 'companies'.
- knowing the opening of bank accounts.
- realising the importance of reduction of 'public consumption'.
- understanding the effect of supply and demand on the prices according to the type of market.

4. Home economics

A. Practical competencies

- cleaning and preparing vegetables and fruits in proper ways;
- preparing of some simple foods;
- preparing of cold and hot drink;
- mastery of some skills of food preparation;
- organising a dining table ;
- storing different kinds of food ;
- use of home tools and equipment ;
- recognition of some kinds of textiles;
- washing, ironing and keeping clothes ;
- harvesting some wild flowers and arranging them ;
- use of the sewing machine.

B. Cognitive objectives

- acquaintance with the nutrition rules in normal situation.
- selecting suitable foods.
- realising the importance of having meals at proper time, particularly breakfast.
- knowing the indications of food corruption.
- knowing the name of establishments relevant to nutrition and food in Jordan.
- choosing clothes suitable for different times, seasons and occasions.
- Considering suitability in clothes and furniture.
- understanding the meaning of symbols of fabrications and clothes.
- understanding the concept of home management.

5. Health and safety

A. Practical competencies

- commitment to health rules in different places and situations;
- cleaning of body;
- assuring the cleanliness of food and water;
- commitment to road safety rules;
- receiving notified vaccination;
- care of the health of mouth, gum and teeth;

- avoiding the sources of infection to prevent the spread of diseases;
- cleaning of eye, ear and nose ;
- performing simple first aid;
- purifying drinking water in particular cases;
- mastery of some basic skills of ' skin health and care;
- considering the rules for using machines.

B. Cognitive objectives

- understanding the main health concepts.
- realising the main rules of personal health.
- acquaintance with concepts of 'first aid'.
- realising the importance of cleaning of water and food for prevention of diseases.
- realising the importance of cleaning of sanitary facilities.
- knowing the characteristics of food and water acceptable for domestic use.
- understanding the importance of 'vaccination for protection from diseases (infections).
- understanding the indications of road signs.
- knowing the main causes of fires.

The overall social and economic objectives of the curriculum in grades 5-7

- respect of manual work.
- co-operation with others to accomplish jobs.
- 'dealing with' the environment positively.
- utilising leisure time for useful deeds.
- doing well in different social situations.
- taking care of house facilities.
- appreciation of the importance of saving and reduction in consumption.
- application of the rules of visiting and hospitality.
- organising times for studying, playing, and other jobs.
- Appreciation of the importance of care of public crafts and inheritance.
- considering the rules of eating and drinking.

Second: The competencies for grades 8, 9 and 10

Objectives and competencies of each training unit are only for the students who study that training unit.

1. Competencies in agriculture.

A. Cognitive objectives

- acquaintance with the basics of protected planting.
- acquaintance with the basics of food storage.
- identifying the agricultural fields available locally.
- recognition of harmful insects.
- recognition of diseases that infect the plants.
- realising the positive and negative effects on the society.

B. Practical competencies

- identifying suitable locations for planting trees in fruit gardens;
- planning planting in garden;
- production of different nursery plants;
- practice of planting under plastic tunnels;

- graft plants using different methods;
- practice the rearing of chickens, rabbits and bees;
- applying safety rules when using agricultural tools, equipment and materials;
- practice making dairy production.

C. Social and economical objectives

- doing jobs with confidence and mastery.
- commitment to positive values of work.
- taking responsibility for him/herself and others.
- participation in production processes at home and in the local situation.
- conserving the natural resources of the society.

2. Competencies in the industrial field

A. Cognitive objectives

- realising the importance of communicative drawing as a global language.
- awareness of the importance of technological development in the industrial field.
- recognition of industrial tools and equipment and the nature of their uses.
- acquaintance with the impacts of manufacturing operations such as environmental pollution and safety hazards.
- understanding the scientific bases of the function of tools and equipment.
- realising the importance of precision and patience for mastery of jobs.
- realising the importance of maintenance of devices and facilities.

B. Practical competencies

- drawing perspectives and views (projections) using the different systems and include dimensions;
- consulting drawings and catalogues in vocational jobs;
- use of accurate measuring devices;
- maintenance of house facilities;
- use of electrical tools and equipment to accomplish vocational jobs;
- identification of the requirement of some vocational jobs;
- following the practical applications of rules and theories that are studied in other subjects;
- determining the cost of some vocational jobs;
- recognition of the characteristics and specifications of materials used in industrial work;
- solving problems resulting from the execution of some vocational jobs;
- dismantling and reassembling some mechanical structures.

3. Competencies of 'business' field

A. Cognitive objectives

- understanding the concepts of internal and external trade.
- realising the importance of advertisements and marketing in sales.

B. Practical competencies

1. recording business operations in their books;
- classifying accounts in the ledger;

- preparation of final accounts and general balance for a single small firm;
- mastery of typing in Arabic and English;
- completion of business forms and receipts;
- writing business correspondence;
- practicing selling;
- developing financial balance and identification of priorities for spending.

4. Objectives and competencies of home economics

A. Cognitive objectives

- acquaintance with standard specifications of some foods.
- acquaintance with basics of planning balanced nutritional meals.
- realising the importance of planning and organising of tasks in the home.
- realising the importance of organising the kitchen.
- acquaintance with basic rules of safety in the house.
- acquaintance with the elements of list of income and expenditure.
- acquaintance with the basics of care of pregnant and breast feeding mothers and babies.
- acquaintance with basics of furnishing and house decoration.

B. The practical competencies

- use of the house measures of weight in a proper way;
- preparation of different dishes of food according to different cooking methods;
- planning of balanced nutritional meals;
- preparation of balanced nutritional diets for ordinary and illness cases;
- serving food and drink by different methods;
- preparation of different types of dough and pantries;
- preparation of some cleaning materials and use them in the house;
- picking flowers and arranging them in different ways;
- doing the simple home nursing tasks in different cases of illness;
- washing of hair and its ornament
- undertaking some simple processes of facial, hand and foot care;
- cutting clothes pieces and sewing them without plans;
- undertaking some needle-sewing work;
- mastery of some textile works;
- cutting curtains and sewing them;
- using fabrics and leather to make toys;
- drawing plans to make clothes for new-born babies.

C. Social and economical objectives

- appreciation the role of the family as a social establishment.
- preserving the family relationships.
- identifying the spending priorities.
- considering the priorities of organising in the home and their accomplishment.
- selecting suitable flowers for different occasions.

5. Objectives and competencies of 'health and safety'

A. Cognitive objectives

- acquaintance with the basics of first aid.

- knowing the basic rules of evacuation and transfer of wounded in the cases of accidents and fire.
- knowing the basics and rules that govern health preventive and treatment actions at home.
- acquaintance with some medicinal and treatment characteristics of environmental plants.
- knowing the main health promotion and health care establishments, their centres and general functions.
- realising the dangers in the use of medicines.
- acquaintance with useful conditions and actions of fire prevention and reduction of fire effects.

B. Practical competencies

- application of the appropriate actions in accidental health situation
- mastery of the basic processes of first aid.
- mastery of the use of first aid staff such as bandages, sticks, cotton.
- commitment to the proper use of medicines and to obeying the instructions of the doctor and pharmacist.
- mastery of skills of the use of some medicinal plants according to their characteristics.
- managing some accidental and common health problems.
- extinguishing fire.

Appendix 2: The standard list of the PVE workshop facilities in schools that have grades 5-7.

No	The Item	Quantity
1	Gas cooker (4 heads) with timer	2
2	Electrical refrigerator with freezer	1
4	Electrical Mixer	3
3	Electrical flat-iron	2
5	Electrical blender with mixing pant	2
6	Electrical squeezer (juice maker)	1
7	Sewing Machine (doing zig-zag) stetches	5
8	Aluminium trays for cake baking	2
9	Tefal trays- different sizes	2
10	Tefal Frying pants	2
11	Tefal pans	2
12	Stainless steel strainer	2
13	Glass or Melamine mixing pant	4
14	Head trays (12 head)	2
15	Manual tomato-juice maker	2
16	Set of stainless steel knives	3
17	Set of stainless steel forks	3
18	Set of stainless steel spoons	3
19	Set of stainless steel sweet knives	3
20	Set of stainless steel sweet forks	3
21	Set of stainless steel sweet spoons	3
22	Set of pouring spoons- 4 pieces	2
23	Kitchen knife- large	6
24	Set of Pyrex pans- 3 pieces	3
25	Kettle with alarm, stainless steel	2
26	Flour sieve	3
27	Pressing pints, 3 sizes	6
28	Trays, 3 sizes	2
29	Egg mixer, wires	5
30	Egg mixer, wheel	5
31	Scaled Flask, plastic or glass	3
32	Tea jug- 2.5 litre	3
33	Balance, 4.5 Kg capacity	3
34	Sewing scissors	1
35	Dining set, glass	1
36	Dining set, melamine	4
37	Cake mould- circular- aluminium	1
38	Foldable clothes hanger (peg)	2
39	Gas cylinder with pipe, and gauge	2
40	Flat-ironing table	2
41	Pastry thinner	3
42	Shovel for agriculture (planting)	5
43	Plastic planting pots, different sizes	50

No	The item	Quantity
44	Water sprayer, manual	3
45	Agricultural spoon with a wooden handle	5
46	Water sprayer for large flats with handle	2
47	Plastic nursery plate tray	20
48	Trimming scissors with disposable blades	5
49	Grafting knife, double blades	5
50	Grafting saw	5
51	Metal scissors with insulated handle	2
52	Lined water pipe, flexible	1
53	Carrier with wheel	2
54	Garden axe with a wooden hand	5
55	Iron comb with a wooden hand	5
56	Garden digger	5
57	Garden shovel	5
58	Plastic water pump	2
59	Garden hoe	5
60	Fork hoe	5
61	Rain gauge	1
62	couthook carrier	4
63	Manual fibre whetting tool	1
64	Welding machine- single phase	1
65	Adjustable angle manual saw	1
66	Electrical drill- double speed	2
67	Electrical whetting machine, double disk	1
68	Pipe vice	1
69	Pipe spanner with nut	5
70	Black smith hammer	10
71	Cable peeler	5
72	Ball-head hammer	10
73	Glass scissors	5
74	Flat file, fine and coarse	10
75	Square file, fine	10
76	Square file, coarse	10
77	Circular file, fine	10
78	Circular file, coarse	10
79	Triangular file, fine	10
80	Semi-circular file, coarse	10
81	Set of screw drivers	10
82	Set of cross screw drivers	5
83	Electrical-Test screw diver	10
84	Vice on a steel table	10
85	Adjustable angle saw	8
86	Hand hack saw	10
87	Level meter	10
88	Circular Pillars	2

No	The item	Quantity
89	G- shape clamp	10
90	F-shape clamp	2
91	Manual wood plane	2
92	Carpentry release hammer	2
93	Manual press pillars	5
94	Manual piercing saw	5
95	Steel right angle	5
96	Steel ruler scaled in (mms) and (inches)	5
97	Measuring tape (2m)	10
98	Carbon steel chisel	10
99	Tin welding tool with copper head	10
100	Set of steel drilling heads	4
101	Protective glasses	2
102	Set of ring spanners	10
103	Set of English spanners (wrench)	1
104	Manual Riveting tool	1
105	Set of pipe work tools	1
106	Set of carpentry chisels	1
107	Fire fighter	2
108	Electric wire cutting pillars	1
109	Wooden vice	10
110	Set of spanners	8
111	Manual steel saw	1
112	Pillars with insulated handle	10
113	Wooden scaled mater	5
114	Manual wheel drill	5
115	Pipe saw	2
116	Teething machine	2
117	Button fuse with base	2
118	Wire cutting tool	10
119	Set of painting brushes	5
120	Oil whetting stone	3
121	Marking pen	4
122	Steel tracer	3
123	Pinch marker	10
124	Spring of electric wire drawing in pipes	10
125	Metallic wire brush	2
126	Roll brush for walls	3
127	Construction trowel	5
128	Triangular trowel	5
129	Vernier calliper	1
130	Set of plastic screws with nuts, length 2-5, dia 10 mm	2
131	Set of industrial plastic tools	5
132	Paper plastic scissors	5

No	The item	Quantity
133	Set of plastic or wooden pieces to build models	5
134	Paving machine, head dia 4 inch	5
135	Paving brushes	3
136	Hammer with plastic head	10
137	Sewing chair with upholstered base and back	20
138	Table for home economics	4
139	Stool	20
140	Sewing machine table	5
141	Sewing table (wooden face)	2
142	Carpentry table (wooden face)	2
143	Metal work table with two drawers	2
144	Wooden board with double glass door	1
145	Steel board with double door, three shelves	1
146	Steel board, 24 room	1

Notes:

- All of the equipment mentioned in the list should be available in the school workshop.
- Schools of grades 8-10 select to teach two training units. So, they may not need all the list equipment, but need the equipment required for the selected fields.

Appendix 3: The syllabus of the PVE teacher preparation Programme at Jordanian Community Colleges.

(f): female, (m): male

No.	The subject name	Credit hours
1	Studies of Islamic and Arabic culture	3
2	Development in the Arab world	3
3	Arabic language	3
4	English language	3
5	General Sciences	3
6	General mathematics	2
7	Introduction to using the computer	3
8	Management information systems	3
9	Accounting	2
10	Office and secretarial work	2
11	Fundamentals of Education	2
12	Classroom teaching and learning	2
13	Measurement and evaluation in education	2
14	Teaching approaches to PVE	2
15	Vocational guidance and counselling	2
16	Child care and his education	2
17	Food and nutrition	2
18	Food preparation	2
19	Health and safety	2
20	Mechanical drawing (m), House management (f)	2,3
21	Animal products (m), Clothing and textiles (f)	2,2
22	Vegetable production (m), Vegetables (f)	2,2
23	Applied electricity (m), Home agriculture (f)	2,2
24	Electricity/ practical	1
25	Food and agricultural products manufacturing	2
26	Technology and construction workshop	2
27	Technology and metal workshop	2
28	Technology and carpentry workshop	2
29	Engineering drawing	2
30	Typing and communication	2

Appendix 4: The syllabus of the BA degree in PVE in the University of Jordan

No	Subject	Credit Hours
The University Compulsory Courses – 18 Credit Hours		
1	Communication skills: Arabic Language (1)	3
2	Communication skills: Arabic Language (2)	3
3	Communication skills: English Language (1)	3
4	Communication skills: English Language (2)	3
5	Human Civilisation	3
6	The Military Sciences	3
The University Compulsory Courses – 12 Credit Hours		
7	Computer Application	3
8	Knowledge and the Community	3
9	Ecology	3
10	Democracy	3
11	Islamic Culture	3
12	Philosophy	3
13	Logic	3
14	Epistemology	3
15	The Arabic Islamic Civilisation	3
16	The History of Jordan and its Civilisation	3
17	Introduction to Social Psychology	3
18	History of Arts	3
19	Economic Concepts and Systems	3
The Faculty Compulsory courses- 18 Credit Hours		
20	General Psychology	3
21	Introduction to Education	3
22	Statistics in Education	3
23	Introduction to Curricula and Instruction	3
24	Classroom Management	3
25	Psychological Health	3
The Faculty Elective courses- 6 Credit Hours out of		
26	The Educational System in Jordan	3
27	Educational Sociology	3
28	Study and Research Skills	3
29	Introduction to the Learning Computer	3
30	Educational Psychology	3
The field Compulsory Courses- 38 Credit Hours		
31	Fundamentals and Skills in plant rearing	3
32	Production of the Farm Animals	3
33	Fundamentals of Food and Nutrition	3
34	Health Education	3
35	Introduction to nursing motherhood and childhood	3
36	Family Nursing Care	3
37	Basic Skills in House Economics	3

No	Subject	Credit Hours
38	The Industrial Skills- Electrical	2
39	Introduction to Engineering Sciences and Engineering Drawing.	2
40	The Industrial Skills- Carpentry	1
41	The Industrial Skills- Metals and Sanitary constructions	1
42	Vocational Safety	2
43	Office Management	3
44	Computer Accounting Application	1
45	Concepts of Accounting	2
46	Introduction to the Finance	3
The Field Pedagogical Courses-28 Credit Hours		
47	Design and Use of the Teaching Materials	3
48	Evaluation of Pre-vocational Education Learning	3
49	Teaching Methods for Industrial Skills	2
50	Teaching Methods for Agricultural Skills	2
51	Teaching Methods of Administrative and Financial Skills	3
52	Teaching Methods for Nursing Skills	3
53	Practical Education (school placement)	12
Free Courses- 6 Credit Hours Selected out of All University Courses		

Appendix 5: Responses of the PVE teachers in the pilot study ranked according to the frequencies

In a pilot open question addressed to sixty PVE teachers asking them about the tasks they do in the schools, the answers revealed that the tasks, ranked according to the frequencies of the respondents who mentioned it, are:

1. teaching in the PVE curriculum as recommended in the guidelines;
2. maintenance of school facilities;
3. taking care of the school garden;
4. exhibitions and school activities (celebrations);
5. modifying and control of discipline in the school;
6. disseminating vocational awareness;
7. participating in the local society activities;
8. building vocational sense and respecting manual work;
9. helping the students utilise their leisure times in useful work;
10. carrying out administrative tasks;
11. developing self confidence concepts through the exercises;
12. selecting the PVE training units for grades 8-10;
13. appointing assignments and discuss them with the students;
14. undertaking examinations;
15. participating in the purchasing of PVE equipment;
16. encouraging students to take care of tools, equipment and facilities;
17. taking care of the workshop and its facilities;
18. management of the workshop;
19. planning for curriculum delivery according to the educational stage;
20. utilising the environment in delivery of the curriculum;
21. attending training courses;
22. behavioural guidance of the students by organising collective meetings.

Appendix 6: The interview schedule

Q.1 What are the special features of the PVE curriculum?

Q.2 What are the main tasks of the PVE teacher?

Q.3 What are the main abilities that the PVE teacher should have?

Q.4 There are some broader aims of PVE in addition to practical skills' acquisition.

What are the activities that enable the teacher to achieve these aims?

Q.5 One of the PVE objectives is to provide the students with knowledge and skills that enable them to deal with the modern technology. What are the implications of this objective for the role of the PVE teacher?

Q.6 How important are the workshop activities for teaching of the PVE curriculum?

Q.7 What are the abilities and skills that enable the PVE teacher to use and manage the workshop?

Q.8 a) Do you expect that PVE teacher should contribute to the maintenance of the school facilities?

b) To what extent can the PVE teacher contribute to the maintenance of the equipment and tools in the PVE workshop and generally in the school?

Q.9 a) Is the PVE teacher expected to utilise the local environment facilities in teaching of the PVE curriculum?

b) How can the PVE teacher utilise the surrounding environment and vocational establishments to enrich the PVE curriculum?

Q.10 What are the activities that the PVE teacher can undertake in order to achieve the objectives of PVE in vocational guidance and counselling?

Q.11 The PVE teacher should participate effectively in school committees (PVE and purchasing committees) and other committees. What are the skills needed to play this role?

Q.12 The PVE teacher should consider the special needs students. What are the basic skills needed to do that?

The following group of questions was asked to those specialised in teacher preparation and training and to the members of the National Committee for the PVE Curriculum development.

Q.13 what is the suitable approach that could be adopted in the PVE teacher preparation and training?

Q.14 What are the main dimensions that the PVE teacher preparation and training programme should cover?

Q.15 What is your opinion in the necessity of practical vocational field experience for the PVE teacher?

Q.16 What are the facilities and human resources required for the PVE teacher preparation and training?

Q.17 What are the shortcomings that you find in the programmes of PVE teacher preparation and training?

Appendix 7: An English translation of the questionnaire.

Dear Teacher of Pre-Vocational Education

The researcher is undertaking a study of the preparation and training of the PVE teacher in Jordan. This questionnaire has been designed to identify the role of the PVE teacher, the activities associated with this role, in addition to the competencies of the teacher to teach the subject. Please read each item of the questionnaire and answer it carefully. I can assure you that the responses will be treated confidentially, and anonymously, and used for the purpose of the study only.

The researcher

Munim Al-Saideh

Ph.D programme in education

The University of Huddersfield/ U.K

Part one: General information about the teacher

1. The type of the region of the school: 1. Urban 2. Rural

2. Gender of the teacher: 1. Male 2. Female

3. The period of the teacher's experience in teaching:

1. Less than one year 2. (1-3) Years 3. (3-5) Years 4. More than
five years

4. The teacher's vocational experience:

1. No experience 2. Less than one year 3. (1-5) Years 4. More than 5 yrs

5. The level of qualification of the teacher:

1. Diploma 2. Bachelor' degree 3. Higher than B.A

6. The specialisation of the teacher:

1. PVE 2. Other vocational field 3. Non vocational field

If your specialisation is not PVE, please specify it.

Part Two: Competencies required to teach PVE

Please identify whether each of the following competencies is one which the PVE teacher needs, then to identify the degree of importance of the competency if it is a part of the teacher's work.

The following example explains how to answer this question

No	Task/competency	Relevance to teacher's work		Degree of importance			
		Relevant	Not relevant	V.I	I	L.I	N.I
82	Using the constructive evaluation in teaching/ learning	X		X			
83	Using summative evaluation in teaching/ learning.		X				

In the table above, if the competency (82) is relevant to teacher's work and its degree of importance is Very important, then (x) sign is put in the square of (relevant) and another (x) in the square of the degree of importance (very important). But if competency (83) is not relevant to teacher's work then only (x) sign is put in the square (Not relevant).

No	The task/competency	Relevance to teacher's work		Degree of importance			
		Rel.	Not rel.	V.I	I	L.I	N.I
The first field: Planning of teaching/learning							
1	Designing a Scheme of Work to achieve the curriculum objectives.						
2	Designing a lesson plan.						
3	Formulating the educational objectives in the form of learning outcomes in knowledge.						
4	Formulating the educational objectives in the form of learning outcomes in attitudes						
5	Formulating the educational objectives in the form of learning outcomes in Psychomotor (practical) skills.						
6	Identifying the prerequisite behaviour (learning aptitude) relating the objectives.						
7	Selecting suitable content material for the objectives.						
8	Identifying the necessary facilities required for objectives (materials, tools and equipment).						
9	Identifying the most suitable instructional approach to achieve the objectives.						
10	Selecting evaluation methods suitable to the objectives.						
The second field: Organising of teaching/ learning							
11	Relating knowledge to life						
12	Guiding classroom interaction oriented towards achievement of the objectives.						
13	Promoting the aspirations of the students towards learning.						
14	Adapting verbal and non- verbal communication skills.						
15	Managing the classroom/ workshop and keeping its discipline.						
16	Using the type of questions suitable to the teaching/ learning activity						
17	Organising of learning for the curriculum units in agricultural education.						

No	The task/competency	Relevance to teacher's work		Degree of importance			
		Rel.	Not rel.	V.I	I	L.I	N.I
18	Organising of learning for the curriculum units in industrial education.						
19	Organising of learning for the curriculum units in business education.						
20	Organising of learning for the curriculum units in the field of health and general safety education.						
21	Organising of learning for the curriculum units in home economics education.						
22	Using methods and techniques of lecturing and demonstrating in teaching.						
23	Using methods and techniques of discovering and self-learning in teaching.						
24	Using methods of discussion (interaction) in teaching.						
25	Using suitable motivation approaches.						
26	Considering special needs students.						
27	Considering the integration between the theoretical information, practical skills and attitudes.						
28	Using different aspects of Educational technology						
29	Organising creative thinking activities.						
30	Relating sub objectives of the lessons with the general objectives of the curriculum.						
31	Analysing the curriculum (units and subjects) into its main elements.						
The third field: The curriculum and its enrichment:							
32	Identifying and using the references relevant to the curriculum.						
33	Considering the Integration between the PVE curriculum and the other relevant educational subjects.						
34	Adopting rational bases to select the subjects to be taught according to the students' needs and available facilities.						

No	The task/competency	Relevance to teacher's work		Degree of importance			
		Rel.	Not rel.	V.I	I	L.I	N.I
35	Selecting alternative exercises to those in the textbooks in certain cases.						
36	Enriching the different elements of the curriculum (objectives, contents, media, approaches, and evaluation)						
37	Using suitable accompanying activities for the curriculum (field visits, local society activities and exhibitions).						
The fourth field: Organising and using the PVE workshop							
38	Utilising the local environment to enrich the facilities of the workshop.						
39	Using the workshop tools, devices and materials effectively and efficiently.						
40	Organising the workshop (to put each of its contents in the suitable place).						
41	Storing the tools and devices in proper ways.						
42	Using the workshop, adopting the individualised training approach.						
43	Using the workshop, adopting the group training technique.						
44	Using the workshop adopting the work-stations approach (Using specific facilities to train groups students in certain tasks then to round them to another work-stations to train in another task).						
45	Carrying out demonstrations for different types of practical tasks (exercises).						
46	Maintaining the facilities of the workshop, tools and devices.						
47	Applying the general safety precautions in the workshop.						
48	Managing the workshop records, arranging the list of the stock taking of the inventory.						
49	Managing workshop time and space according to the number of students.						
The fifth field: the personal abilities of the teacher							
50	Undertaking the study and research that are relevant to improve performance.						

No	The task/competency	Relevance to teacher's work		Degree of importance			
		Rel.	Not rel.	V.I	I	L.I	N.I
51	Adapting to emergency situations and taking suitable decisions about these situations.						
52	Opening communication channels with the establishments related to PVE.						
53	Maintaining positive relationships with the people working in the school.						
54	Co-operating with parents in issues relevant to their children.						
55	Practising the role of the mediator teacher to help the teachers in the lower educational stages.						
56	Organising seasonal collective activities related to the curriculum.						
57	The ability of professional development (knowledge and education) by self						
58	Adopting student activities to generate financial return.						
59	Participating in the different school committees.						
60	Knowing the hierarchical structure of the educational system.						
61	Contribution to the maintenance of the school facilities.						
62	Participating in the collective school activities.						
The sixth field: Vocational Guidance and Counselling							
63	Knowing the bases and principles of vocational guidance and counselling.						
64	Identifying students' problems related to PVE.						
65	Enhancing students' positive attitudes towards the different vocations and to manual work generally.						
66	Helping the students select their future careers.						
67	Co-operating with vocational establishments to organise vocational guidance meetings.						
68	Exploring the students' vocational interests.						

No	The task/competency	Relevance to teacher's work		Degree of importance			
		Rel.	Not rel.	V.I	I	L.I	N.I
69	Helping the students understand the relationship between PVE and work places.						
70	Constructing and maintaining the students' records regarding their progress in PVE						
The seventh field: Evaluation							
71	Preparing the evaluation tools of the teaching/ learning objectives.						
72	Using diagnostic and formative evaluation in teaching/ learning.						
73	Using summative evaluation in teaching/ learning.						
74	Preparing suitable exams to measure the cognitive objectives (verbal, written and objective).						
75	Preparing and using suitable tools to measure the acquisition of practical skills.						
76	Preparing and using suitable tools to change in certain attitudes.						
77	Using feedback to amend or enhance the effectiveness of the teaching/ learning processes.						
78	Using appropriate methods of assessment of students' achievement.						
79	Preparing evaluation checklists to help students to practise self-evaluation.						
80	Using the principles of descriptive statistics for describing the examinations results.						
81	Using the principles of analytical statistics for analysis of the tests' results.						
82	Taking suitable decisions in the light of the description and analysis of the exams' results.						

Part two:

Q.1 The following are the aspects that make the role of the PVE teacher different from teachers of other subjects. Please give your degree of agreement/ disagreement on each aspect.

No	The Aspect	The Degree of Agreement/ Disagreement			
		S.A	A	D.A	S.DA
1	Teaching of different vocational subjects through PVE (industrial; agricultural; business; home economics, and health and safety).				
2	Teaching of practical skills in different vocational subjects in addition to theoretical bases of these skills.				
3	Necessity of vocational practical training for the PVE teacher to be able to demonstrate the practical skills for the students.				
4	The main role of the PVE teacher in vocational guidance and counselling.				
5	The curriculum flexibility that makes the teacher select the topics according to the available facilities and the students and the local society needs.				
6	Helping the students to deal with modern technology.				
7	Necessity of utilising the environment facilities in teaching of the curriculum.				
8	Necessity of building relationships with society, the social and vocational activities to serve the curriculum objectives.				

No	The Aspect	The Degree of Agreement/Disagreement			
		S.A	A	D.A	S.DA
9	Existence of long-term social and economic objectives of the PVE curriculum.				
10	PVE represents a link between the academic education and vocational education.				
11	Necessity of continuous assessment of the students' progress, and documentation of the assessment to help them to select their future careers.				
12	Carrying out maintenance tasks on some school facilities and taking care of the school garden.				
13	Workshop use and management including the responsibility for the workshop facilities.				
14	Necessity of the knowledge in the safety regulations of using the tools and devices since PVE has a practical nature.				

Please if you see any other aspects, add them in the following space

Q.2 If you are a member of the (PVE and Purchasing committees) or any other committee of the school, what are the main activities that you do through your work in these committees?

The Committee	The Main Activities
The PVE Committee	
The Purchasing Committee	
Other Committees	

Q.3 Do you carry out maintenance processes on the school facilities, and take care of the school's garden as a part of your work in the school? What are the activities associated with these tasks i.e. (What are the facilities that you undertake maintenance of)?

The activity	The Associated tasks
The Schools Maintenance	
The school garden care	

Appendix 8: The competencies of the PVE teachers as perceived by the teachers ranked according to their degrees of importance for the teacher's work.

f: frequency, P: Percentage, R: The rank, V.I: very important, I: important, L.I: of little importance, N.I: not important

The competency	Degrees of importance				R	The field	
	V.I	I	L.I	N.I			
Applying the safety rules in the workshop.	F	123	17	0	0	1	Workshop
	P	87.9	12.1	0.0	0.0		
Organising learning for the curriculum units in the field of health and general safety education.	F	88	43	0	0	2	Organising/Sub-ject matter
	P	67.2	32.8	0.0	0.0		
Organising the workshop (to put each of its contents in the suitable place).	F	112	28	1	0	3	Workshop
	P	79.4	19.3	0.7	0.0		
Enhancing students' positive attitudes towards the different vocations and to manual work generally.	F	96	41	3	0	4	Vocational guidance
	P	69.1	29.5	1.4	0.0		
Relating knowledge to life	F	99	35	0	2	5	Organising of teach/ learning
	P	72.8	25.7	0.0	1.5		
Maintaining the facilities of the workshop, its tools and devices.	F	80	34	2	0	6	Workshop
	P	69.0	29.3	1.7	0.0		
Designing a scheme of work to achieve the curriculum objectives.	F	110	23	2	0	7	Planning of teach/learning
	P	75.9	22.1	1.4	0.0		
Keeping up the tools and devices in proper ways.	F	111	30	2	1	8	Workshop
	P	77.1	20.8	1.4	0.7		
Considering the integration between the theoretical information, practical skills and attitudes.	F	98	38	4	0	9	Organising of teach/ learning
	P	70.0	27.1	2.9	0.0		
Considering special needs students.	F	96	31	4	0	10	Organising of teach/ learning
	P	73.3	23.3	3.1	0.0		
Helping the students to plan for selecting future careers.	F	91	37	5	0	11	Vocational guidance
	P	68.4	27.8	3.8	0.0		
Relating sub-objectives of the lessons to the general objectives of the curriculum.	F	83	44	4	1	12	Enrichment of the curriculum
	P	62.9	33.3	3.0	0.8		
Maintaining positive relationships with people working in the school.	F	106	28	5	1	13	Vocational guidance
	P	75.7	20.0	3.6	0.7		
Using the workshop tools, devices and materials effectively and efficiently.	F	102	34	5	0	14	Workshop
	P	71.8	23.9	3.5	0.0		

The competency	Degrees of importance				R	The field	
		V.I	I	L.I			N.I
Using feedback to amend or enhance the effectiveness of the teaching/ learning processes.	F	85	47	5	0	15	Assessment
	P	61.6	34.1	3.6	0.0		
Utilising the local environment to enrich the existents of the workshop.	F	93	36	6	0	16	Workshop
	P	68.9	26.7	4.4	0.0		
Knowing the bases and principles of vocational guidance and counselling.	F	71	56	6	0	17	Vocational guidance
	P	53.4	42.1	4.5	0.0		
Contribution to maintenance of the school facilities.	F	62	55	6	0	18	Personal abilities
	P	50.4	44.7	4.9	0.0		
Using the workshop, adopting the group training technique.	F	95	35	6	1	20	Workshop
	P	69.3	25.5	4.4	0.7		
Managing the workshop time and space with the number of students	F	94	30	6	0	21	Workshop
	P	71.8	22.9	4.6	0.0		
Managing the workshop records, and arranging the stock taking of the inventory.	F	91	35	7	1	22	Workshop
	P	68.4	26.3	5.3	0.8		
Organising learning for the curriculum units in agricultural education.	F	79	42	5	2	23	Subject matter
	P	61.7	32.8	3.9	1.6		
Designing a lesson plan	F	96	36	7	0	24	Planning of teach/learning
	P	68.3	25.7	5.0	0.0		
Carrying out demonstrations of different types of practical tasks (exercises).	F	72	55	7	1	25	Workshop
	P	53.3	40.7	5.2	0.7		
Co-operating with parents in the issues relevant to their children.	F	69	57	6	2	26	Personal abilities
	P	51.5	42.5	4.50	1.5		
Exploring the students' vocational interests	F	56	70	6	1	27	Vocational guidance
	P	41.8	52.2	4.5	0.7		
Organising creative thinking activities.	F	63	60	7	1	28	Organising of teach/learning
	P	48.1	45.8	5.3	0.8		
Helping the students understand the relationship between PVE and other vocational sites.	F	53	66	5	2	29	Vocational guidance
	P	41.7	52.0	3.9	1.6		
Organising learning for the curriculum units in home economics.	F	77	39	5	3	30	Organising/subject matter
	P	62.1	31.5	4.0	2.4		
Identifying students' problems related to PVE.	F	73	51	9	0	31	Vocational guidance
	P	54.9	38.3	6.8	0.0		
Adopting rational bases to select subjects according to the students' needs and available facilities.	F	55	58	9	0	32	Enrichment of the curriculum
	P	45.1	47.5	7.4	0.0		

The competency	Degrees of importance				R	The field	
		V.I	I	L.I			N.I
Using methods of discussion (interaction) in teaching.	F	72	52	52	10	33	Organising of teach/learning
	P	53.7	38.8	7.5	7.5		
Considering the integration between the PVE curriculum and the other relevant educational subjects.	F	51	59	10	0	34	Enrichment of the curriculum
	P	42.5	49.2	8.3	0.0		
Analysing the curriculum (units and subjects) into its main elements.	F	73	41	9	2	35	Enrichment of the curriculum
	P	58.4	32.8	7.2	1.6		
professional development (knowledge and education)	F	69	40	11	1	36	Personal abilities
	P	53.5	37.2	8.5	0.8		
Preparing suitable examinations to measure the cognitive objectives (verbal, written and objective).	F	69	62	5	0	37	Assessment
	P	47.6	42.8	3.4	0.0		
Preparing and using suitable tools to measure the acquisition of practical skills.	F	69	61	3	1	38	Assessment
	P	47.6	42.1	2.1	0.7		
Using diagnostic and formative assessment in teaching/ learning.	F	47	66	14	0	40	Assessment
	P	37.0	52.0	11.	0.0		
Co-operating with vocational establishments to organise vocational guidance meetings.	F	52	52	11	0	41	Vocational guidance
	P	44.4	44.4	9.4	0.0		
Preparing assessment check lists to help students to practise self-assessment.	F	53	65	13	2	42	Assessment
	P	39.8	48.9	9.8			
Organising of learning for the curriculum units in industrial education.	F	72	41	12	3	43	Organising/su- bject matter
	P	56.3	32.0	9.4	2.4		
Using the different elements of Educational technology	F	49	56	14	0	44	Organising of teach/learning
	P	41.2	47.1	11.8	0.0		
Using suitable accompanying activities for the curriculum (field visits, local society activities and exhibitions).	F	68	48	14	3	45	Enrichment of the curriculum
	P	51.1	36.1	10.5	2.4		
Organising seasonal collective activities related to the curriculum.	F	55	52	13	3	46	Vocational guidance
	P	44.7	42.3	10.6	2.4		
Identifying and using references relevant to the curriculum.	F	47	55	13	3	47	Personal abilities
	P	39.8	46.6	11	2.5		
Using methods and techniques of lecturing and demonstrating in teaching.	F	55	57	18	0	48	Organising of teach/learning
	P	P	42.3	73.8	13.8		

The competency	Degrees of importance				R	The field	
		V.I	I	L.I			N.I
Using methods and techniques of discovering and self-learning in teaching.	F	43	56	15	1	49	Organising of teach/learning
	P	37.4	48.7	13.	0.9		
Opening communication channels with the establishments related to PVE.	F	56	41	14	2	50	Vocational guidance
	P	49.6	36.3	12.4	1.8		
Organising of learning for the curriculum units in business education.	F	56	46	16	1	51	Organising/subject matter
	P	47.1	38.7	13.4	0.8		
Using summative assessment in teaching/ learning.	F	71	52	8	0	52	Assessment
	P	49.0	35.9	5.5	0.0		
Using the workshop adopting the work stations approach (Using specific facilities to train students to do certain tasks then to transfer them to another work-station to be trained on another task rotationally).	F	56	51	16	3	53	Workshop
	P	44.4	40.5	12.7	2.4		
Undertaking the study and research that is relevant to improve performance.	F	29	51	11	4	54	Personal abilities
	P	30.2	54.2	11.5	4.2		
Enriching the different elements of the curriculum (objectives, contents, media, approaches, and assessment)	F	52	68	7	0	55	Enrichment of the curriculum
	P	40.6	43.1	5.5	0.0		
Selecting alternative exercises to those included in the book to be taught to students in certain cases.	F	44	61	24	3	56	Enrichment of the curriculum
	P	33.3	46.2	18.2	3.0		
Preparing and using suitable tools to detect the origination and change of certain attitudes.	F	32	58	20	0	57	Assessment
	P	28.1	50.9	17.5	0.0		
Taking suitable decisions in the light of the description and the analysis of the exams' results.	F	32	49	21	9	58	Assessment
	P	28.8	44.1	18.9	8.1		
Constructing and keeping up the students' records regarding their progress in PVE	F	31	60	32	5	59	Vocational guidance
	P	24.2	46.9	25.0	3.9		
Adopting student activities with financial revenue	F	26	32	27	8		Personal abilities
	P	28.0	34.4	29.0	8.6		
Using the workshop, adopting the individualised training approach.	F	26	40	31	13	60	Workshop
	P	23.6	36.4	28.2	12		