UNIVERSITY OF
EXETER

Understanding the impact of a Reflective Practice-Based Continuing Professional Development Programme on Kuwaiti' Primary Teacher's Integration of ICT

Submitted By:

Hasibah Mohammad

To The University of Exeter as a thesis towards the degree

Of Doctor of Philosophy in Education

Curriculum & Methods of Teaching with ICT

In August 2014

I certify in the year of submission that all material in this thesis which is not my own work has been identified and that no material is included for which a degree has previously been conferred upon me.

………………………………… (Signature of the candidate)

Abstract

The main theme of the study is exploring and understanding the impact of an innovative continuing professional development model for integrating ICT into classroom pedagogy. The focus is on the relationship between teachers' beliefs, knowledge and pedagogic practice in the process of developing and adopting new knowledge and skills to cope with 21st century education.

The study explores the 'future schools' primary teachers' education, in-service training, status, beliefs, knowledge, and skills of using ICT in practice in the Kuwait context. The finding from the exploratory study shows that teachers' lack of Technological, Pedagogical and Content knowledge TPACK and that this impacts on their capacity to improve their pedagogic practice. The study applied a social-constructivist approach to understand the process of change in the nine participants' teachers' beliefs, knowledge through an innovative continuing professional development model, and stimulating teachers to develop a reflective practice skills focusing on improving pedagogic practice and using ICT.

A case study approach was used as the methodology of the study to develop an understanding of the process of change in the nine participant teachers' reflection on and experienced of the effects of adopting alternative pedagogic practice and integrating ICT. The numerous small findings from the quantitative and qualitative methods applied to the six months of continuing professional development involving nine primary teachers come under four main themes: 1) In-service teachers' beliefs and knowledge development, 2) Classroom pedagogy for autonomy with ICT integration, 3) Constraints affecting future schools' teachers' integration of ICT, and 4) The key principles of an RP-BCPD model for teachers CPD in Kuwait. The understandings from the findings of the study show that the quality of the CPD for improving teachers' pedagogic practice is affected by the socio-cultural context of the 'future schools'. The study shows that the nine participant teachers can develop effective alternative pedagogic practice and successfully integrate

ICT, when they are empowered to reflect, inquire into their practice, and learn from each other and from cross-cultural best practice. The unique finding of the study indicated that the nine participant teachers experiences some difficulties with engaging in the change process because of classroom cultural context such as: teachers' TPACK knowledge and competences, curriculum overload, and classroom size. Finally, the finding shows that providing the participant teachers with reflective practice as the base of CPD programme within schools context linked learning theory to improve pedagogic practice.

Dedication

To my Precious Parents

To my Beloved Country Kuwait

To Kuwait's Primary Teachers and Pupils

To Kuwait's Ministry of Education

"We do not learn from experience...we learn from reflecting on experience."

John Dewey

Acknowledgement

I thank **Allah** for his blessing and gratitude and generosity upon me. Without his mercy and guidance, this work would have not been achieved.

First, I need to pay my respect and grateful to my **Precious Parents** for their moral and financial supports during my PhD years with lots of appreciations.

Second, I thank my first supervisor Professor **Dr. Rupert Wegerif** for his supervision, guidance and support for my PhD work during my time in the University of Exeter.

Thanks to my second Supervisor **Dr. Nasser Mansour** for his supervision, time and support and for giving me the chance to participate as member in the JURE pre-conference local organizing committee.

Special Thanks to **Professor Dr. Debra Myhill** for facilitating the difficulties for postgraduate researchers at St. Luke's College. Special thanks to my internal examiner **Dr. Nigel Skinner**, and external examiner **Professor Dr. Avril Loveless** for their feedback to improve my work.

Third, my thanks and appreciation go to **Broadclyst Community Primary School- Exeter- UK**, Head-teacher (**Mr. Jonathan Bishop**), deputy, teachers and pupils and pupils' parents for their kindness to accept visiting the school and videotaping the good practice.

Fourth, special thanks to **Kuwait' Ministry of Education, Future' schools managers**, teachers, pupils and parents for accepting to participate in my design-based research experiment and supporting my work to be successful and beneficiary for their teachers and pupils development.

Finally, I thank all my **friends and colleagues** in the **Curriculum Development Department** at Kuwait's ministry of Education for their support and help during my PhD years and the implementation stage in Kuwait Future schools experiments.

Table of Contacts

List of tables

List of Figures

Abbreviation

ADDIE: Analysis Design Development Implementation Evaluation

RP-BCPDP: Reflective Practice- based Continuing Professional Development Programme

CPD: Continuing professional development

CsT: Computer studies Teacher

EnT: English Teacher

FT: First-Teacher: each subject matter has a section within the school, and a first-teacher assigned to in each section. F-T's job is to monitor teachers and evaluate their performances.

ICDL International Computer Driving License

ICT: Information Communication Technology

ID: instructional Design

IT: Instructional Technology

IWB: Interactive Whiteboard

LiT: Literacy Teacher

MoE: Ministry of Education

PAAET: The Public Authority for Applied Education &Training

ScT: Science & Math Teacher

S-CT: Social-Constructivist Theory

U.o.K: University of Kuwait

Chapter one

Introduction

1. Introduction

This chapter presents the problem under investigation and the reasons for its importance that led to the need to bring it to the forefront of education system reform in Kuwaiti public schools and teacher education. Furthermore, the chapter presents the aims, the research questions, and the research approach to explore the proposed CPD model, and the significance of the study. The chapter concludes with an overview of the thesis.

The educational systems of the current century's societies are a living reflection of governments' and individuals' visions and aspirations. As a researcher in the Sector of Educational Research and Curriculum at the Ministry of Education in Kuwait, I am involved in the new educational reforms of the curriculum. The start of the 21st century coincided with the beginning of a major national reform and further development of education within public schools in Kuwait. The main emphasis was placed on the development of the Kuwait national competence-based curriculum and framework, teaching licence standards and assessments, as well as creating a solid infrastructure of schools' environments supported by information and communication technology.

Reviewing the Education Strategy in Kuwait (2005-2025) and the E-learning strategy for Kuwait public schools (2008), the aims were to ensure the quality

of school education and the efficiency of administration, to improve the quality of outcomes for all students and to equip schools with technological tools such as laptops for each student, interactive white board (IWB) and internet access. However, less attention was paid to teachers' educational programmes and in-service professional development concerning teachers' values, attitudes, beliefs, skills and knowledge about the curriculum reform, and the integration of ICT into classroom pedagogy. Across the nation a digital generation is being raised that is immersed in the world of digital moveable devices, while teachers face the challenge of understanding how to use new ICT tools to enhance their practice (Loveless & Dore, 2002). Redecker and Johannessen (2013) argue that the "evaluation of information and communication technologies (ICT) is deeply re-shaping society, giving rise to new competence needs" (p. 79). The curriculum and the assessment strategies need to be changed to reflect the skills of the 21stcentury, which also requires developing teachers' skills and knowledge such as: problem-solving, reflection, creativity, critical thinking and inquiry, and learning to learn in a collaborative social environment (Redecker and Johannessen, 2013). The present study attempts to address this crucial gap between teacher professional development programme and the integration of ICT into classroom pedagogy in the Kuwait context of primary education.

1.1 Statement of the problem

Teachers' preparation for 21st century educational skills has been the focus of many research studies around the world, which shows the emphasis on the existing gap between teachers' education, in-service professional development and classroom pedagogy utilising ICT (Tondeur et al., 2011;

Glassett & Schrum, 2009). The improvement of public schools focuses on teachers' quality and their connection to educational system reform. The existing studies into schools' reform emphasise the importance of teachers' capacities to incorporate ICT as the critical element in any education and school reform or change (Fullan, 2007; Cuban, 1988; Elmore, 2004; Crowther et al., 2002; Darling-Hammond & Bransford, 2005). Other research elucidates the significant influence of teachers' beliefs and knowledge in creating classroom pedagogy (Dewey, 1933; Pajares, 1992; Bandura, 1986; Nisbett & Ross, 1980; Ernest, 1989; Guskey, 1986; Keys, 2006; Greeno, 1987; Cadlerhead, 1987; Shavelson, 1981; Shulamn, 1986, 1987; Mishra & Koehler 2006). Teacher education and in-service professional development in Kuwait lack the technological standards and competences in the teachers' preparation programmes and licence (Al-Menaifi, 2012). As a result of the limited access to ICT tools and the lack of technological and pedagogical preparation programmes, teachers face a major problem between learning the techniques of incorporating ICT and its implementation in daily classroom activities (Kagan, 1992).

In attempting to increase the importance of ICT integration into classroom pedagogy, it is essential to consider the invaluable role of the teacher. Many studies supported the idea that teachers' values, beliefs, attitudes, knowledge and skills play a determining role in the integration of ICT into classroom pedagogy (Pajares, 1992; Ertmer, 2005). While the Kuwait Ministry of Education considers the importance of ICT integration for students' use in public schools as a way to cope with the new century, studies shows that it is

teachers who determine the best way to use ICT and when to implement it in classroom activities. Recent research identifies that the limited integration of ICT in practice is the result of failing to equip and empower teachers to utilise ICT in a meaningful way into their practice.

Kuwaiti primary teachers are committed to the national curriculum and the teachers' guide textbook in designing their classroom pedagogy and preparing pupils for exams. In order to be a professional teacher in the 21st century as a member of a smart or 'future' school, it is necessary to be able to practise with certain skills related to 21st century educational vision. Along with the rapid growth of digital devices, whiteboards, the web and communication tools, students' responses to new mobile and computer technology have exceeded Kuwaiti teachers' qualifications, skills and knowledge. The advancement of technology use around the globe and especially in Kuwaiti society have reached a point which calls for a quick response and changes in the education system to cope with 21st century demands. If the investments in ICT are to be put to effective use in the classroom, then it is imperative that we understand the process of change in primary teachers' pedagogic practice using ICT. Given this important role of teacher in ICT integration, an adequate design of a professional development programme is necessary to understand what influences teachers to change their pedagogic practice. Furthermore, the awareness has to be raised of developing teachers' skills, such as inquiring into their own practice and generating technological knowledge and skills, thinking critically to solve practice problems, and communicating their practice widely and collaboratively with colleagues to improve it. We need to

understand how teachers can change and develop new knowledge and skills through research, as well as how teachers can change their skills to be able to transform and develop the 21st century skills in their pupils, how they can prepare their pupils for the future as interactive learners, effective leaders in their communities, and able to compete locally and internationally.

Kuwaiti teachers' professional knowledge and skills are limited to academic education, the school environment and classrooms. However, the ubiquity and flexibility of the advanced technology can open avenues for unlimited self-learning in the social context. The curriculum reform committee members at the Ministry of Education in Kuwait think that teachers need to become aware of the ICT tools' potentials and leverage for teaching and learning, and also to integrate ICT into their lesson plans and activities. This study focuses on understanding why and when teachers utilise ICT in classroom pedagogy, to understand how teachers experience why and when to use ICT inside their classrooms, and how they learn and generate knowledge from reflecting on their experiences. Furthermore, placing teachers in an ICT-based classroom demands a new role, such as that of guide, facilitator or activator of pupils' learning. This study seeks to understand how teachers learn in order to create and manage the innovative learning environment using ICT for their pupils (Anderson, 2010).

Researchers who were involved in the Kuwait educational reform process attempted to investigate the influence of ICT-based activities on pupils learning at Kuwaiti public schools, as well as creating ICT-based activities and

applications for teachers to use in their lessons. Only one study, by Al-Menaifi (2010), focused on "The reality of technological courses in the College of Basic Education" at the Public Authority for Applied Education & Training (PAAET). The study pointed to the reality of the insufficient training courses on ICT's integration during the pre-service teacher education programmes. However, the study did not provide a solution for improving technology courses in teacher education programmes. Instead, it urged educators to recognise the existing gap in teacher education programmes and the need to find alternative solutions. Significantly, few empirical studies have been done on the reality of the technology used by the Kuwaiti' in-service's teachers for different subject matter, with specific solutions to improve the quality of teaching. The existing gap between how student-teachers are being prepared in Teacher Education Institutions and what they are actually practising in real life becomes arguably wider during the in-service years. Although research in Kuwait's primary schools suggests that teachers are increasingly using technological tools in their daily classroom practice, it also supports the claim that technological tools are limited to lesson delivery purposes.

As a teacher's assistant and lecturer in the College of Basic Education at the Public Authority for Applied Education&Training (PAAET), and as a researcher in the Curriculum Development Department at the Ministry of Education in Kuwait, I have became aware of the gap between the students'- teachers' preparation in the practicum courses and the real life in-service teaching. However, the in-service teachers' professional development programmes - which are provided by the Training Centre at the Ministry of

Education in Kuwait - are to prepare teachers for teaching the subject matter, regardless of the teachers' needs or national strategies. Teachers' professional development programmes are either one-event workshops or of one week duration. Teachers were urged by the Ministry of Education to take International Computer Driving Licence (ICDL) courses. Most of the technology courses are provided for the teachers' inspectors and first-teachers upon their request, for administration purposes only.

Still, defining an adequate professional development for Kuwaiti primary teachers can raise significant problems. A teacher's professional action is based on how the teacher understands the content and transforms it for learners inside the classroom using the appropriate ICT tools, which is the essential of knowledge generation. We do not know how Kuwaiti' primary teachers can change to become knowledge generators, decision-makers and familiar with more practical reasoning in the process of improving their practice with ICT. Hence, we need to find out more through research about how Kuwaiti teachers can leverage the other cross-cultural practices involved ICT around the world to improve their pedagogic practice. How can teachers adopt new skills, such as becoming reflective practitioners responding to the changes in everyday life and pupils' needs? In the 21st century, teaching effectively to meet the standards of the new Kuwait national competence-based curriculum requires preparing teachers with technological and pedagogical knowledge and skills. A failure to recognise the type of educators involved in designing a teacher's professional development will result in training that does not satisfy teachers' specific needs and classroom practice.

In order to understand the integral and essential role of the teacher in the integration of ICT to support an innovative classroom practice, it is critical to understand how the CPD can be implemented in its most effective form. This study combined the knowledge established from the literature review in the area of constructivist pedagogy, concepts of change with ICT, reflective practice and professional development studies, aiming to understand what influences a teacher to change in the Kuwait context through designing a continuous professional development programme. Furthermore, to understand what makes the CPD programme work and find out the failure and success factors, and why teachers resist change. My argument is that it worthwhile to spend the time on understanding how to improve teachers practice with ICT through the investment in improving a teacher's professional development to become a sustainable process throughout the teacher's career, which is based on equipping and empowering them with ownership of inquiry into their classroom practice.

1.2 Research aims

The main aim is to explore the nature of the process of change in teachers' pedagogic practice due to using reflective practice-based continuing professional development intervention focusing on integrating ICT and to understand the socio-cultural context of the change process in the Kuwaiti 'future schools'. This can be broken down into three research aims as follows:

- To understand the impact of the reflective practice-based continuing professional development RP-BCPD has on teacher's pedagogic practice.

- To investigate the factors that lead to the integration of ICT into classroom practice.

- To investigate the factors that lead teachers to engage or disengage in the process of change.

1.3 Significance of the study

Although Kuwaiti teachers are using technological tools on a daily basis within classroom activities, the research identifies that ICT is only a marginal component in the classroom and it is not used in a way that fulfils its promise to enhance teachers' practice or pupils' learning. In my opinion, formed through my experience in Kuwait schools, the current professional development of teachers lacks an understanding of Kuwaiti teachers' technological and pedagogical TP needs to integrate ICT into the national competence-based curriculum. Furthermore, with a lack of ICT professional development programme opportunities, it is unlikely that teachers will develop the necessary technological and pedagogical TP knowledge and skills without this model. This professional development model initiative has the potential to serve the vision and mission of the current Kuwaiti educational reform and the new national competence-based curriculum. Reflective practice-based continuing professional development helps to prepare and empower Kuwait's primary teachers to create engaging authentic lessons using best practice pedagogy with ICT for their pupils. The significance of this thesis is to understand the nature of the process of change in the Kuwait context related to teachers' pedagogic practice using ICT, understanding why and when the change occurred, how the change happened and why it is not happening.

Importantly, the teachers are also the role models for their pupils in promoting the sense of lifelong learning by being able themselves to develop the desire for a continuous, innovative and creative utilisation of ICT. In this study, teachers experienced a professional development model that was designed specifically for them. The reflective practitioner model urged teachers to learn through reflecting on experience while integrating information communication technology (ICT) and alternative pedagogic practice. The study was an attempt to offer an innovation CPD model with the following features:

- *Social-constructivist theory:*

Through introducing a version of social-constructivist theory to the Kuwaiti primary schools for the first time, teachers were urged to develop an awareness of the importance of the social context in the teachers' community and the collaborative constructivist learning environment.

- *Technological Pedagogical Knowledge:*

The study raises awareness about the important of the technological and pedagogical knowledge to be acquired in the pre-service teacher education years, as well as the use and the potentials of information and communication technology (ICT) to approach the student-centred classroom.

- *Reflective practice:*

The reflective practice methods were introduced for the first time in the primary school context and were used in the study to empower and enlighten teachers about the methods of inquiring into their own practice for the purpose of improvement and development.

- *In-service continuing professional development:*

The study provides an example of a CPD model, which shows the necessity in the long-term of improved in-service professional action that positively influences teachers' classroom practice through integrating appropriate aspects of ICT. In addition, it sheds light on the factors encountered that might affect the implementation of such an innovative CPD model.

- *Teacher Education:*

The study contributes to the community of teacher educators at the higher teacher education level at the University of Kuwait and the The Public Authority for Applied Education & Training (U.o.K and PAAET), highlighting the urgent need to update and improve the teacher education programme to satisfy the requirement of schools for professional teachers equipped for 21st century education with ICT.

1.4 Research approach

Progressive teachers' professional development programmes have been developed in many advanced countries in order to integrate rapid changes in ICT into teaching and learning, and meet the demands for 21st century skills in education. The new approach to teachers' professional development in this study was designed for Kuwaiti teachers considering their urgent need for appropriate in-service training to integrate ICT in pedagogic practice.

Designing and implementing the new professional development model for 'future schools' teachers hoping for specific changes in the Kuwait context is a problematic process. To achieve the main aim of this study, which is to understand the factors that impact the change in teachers' pedagogic practice

participating in an intervention model proposed to integrate ICT, the study was most suited for a case study design. As a form of research methodology, case study is an ideal design for understanding and interpreting educational situations, such as implementing and evaluating a RP-BCPD model. Case study was employed to gain an in-depth understanding of the process of analysing, designing, developing, implementing and evaluating the RP-BCPD model in the Kuwaiti context for teachers.

In order to understand the process of change in teachers' classroom practice utilising ICT, the use of a mixed method approach was appropriate for data collection, including a questionnaire, interviews, classroom observations, field notes and journals to enable a triangulation of data. The RP-BCPD model was specifically designed for a small group of teachers from Kuwaiti primary 'future schools' due to the fact that there is one coach to train teachers, the researcher of this study. The sample of the study came in three stages. The first stage consisted of 204 self-selected Kuwaiti primary teachers from four 'future schools' responding to the questionnaire. In the second stage of the study, nine volunteer teachers from 'future schools' agreed to join RP-BCPD as a purposeful sample from different subjects to integrate ICT into their practice. The third stage sample of three teachers was based on the analysis of the mixed method data collection, in order to study and understand the potential changes in classroom pedagogy, and the process of adopting best practice and utilising ICT as a result of participating in the RP-BCPD model.

The analysis and interpretation from the case study's collected data helped to understand the factors which impact on teacher change in Kuwait through observing the problems encountered and the resistance to the RP-BCPD model as well as its success. Also, the results of the evaluation and teachers' feedback provide valuable insights for future implementation in other public schools, which will be used as a contribution to knowledge in the Kuwait educational context, specifically for teachers' pre and in-service preparation programmes.

1.5 Overview of the thesis

This thesis comprises ten chapters. The current chapter introduces the main concepts of the research with reference to its rationale, significance and aims. Specifically, **Chapter One** focuses on exploring the problem under investigation, the gap between teacher education, preparation programmes, in-service professional development, the advances in technology in the 21st century and teachers' classroom pedagogy. Furthermore, it covers the research questions, the research approach and the content of the chapters in the thesis.

Chapter Two presents the background of the education system in Kuwait. The focus of this discussion is to outline the teacher education system, professional development programmes and the 'future schools' context within the primary level of education.

Chapter Three presents the literature review related to the theoretical framework, the concepts of change process, the pedagogy of autonomy and

the history of the in-service teachers' professional development programmes regarding teachers' technological and pedagogical beliefs, knowledge and classroom practice. In addition, there is a review of the literature related to reflective practice, such as aspects of social-constructivist theory and the pedagogy of autonomy for teachers' professional growth and action.

Chapter Four outlines the methodology of the study, the underpinning research paradigm, with its associated ontological and epistemological assumptions, and the applied methods of data collecting and analysis. The focus here is on the reflective practice utilising an innovative CPD intervention model. The justification of the use of triangulation techniques between research methods in the analysis and coding stages of the collected data responding to the research questions and aims is given due attention, and the ethical issues related to the research implementation are highlighted.

Chapter Five, is the first of four chapters presenting the five phases of the analysis- design- development- implementation and evaluation (ADDIE) case study of the intervention model findings from the collected and analysed data responding to the research questions. The chapter present the current status of teachers in 'future schools', where are they now, identifying the problems they face and what they need, using the triangulation technique in presenting the findings based on statistics and thematic coding analyses from the qualitative and quantitative data collection. The chapter presents examples of teachers' pedagogic practice before participating in the RP-BCPD model.

The following findings chapters present the findings from the four phases of the case study to the related research questions using the triangulation methods between and within the research methods of collecting data. The finding in **Chapter Six** presents the second, third and fourth phases of the case study it explains the designing of the CPD model according to the finding in Chapter Five, developing and implementing the teachers' reflective practice-BCPD model, in order to understand the change process and the relationship between teachers' re-construction of knowledge and skills, and how they put it to change their pedagogic practice. **Chapter Seven** is the first part of phase five of the case study, used to answer research questions regarding the factors and barriers affecting teachers' attempting to make changes in their pedagogic practice before and after participating in the innovative CPD model. **Chapter Eight** is the second part of phase five of the case study, to demonstrate the evaluation of the intervention model, the advantages and disadvantages of the proposed CPD model for the context of Kuwaiti primary 'future schools'.

Chapter Nine is the discussion chapter, to discuss the study findings and the main themes of the findings and tentative conclusions of the study are discussed and linked to the literature review presented in Chapter Three. Finally, **Chapter Ten** presents the main contribution to knowledge from the study findings and discussion, the limitations, implications and recommendations for an in-service teachers' professional development programme with consideration to teacher education for policymakers,

graduate teachers and researchers, for future research into teachers' classroom pedagogy with ICT.

Chapter Two

Education System in Kuwait

2. Introduction

This part of the literature review presents the background of the primary education system in Kuwait. Understanding the context of the study helps to analyse the existing gap, and issues associated with the teachers' preparation system at the primary level in the Kuwait context. The chapters begins by identifying the nature of the education system in Kuwait and the aims of the general public schools in relation to primary schools in Kuwait, as well as the dysfunctions of the educational system in Kuwait. Special attention is paid to the introduction of Kuwait's primary 'future schools' which are the context of the present study. The appraisal of primary school development, the teachers' preparation programmes in the Kuwait context, Kuwait's educational indicators and assessments, the current status of ICT in public schools, and the analysis of the development of 21st century educational skills among Kuwait's pupils and teachers in relation to the global policy and the Kuwaiti context.

2.1 The Educational System in Kuwait

Education in Kuwait is compulsory for all Kuwaiti citizens from the age of 7 until the end of intermediate education. General education includes two years of kindergarten, five years of primary school, four years of intermediate school and three years of secondary school. The new system was issued in 2003 and applied in 2004/05 for 9 years of compulsory basic education instead of 8

years primary to intermediate stage (MoE, 2008). There are approximately 40 weeks in the school year. Education in Kuwait is organised in a structure referred to as a (5-4-3) ladder which means 5 years 1-5 as primary grades, 4 years 6-9 intermediate grades and 3 years 10-12 as secondary grades.. The primary stage has the main function of supporting children in gaining integrated growth and basic skills that enable them to properly understand the world around them.

2.2 The aims of the Educational System in Kuwait

The overall aim of education in Kuwait is to make available the appropriate opportunities for helping individuals achieve integrated growth at the spiritual, moral, intellectual, social and physical levels, to the maximum degree allowed by their abilities and aptitudes. In the light of the nature, philosophy and hopes of Kuwaiti society, as well as the principles of Islam, Arab heritage and contemporary culture. Also, to establish a balance between the individual's self-accomplishment and constructive participation in developing Kuwaiti society in particular and the Arab and the world community in general, which can be displayed in four key sources:

- The nature of Kuwaiti society.

- The nature of the present age.

- Learners' characteristics and growth needs.

- Contemporary educational trends (MOE, 2012).

In Kuwait's primary schools, the stage encompasses a large number of pupils from the public regardless of their social and economic situations, and it is

intended to provide them with the fundamentals of righteous citizenship. The aims of primary schools in Kuwait are as follows:

- The establishment of Islamic religious faith and society's values, and respect for other beliefs and religions.

- The acquisition of Islamic and Arabian cultural constituents and interaction with world cultures.

- The acquisition of the basic skills of reading, writing and maths in a way that enables the child to communicate using the Arabic language and other languages.

- The acquisition of scientific thinking skills to understand and explain natural and social phenomena, and to confront life's problems, promoting the skills of analysis and inference.

- The acquisition of self-learning skills to find information from its original source using different kinds of information technology tools and media, in order to acquire lifelong education principles.

- Opportunities for different learning and activities, supporting the initiative of discovery and exploration, aestheticism and appreciating the different kinds of arts.

- The acquisition of ways to deal with the new era's discoveries and exploration and how to fit these into the daily life.

- The promotion of physical and personal health and safety constituents and the required skills to safeguard public health.

- The acquisition of working skills and culture, appreciation of time and endeavour and participation in co-operative and voluntary work.

- The promotion of positive attitudes toward the safety of the environment and public property.

- The acquisition of social communications and respecting others' opinions and politics and the knowledge of social rights and duties.

- Promoting positive attitudes toward the social system's values, culture, conventions and institutions.

The aims reflect what the society expects from future citizens of the country. However, the current aims cannot clearly and explicitly show all of the competencies – integrated systems of knowledge, skills and attitudes – which students are expected to possess by the end of Compulsory or Secondary Education and which can be standardised and assessed in terms of students' achievements. The aims show the amount of knowledge only that pupils have to know in each stage. The aims of the primary stage were established in the same way as the general aims, and presented in a special set of official documents well known by teachers (MOE, 2012).

The current teaching plan is the document that presents the list of subjects taught at each stage, as well as the number of their weekly periods. This is an important piece of Kuwait's overall Curriculum System. The Teaching Plan shows the list of subjects and the corresponding number of weekly periods for each of the three stages of the education system. The timetable for each of these stages consists of thirty-five periods per week, while the worldwide average is 20-24. The periods are of 40 minutes in Primary, and 45 minutes in

Intermediary and Secondary. The primary stage curriculum consists of twelve subjects (MOE, 2012).

2.3 Current issues with Kuwait's Educational System

An analysis of the current educational system in Kuwait, many educational studies and reports carried out by Kuwaiti educators at the Ministry of Education, and studies made in collaboration with the World Bank (MOE, 2012), have revealed a number of weakness in the Kuwaiti Educational and Curricular system, including:

- Lack of clear educational philosophy that would be the frame of reference for the whole system.

- Need to seriously reconsider Kuwaiti teachers' preparation methods – directly related to the issue of a new curriculum and its implementation.

- The placing of too many administrative burdens on teachers.

- Failure to use computers in the teaching and learning process and lack of motivation to do so.

- Outdated character of the training methods and the inappropriate time-on-task for teachers during working hours.

- Inadequacy of Basic Education teacher preparation programmes.

- Overload of the Teaching Plan in terms of weekly periods of study for students.

- Inadequacy of some curricula in addressing self-learning skills and developing the higher order learning and cognitive skills (i.e. analysis, synthesis, application, criticism, evaluation and problem-solving).

- Lack of diversity and effectiveness in the methodology of assessing learner achievements, which do not provide an accurate picture of the educational goals realised.

- Inappropriateness of the teacher and learner assessment methods in their current form.

- Low level of cooperation between some school administrations and parents, which has resulted in weakening the role of the school as a leading educational institution.

- Lack of proportion between the times of the school day and the time allocated to each period due to the huge curriculum content.

- Inadequacy of teachers' proficiency assessment.

- Focus on memorising rather than on thinking.

- Failure to cope with current social and political changes.

- Problems with the content and the organisation of the curriculum.

- Weak proficiency levels of students.

- Focus on theoretical rather than practical aspects. In fact, the dominant feature of the curriculum is its focus on theoretical aspects and concentration on facts (MOE, 2012).

Therefore, the educational system in Kuwait is unable to prepare learners for practical life and productive work or to make them form positive attitudes towards work in 21st century society. The results of a study conducted by the Kuwait Society for the Advancement of Arab Children (1998) indicated that there was a higher rate of achievement at the memorising level compared with that at the thinking level. The study also indicated that the primary school

had not realised its objectives and desired outputs, and that the learner's achievement return was not proportional to the learner's cost at this stage.

2.4 The introduction of Primary Future Schools

The introduction of the idea of 'future schools' to Kuwaiti public schools was the result of international missions aimed at learning from cross-cultural experiences in educational reform. A committee consisting of a group of inspectors from the MOE and an assistant professor from Kuwait University was assigned to visit different advanced countries. The mission's aims were to transfer to the Kuwait context the best experiences of education reform around the globe, and the best practice in relation to integrating ICT in classrooms. The countries visited were ranked high in UNESCO's reports about educational reform and the integration of ICT into teaching and learning, such as: the USA, Canada, the UK, France, Singapore and Japan, while Kuwait was ranked very low in education level. After the missions, the appointed committee developed a proposal for a 'future schools' vision for primary stage that suits the Kuwait context. The Ministry of Education in Kuwait approved the proposal of the 'Future Schools' project and awarded them with a grant and facilities to start the project with four schools (boys' and girls' schools). These 'future schools' were designed to serve the aims of Kuwait's educational reform in the general public schools. The project is one of a series of projects that are designed, applied and under evaluation for future implementation.

2.4.1 Aims of the future schools project

The project aims to: 1) Adjust the quality of general education according to international standards; 2) Recognise the pupils as individuals, considering their individual differences in learning; 3) Develop the general public school infrastructures, ensuring the refinement of the learning environment; 4) Bridge the gap between the realities of current general education and deal with the future requirements of the advanced technology; 5) Activate the roles of parents and social institutions in supporting education (MOE, 2008). Kuwait's 'future schools' aim to focus on the relationship between teachers and pupils and to increase the pupils' learning achievement by applying standard exams. Addressing the more holistic aims of education, the non-literacy outcomes are concerned with the: 1) national loyalty, self-confidence, self-esteem, cooperative learning, critical and creative learning, learning by dialogue and respecting others' opinions, learning responsibility, tolerance, and 2) morality, respecting families, the schools' employees, all society trips, and to avoid extremism. The utilisation of ICT in primary school classrooms will help to make the goals more practical and visible.

2.4.2 The nature of 'Future Schools'

The 'future schools' project inspired other schools to accept to join the experiments, thus, the numbers of 'future schools' were increased to six schools in Kuwait (4 male schools and 2 female schools). All Kuwait's public primary schools are required by the educational policy regulations to have only female teachers. There were 378 female teachers in all 'future schools' according to the Ministry of Education Statistics in the year that this study was

conducted (2009-2010) and the number was expected to rise. The 'future schools' had increased to six schools in three districts by the school year 2007/2008. Kuwait's 'future schools' were designed and equipped with an interactive learning environment to enable teacher educators and researchers to implement educational research and experiments, in order to use reliable results to improve teaching and learning in the context of Kuwait's general public schools. The 'future schools' are under the supervision of a committee consisting of an assistant professor from the University of Kuwait and four teachers' inspectors. These six primary schools are voluntarily involved in the 'future schools' project. Pupils are normally enrolled in these six primary schools according to their districts and the area where they live. Furthermore, teachers were assigned randomly to these six schools by the teachers' inspectors in the six educational districts.

2.4.3   Teachers' Status in Future Schools

In the 'future schools', teachers are assigned to teach subjects that are outside their main field of preparation. Each classroom has two main teachers, science and literacy, and they act as assistants for each other inside the classroom. Furthermore, five other teachers are teaching various subjects for the same class, such as: English, computers and life skills, sport and art, in addition to tutor-teachers for weak pupils.

The paired class-teachers are the science and literacy teachers who are supposed to be in the class throughout the school day with their desks inside the class. The science teacher has to have majored in a maths subject and is forced to teach science with life skills subjects in the 'future schools'. The

assumption is that science is a very easy subject and the maths teachers can learn to teach it from the science first-teachers in the six 'future schools'. On the other hand, the literacy teacher has to teach five subjects including life skills related to each subject. Most of the literacy teachers have majored either in the Arabic language or in Arabic literature and is required to teach subjects that they did not major in, such as Islamic religion, the Qur'an, social studies and life skills, with the assumption that these subjects are part of literacy and Arabic language teachers can teach them with the assistance of first-teachers of each subject. The class-teacher has to prepare the lesson plan for each lesson in the textbooks of the subjects that they are responsible for, which is an overload work for teachers who are not being prepared to teach more than one subject matter such as math or science. In addition, class teachers have to prepare the periodic and weekly tests and exams for subjects, and follow up with pupils' assessment portfolios for each subject activity individually. Teachers convey the knowledge of each subject orally by explaining and replying to pupils' questions, and pupils have to listen, watch and store the received knowledge to answer the test and exam questions.

The tutor-teachers are expected to work with and mediate pupils' weaknesses in the sub-essential skills in different subjects. This is one of the main gaps in the present research, and which the study seeks to solve and narrow. When it comes to teachers teaching subjects that they are not expert in or prepared for, arguably, the study suggests that the implementation of ICT in the 'future schools' might effectively help teachers in teaching other subject matter, if teachers are given the freedom to practise with ICT tools,

activating pupils' learning, making learning the responsibility of the pupils and transforming the classroom into a pupil-centred place. The integration of ICT into the learning process will help to make tutorial sessions for weaker pupils unnecessary, as the teachers will have more time to spend with them.

2.4.4 First-teachers and teachers' inspectors

The first-teachers are supposed to act as subject matter experts inside the schools to monitor teachers' performances. However, in 'future schools' first-teacher is subject matter trainer for the classroom-teachers, to prepare lesson plans and teach the subjects that they are not prepared for or have not majored in. For example, the science's first-teacher is the trainer for the science and maths classroom teachers, also, the Islamic first-teacher is the trainer for the literacy classroom teacher, which they are not qualified for in teacher education college. Despite the first-teachers' job being identified by the 'future schools' committee members as that of an expert, they are still interfering in teachers' practice inside the classroom. They do not trust teachers to design the lesson plan and manage the classrooms without their help and observation, which is the result of requiring teachers to teach subjects that they are not qualified for.

The teachers' inspectors are the educational district representatives to schools. They visit schools periodically to monitor teachers' practice and performance inside the classrooms, as well as provide them with the needed professional development. In the 'future schools' project the inspectors are the trainers; they train and prepare the unqualified class teachers for the additional subjects they are teaching as their obligations in the 'future schools'

system. The inspectors are training the literacy teachers how to recite the Holy Qur'an properly and convey it to their pupils, how to teach Islamic studies, social studies and life skills, as well as the Arabic language if they had majored in Arabic literature, not as a language teacher. District inspectors have difficulties, in teacher assessments, evaluating class teachers' performances when they are teaching subjects that they are not qualified in at the teacher education college. Thus, the professional development in 'future schools' which is guided by district inspectors is not beneficial to class teachers, because it is not fulfilling teachers' need to improve their practice, however, training them to teach subjects that they are not qualified for.

2.4.5 Curriculum in Future Schools

The 'future schools' are using the same national content-based curriculum textbooks that are used in general public schools. Similarly, the schools were provided with computer facilities for computer studies classes. Furthermore, the Ministry of Education provides the 'future schools' with e-learning activities for different subjects matters to be used in the computer lab only. Also, the 'future schools' committee developed a supplementary curriculum activities for weaker pupils to be used in the tutorial classes. Similarly, a supplementary curriculum activities are designed for the more advanced pupils. In addition, new notebooks were designed for pupils to be used for completing classroom activities that suit the nature of each subject, such as language subjects.

2.4.6 Pupils in Future Schools

Focusing on pupils' educational achievements, the 'future schools' have both literacy and non-literacy goals and outcomes. The schools' literacy outcomes focus on using the pupil's best achievement skills, especially the fundamental skills, and the pupil's weakness are treated and addressed prior to introducing the new skills. Ten stimulation sessions (used to prepare weaker pupils for the new lessons in each subject matter) are offered during the school year. A diagnostic test is taken after the stimulation sessions, the results are studied and a mediated plan is developed for each situation. A teacher (tutor) is assigned for weak pupils, to assist them during the class time, with the help of the classroom teacher using a supplementary curriculum for fundamental skills in special classrooms. Four levels are allocated for pupils during the school year using standard exams from the district to measure and evaluate pupils' achievements.

2.4.7 The Nature of ICT in Future Schools

A private donor provided one of the 'future schools' (Alfarisi schools) with interactive white boards for each classroom (with on-call service for technical support which then became part of the Ministry's responsibility), and several teachers have been trained in the use of the IWB in teaching and learning. Furthermore, the 'future schools' were designed with local area network (LAN) and internet networks to be used by teachers and pupils in the future, but it is not active yet. The reports from the 'future schools' control team indicated that teachers in Alfarisi school were developing new skills in using the interactive white boards for teaching and learning, and how their use releases time for teaching, since it contains libraries of pictures, materials and

films for each subject (Al-Zubi, 2008). My study will draw the attention of educators in the Ministry of Education to the importance of ICT tools to transform the traditional classroom into a more pupils-centred place and turn teachers into the facilitators and activators of the learning process.

Despite the fact that the 'future schools' seek to integrate the use of ICT tools in the teaching-learning process and to develop teachers' and pupils' skills and knowledge, still not all the 'future schools' are equipped with advanced ICT tools and devices. As a result, teachers in the 'future schools' are not being prepared or trained appropriately, and pupils are not being prepared to use ICT because the schools are not equipped with ICT tools inside the classrooms, such as computers and internet access. This is the second main gap that the present study addresses and seeks to improve, which is teachers' training and in-service continuing professional development regarding using ICT in teaching and learning, and preparing teachers and pupils for the digital age.

The nature of the context in the 'future schools' is similar to other public schools in Kuwait, with no ICT tools and equipment inside the classrooms for pupils learning. In general, classrooms are still teacher-centred, with too few teachers who have developed innovative classroom practices. Instead, teachers still cling to traditional practice according to which they are experts responsible for transferring knowledge to pupils and preparing them for exams. The present study offers a RP-BCPD model that urges teachers to develop a reflective attitude toward their practice, and encourages them to

enquire and research to improve it with ICT integration, as well as making their classrooms more learner-centred.

2.5 The appraisal of the primary school development project

In an attempt to evaluate the new development programme of the primary public schools which was implemented in 2005-2006, a committee for the evaluation process was formed in 2007 by the Ministry. The head of the committee was Dr Gaze Al-Rashidi from Kuwait University; he was also the general manager of the National Centre for Educational Development and the head of the 'future schools' committee. This committee was divided into four teams and each team was assigned to a specific part of the appraisal project. The committee members were chosen from the Education College of the University of Kuwait and the Ministry of Education. The evaluation focused on four elements of the 2005-2006 primary school development project which were: 1) The evaluation of pupils' assessment e-portfolio (which is an electronic assessment system of pupils' performance in all subjects), assessing the accomplishment of the expected aims, and which ones to include, as well as helping to follow up and measure pupils' skills and achievements; 2) The evaluation of tutor classes during the school day, the relevance and effectiveness of the separated tutoring classes for weaker or special needs pupils, and the mechanism of the implementation; 3) The evaluation of the new subjects which are (life-skills and the national education studies), the assessment of the two subjects suggested, focusing on what must be included based on the society's needs and their implementation in the primary curriculum, and 4) the evaluation of the documentary, which included the positive and negative aspects along with suggestions for further

improvement. The appraisal committee's task was to study the documents related to the development project, design methods for collecting and evaluating data regarding the process of the project, analyse the collected data and present their conclusions and proposals for the evaluation and development of the different aspects of the primary public school reform project.

Although some members of this committee were also members of the primary 'future schools' committee and one of their aims was to introduce ICT into the teaching and learning pedagogy, they did not include any specialists in the information and communication technology field in the study. They did not include any studies about the importance of ICT for the development of the primary schools curriculum. Questions such as how ICT should be integrated into the primary curriculum or how to prepare teachers for integrating ICT into their classroom practice were not addressed. They did not expose teachers to the cross-cultural experience of other countries - which they had visited - regarding the integration of ICT into the classroom, which would have helped to improve teachers' classroom pedagogy, or the studies about preparing teachers for 21st century skills in education. Furthermore, the important aspect of helping teachers to use ICT to transform their classroom into a more learner-centred environment does not seem to be given sufficient attention, if any. For example, they had only IWB in one 'future school' where teachers were instructed to use the IWB library in their lessons or design their own PowerPoint to deliver the lessons. The following sections will be addressing the pre-service and in-service teacher preparation programmes to

shed light on the gap that exists between the theoretical and practical parts of teachers' reality in the Kuwait context.

2.6 Teacher Preparation Programmes

Teacher preparation programmes in Kuwait are accommodated by three sectors: the Ministry of Education, the College of Education at the University of Kuwait (U.o.K) and the College of Basic Education at the Public Authority for Applied Education & Training (PAAET). The main aim is to equip the prospective teachers with the knowledge, attitude, behaviour and skills required to perform their tasks effectively in the public schools. Teacher education for the Kindergarten Studies, Primary, Intermediate and Secondary schools have the same procedures and methods of learning with differences in the number of the subjects that are needed for each stage and it is usually divided into three stages:

2.6.1   Initial teachers education (pre-service stage1)

The initial stage of teacher education is delivered through the pre-service courses before entering the classroom. Student-teachers are required to complete a four-year undergraduate degree majoring in one of five subject areas offered by the (U.o.K) or (PAAET), which are: Islamic Studies, Arabic Language, English Language, Science & Maths and Social Studies. The courses that teachers take in college vary between the educational theories and the requirement courses for each subject area that they are majoring in; also, other common courses, such as curricula and teaching methods, educational psychology, education foundations, educational administration and planning, Islamic studies, Arabic and English language and educational

technology are offered. In general, it would be equal to 132 credits for graduation including the field training course which will be introduced in the induction stage below. Pre-service students- teachers are entitled to complete two technology and ICT courses only. These two courses are an introduction to technology and ICT, and therefore general knowledge more than a preparation of teachers to integrate technology and the use of ICT in classroom pedagogy.

2.6.2 Induction (practicum course prior to graduation stage2)

This stage is part of the college period of study. After student-teachers finish 122 credit hours toward their graduation, they have to complete 10 credit hours at schools equal to one semester at public schools, which is called the practicum. Student-teachers will then be assigned to a specific public school, either primary boys' or girls' school, and have two mentors: one from the college visits them sometimes in the field, and the other one is from the first teachers in the school based on the subject matter they are majoring in, for example, the student-teacher who is majoring in maths will be mentored by the first maths teacher in the school and so on (each school has a first teacher for each subject, and the job of the first teacher is to lead as an expert the teachers who teach the same subject matter in their sections, for example the maths section teachers and their first teacher). In the practicum course the student-teachers are supposed to relate what they have learned in the college to the classroom reality, to develop their professional identity and apply the basic competences that were acquired in college. In reality, student-teachers are supposed to be observing examples of good practice and getting the support they need. Also, they are obliged to design innovative learning tools

for the teachers in the schools - not actually practising teaching, for which they must be graded after they finish the practicum course and be qualified as school's teachers. Further, all learning objects and tools are prepared by the student teachers using their own funds, which are not approved by the college, but they have to do it or they will fail the course.

2.6.3 Teacher professional development (in-service stage3)

The in-service stage is the real life for the student teachers. They have not practised teaching appropriately, but now they are face-to-face with classroom practice, teaching and learning how to teach by using the advice and help of senior colleagues who are experts in the field. It is a kind of dilemma that the new teachers are trapped in and struggling to survive with some help, if they are lucky to have a wise and patient first-teacher and school manager. Otherwise, they are expected to improve themselves in order to get promotion at the end of the year, or fail to get it. The dilemma starts on the day teachers enter the Ministry of Education as novice teachers: the first-teachers' and teachers' inspectors are supposed to be training and qualifying the new teachers for the classroom practice. There are two types of new teachers that the Ministry of Education is hiring: the graduate teachers from the University of Kuwait (U.o.K) and PAAET and other Arab, or non-Arab countries. New teachers have different qualification degrees: some of them majored in education while others are from different majors. For example, if the Ministry is short of Arabic or English teachers they will hire the equivalent graduates of other disciplines to do the job, such as graduated students majoring in Arabic or English literature. If the shortage is in maths and science teachers, they will hire graduates from Science College, or even unqualified College students in

education are used as school teachers to teach in public schools. For example, teachers of Arabic in 'future schools' are also required to teach Islamic or social studies, and the mathematics teachers will also teach science and vice versa (if the school is designed to have only science and literacy teachers in the classroom, such as the 'future schools'). The same applies to other subject areas like computer studies, meaning that students majoring in management or business can teach it. The unqualified teachers have a one or two week orientation course once they enter the work field, and this course prepares them for teaching in the classroom in order to be qualified for teaching in public schools. But, the qualified teachers with teaching certificates are assumed to be qualified for classroom practice. The qualified teachers will have only one week preparation to familiarise themselves with the rules and regulations of the Ministry as employees.

Reviewing the annual catalogue of teachers' professional development plan, which is provided by the Training Centre at the Development and Management Department, which is one of the three departments of the Planning and Information Sector at the Ministry of Education, shows that all the technology courses are provided for the teacher's inspectors and first-teachers upon their request for administration purposes only. Typically, the professional development courses are a single-event course or workshop, with an assumption that teachers need to obtain specific training courses to cope with the new developments in the field for the next 20 or 25 years. The centre provides different courses for the teachers depending on the recommendation of the teacher inspectors' office or the supreme council of

education in the Ministry. Courses like the international computer-driving license (ICDL) are considered as one of the teacher qualifications which both the new and old teachers have to pass and the in-service teachers are reimbursed if they have obtained the certificate. The ICDL has influenced quite a few teachers' practices; they have started to use the Microsoft office software tools like PowerPoint and Word Processor in their daily practice for the purpose of administration or delivering lessons. Other courses are treated as free choices or, alternatively, if the school manager decides that either all or teachers in particular fields should have these skills, then they will be assigned randomly to take the courses whenever they are offered. These courses are being taught theoretically with no infield practice. Teachers just add to their records or CVs that they have completed these courses during their service for a promotion, but if some of them do not have any it will not affect their annual report. Sometimes teachers refuse to take the courses for a variety of reasons: lack of time because of workload, or it is after school hours and they are exhausted during the day and do not need more stress, or because they do not want to sacrifice their family time.

The assumption is that there is no sufficient time to train all public school teachers and that it is the responsibility of the inspectors and first-teachers, as part of their task to train and prepare teachers, to integrate ICT into the classroom pedagogy. Furthermore, depending on the inspectors' and first-teachers' time or mostly during the weekly or monthly meeting outside the classroom context, teachers might be offered lectures about methods of using ICT in teaching or practical workshops about implementing some examples,

but it depends on the inspectors' personalities. Teachers are obliged to follow inspectors and first-teachers' instructions even if they do not have the specific skills or the tools to complete the task in order to obtain a better annual report.

The current situation of in-service teacher's training can be summarised as follows: optional, addressed mainly to beginners/low performers (they see it as punishment), subject-based, methodical guidance, performed by supervisors, and university professors, closed circle and district based, low frequency in organisation of events, unattractive to teachers, instructor-focused and based on lecturing, theoretical more than practical, low feedback for teachers, linked to supervision processes, managed at supervision level with unclear procedures, no database to track teachers' training personal records (MOE, 2012).

The present study aims to explore the process of change in Kuwaiti 'future schools' teachers' pedagogic practice through researching and finding the factors that impact on change, and gathering data in an attempt to provide a CPD as a sustainable and continuous process. The proposed RP-BCPD model aims to enhance teachers' professional action as reflective practitioners, learning and generating knowledge, practising with autonomy, utilising ICT in pedagogic practice as a continuous process. Hence, it emphasises the help of in-site experts coaching teachers' learning to integrate ICT instead of the first-teachers and inspectors. The programme is designed to make teachers free of any obligations forced by the first-teacher, inspectors and schools administrators in order to get significant understanding of the

process of change in teachers' classroom practice. Furthermore, it offers teachers time to learn, to train and develop new skills and knowledge. In addition, it encourages teachers to become reflective practitioners and inquire into their own practice to enhance it, and to be more active and activate their pupils' learning. The study seeks to understand how to offer teachers equal chances to learn and implement the new knowledge and skills, based on interactive methods and individual reflection.

2.7 Kuwait Educational Indicators and Assessment

The annual EISK report about the Kuwaiti public schools' educational assessment is done in collaboration with the World Bank, the Ministry of Education adopted a policy for the improvement of educational achievement in Kuwait and the result of this project acts as a guide for decision-making and policy development. The third *Education Indicators in the State of Kuwait 2007* EISK 2007 report pointed out the weaknesses and strengths of the education system in Kuwait, and highlighted the aspects, which need more attention and re-examination in order to improve the educational achievement in Kuwait. This edition of EISK focused on the fourth and eighth grades. Teachers are the main element of the education system which have the most impact on students' achievement; however, less attention was paid to teachers' qualifications and experience for the elementary school. EISK reported the current state of teachers' qualifications and experience in grade 4, as quoted below:

> "teacher qualifications and experience in grade 4, 80 percent of teachers held education (teaching) qualifications and the rest held general qualifications. A greater proportion of English teachers than teachers of other subjects held general degrees (38 percent of English teachers compared to 10-20 percent of other subject teachers). Eight percent did

not hold a university degree, the vast majority of whom were aged 40 years or older… At the grade 4 level, possession of an educational qualification was not related to student achievement in mathematics… The vast majority of sampled teachers taught subjects in their major fields. However, 15 percent of grade 4 science teachers did not have a formal science qualification (15 per cent had majored in mathematics). Similarly, some Arabic language teachers did not have the appropriate formal qualification (14 per cent of them had majored in Islamic studies)" (MoE, 2007: 114).

The project revealed "little evidence of a relationship between teacher preparation and the quality of student achievement in mathematics, suggesting a need to examine the nature and quality of teacher education" (MoE, 2007: 114). Another study was conducted by the Kuwait's Society for the Advancement of Arab Children KSAAC (1998), the Education Indicator and Building National Capacity project. The study revealed that one third of the Kuwaiti teachers expressed feelings of dissatisfaction with the job, and that they accepted it because they could not find a better job. It is an indicator of the seriousness of this phenomenon and that the teaching career is not attractive anymore, which has a negative influence on the quality of the educational process (p. 194).

Al-Menaifi (2012), in his study "The reality of technological courses in the College of Basic Education", for pre-service teachers found that:

1- Student teachers have only two technology courses out of five to eight technology courses which are introduction to Technology and production of teaching aids workshop, within the mandatory professional courses, and other courses are optional, such as: introduction to computer education are within the general cultural optional courses, which means that the student teachers complete two

technology courses during the programme only, and the remainder of the technology courses are treated as optional (p. 7).

2- The 'student's information guide' does not include the number of mandatory technology courses that the student has to complete in order to pass the programme. Further, it does not include the relative weighting of the technology, educational and cultural courses.

3- The overlap in some of the descriptions of some technology courses in one programme, such as the 'introduction of computer education' and 'the basics of computer education'.

4- Lack of technology courses that address the computer programs such as: Microsoft windows, Microsoft office, Graphic programs, and Multimedia programs.

In his recommendations for the Public Authority for Applied Education & Training (PAAET), Al-Menaifi (2012) emphasised the importance of the ICT courses in teacher education programmes and linked them to the society, educational sectors and public schools. He suggested creating a committee of faculty members' experts in different disciplines area and colleges, to work on the redistribution of the relative weights between the courses of technology and other courses, to address the imbalance in the appropriate technology courses with other courses. Also, it was proposed to consider the integration of technological courses and other courses at the vertical or horizontal level during the four academic years of the programme. Reviewing the teacher preparation programme in the Faculty of Basic Education, Al-Menaifi (2012) suggested increasing the number of courses requiring technological knowledge, and stressed the importance of knowledge about technology

implications for all of the disciplines in developing the skills and abilities of student-teachers in the College of Basic Education. Al-Menaifi (ibid) argued for the need firstly to develop and reform the technological characterisation of the courses in all areas of educational technology. Secondly, he suggested keeping pace with the progress and development in educational technology globally. Thirdly, he proposed an increase in the number of hours allocated for technology courses within the curriculum. Moreover, he stressed the need to develop and equip computer labs in the college with the latest equipment utilised to teach technology and courses in the other disciplines, aiming at transforming the computer labs into the training centre for faculty members and student teachers. Arguably, Al-Menaifi's (ibid) conclusions apply in equal measure to the Teacher Education in the University of Kuwait, where undergraduate pre-service student teachers are not being prepared for the 21st century skills involved in education with ICT.

Al-Menaifi's study shed light on the essential problems in the teacher education programmes at the PAAET, which affected teachers' preparation and schools' reality. Hence, his study opened more avenues for other researchers to build on his findings and try to provide practical solutions for in-service teachers. The present study will focus on the Kuwaiti in-service teachers professional development programme. However, it will investigate their view about the pre-service programme that they had, which might help to develop an appropriate solution to improve the Teacher Education programme in Higher Education in Kuwait.

In response to Kuwaiti society's needs, the Ministry of Education has developed for the first time a comprehensive strategy for educational development up to 2025, and has adopted a new policy since the 2005 school year. The Ministry of Education started the project of developing general primary public schools in 2005, with clearly stated aims, education plans and a system of evaluation. The new education plan pointed out the necessity of diagnosing the weakest points of pupils' learning achievements and to prepare programmes to improve these learning skills with tutoring classes, which should be part of the schools' regular timetable. Furthermore, each pupil has to have his/her own assessment e-portfolio (pupils' skills assessment records), which includes the pupils' scores for all learning skills in each subject.

Another important issue in this context is the traditional balance of power between a teacher and a pupil, where the teacher is the main source of knowledge, with very little interaction on the part of the students. The most common teaching method in the classrooms is the IRF (initial-response-feedback) pattern of pupil-teacher interaction that limits pupils' thinking and is being used for testing pupils' understanding of the lesson (MoE, 2009). Most of the teachers sometimes try to engage pupils in the learning process by asking questions; otherwise, pupils must remain silent, listening and watching and receiving knowledge, as the teacher is the provider of knowledge. According to the MoE's (2009) final report of the evaluation of the primary development project, the appraisal team members pointed out that the majority of primary teachers are not well prepared and do not have the skills

and knowledge to teach effectively or design assessment tests to measure pupils' skills and knowledge or the e-portfolio for the new curriculums.

My study investigates the impact of an innovative RP-BCPD model on teachers' classroom practice with autonomy, the teachers' and pupils' relationship inside the classroom using ICT tools for teaching and learning. Teachers and pupils can have the chance to use the new learning's style and tools for learning and teaching in and out of the classroom, hence to extend the range of the ICT learning tools in the classroom, which offer more freedom of experiencing other options. The following section will shed light on the reality of ICT utilisation in Kuwait context.

2.8 Current status of ICT in Kuwaiti public schools

The Planning and Information sector includes three departments: the Educational Technology Department, Development and Management Department and the Information System Department. However, it is not always clear which department in the Ministry of Education is responsible for providing public schools with information and communication technology equipment and designing the learning objectives. The Ministry has two different departments, one of which is called the Educational Technology Department and the other is the Information System Department. The Educational Technology Department provides public schools mostly with the basics, such as maps, audio and video educational products, as well as school radio station equipment and language labs. The department is not eligible to have an employee technology programmer to design e-learning software for schools.

The Information System Department, however, is the centre that provides the Ministry's departments, districts and schools with computer hardware and software, the Internet and maintenance; it also, manages and updates the Ministry's websites. As it has a team of expert programmers and computer engineers, the department has been involved in designing and producing e-learning drills and practice software on CDs for the integral classrooms (a class taken in the computer labs for using the drill and practice ICT software or activities made by the ministry for the Arabic and maths subjects only), and the teachers of computer literacy were forced to facilitate and observe pupils while completing their class work in computer labs, despite the fact that computer literacy teachers are not experts in this subject matters. Then, by the school year 2007-2008, computer literacy teachers complained because they were not being paid for this job. The General Education sector intervened to solve the problems arising from engaging computer literacy teachers in the integral classrooms.

The Kuwaiti public schools are equipped with basic technology tools for teachers to use in delivering and demonstrating lessons only, and computers are used in the computer labs for computer literacy subject matter, or the language lab for English subject matter. Furthermore, the e-learning activities for some of the subjects are designed by the programmers and computer engineers who are not experts in subject matter, and were used in the integral classroom without the supervision of the subject matter experts. It is forbidden

for pupils or teachers inside the schools to use ICT communication tools and devices such as e-mails, blogs, forums and other social networks.

This study seeks to understand Kuwaiti teachers' need for professional training to increase ICT-competences related to the implementation of the E-Learning strategies of the Ministry of Education in the Kuwait context. It focuses on teachers as the experts on the subject matter involved in preparing the instructional design for the ICT-based lessons. It proposes equipping classrooms with ICT tools for the use of teachers and pupils, instead of moving back and forth between classroom and computer lab. The following section will focus on teachers' professional training to meet pupils' learning skills in the 21st century, why teachers need these 21st century skills according to the global challenges, as well as the vision of Kuwait in the 21st century.

2.9 The 21st century skills and global challenges

Although the current vision of the Kuwaiti government is to promote 21st century skills in favour of becoming a world-wide financial and economic centre and the world oil capital, as envisaged by the Prince of the Kuwait, still the outcomes of the educational system do not live up to governmental ambitions. According to the Ministry of Education, in recent educational system reforms (MOE, 2012) the education system faces a variety of challenges, which need to be addressed in order to improve the future outcomes of public schools. The new vision requires curriculum designers, educational policy-makers and educational leadership in general to work diligently to realise this extremely promising but also highly demanding

national vision. The Kuwait educational system for public schools is facing global challenges that imply the need to keep pace with the requirements of the digital age in the 21st century. In order to meet the expectations of the world living in the highly competitive economic environment of 21st century societies, and furthermore to meet the expectations of the government and students regarding the schools and the new curriculum in the current educational reforms, we have to respect the needs of Kuwaiti teachers to fulfil the requirements of the national vision and the future of Kuwait as a financial and economic centre.

According to a study carried out by the World Bank's curriculum and educational policy experts in 2006-2011 upon the request of the Kuwait government, Kuwait's curriculum lacks the international standards of long-term policy (MOE, 2012). As a result, the Kuwait Ministry of Education is currently reforming the national curriculum policy to meet the needs of the 21st century's educational skills. There is a serious dysfunction in Kuwait's teacher education and in-service professional development, which has been reviewed in more detail above. The Kuwaiti primary teachers are conveying knowledge to the learners orally by explaining and replying to their enquiries. The transmission model is still the dominant approach in Kuwaiti primary schools. In the transmission model, pupils learn information but are not able to apply this knowledge to their context; they cannot communicate their knowledge and ideas and use them creatively to solve real life problems. Thus, the number of pupils as listeners is limited with increasing of recipient pupils' numbers in the stage of reading and writing. Unlike the constructivist model,

pupils are able to actively use ICT to gain skills and knowledge and are able to apply it in daily life and the learning process. In order to have a generation equipped with skills and competencies fostering competition in the labour market, it is inevitable to make the learner the centre of the educational process and curricula. Developing students' 21st century skills and adopting the student-centred approach means we need more research to approach teachers' needs and their role in 21st century schools, as well as understanding the specific nature of the process of change in teacher practice, skills, professional development and training in the Kuwait context.

The Kuwait Ministry of Education (MOE, 2012) has listed the requirements of today's young people and their expectations of school and the new competence-based curriculum. The new competence-based curriculum concentrates on the importance of developing students' self-learning that enables them to be a lifelong learner. This is learning that leads to building future skills and life strategies in the 21st century, including: a) learning to be; b) learning to know; c) learning to do; d) learning to live together. In practice this means teaching students how to learn, how to discover knowledge, and how to employ it in solving everyday problems, enabling learners to represent their country in international achievement tests and occupy an advanced position. Students develop skills of working with others, communicating effectively orally and writing and sharing their ideas and opinions publicly and internationally, creatively and innovatively making things happen and contributing to their society, using information and communication technology effectively to serve the development of their country. Globalisation is one of

the challenges that the nation of Kuwait and individuals face, which is connected to a series of international trends and evaluations underlying the beginning of the 21st century. Globalisation means moving from the local orthe national and regional domain to the global, accepting that the country and individuals are part of the global economy, ecosystem, political network and community. Students learning how to communicate and collaborate innovatively and creatively solve problems with people beyond their national boundaries using information and communication technology.

According to Volman (2005), we cannot say that "revolutionary changes in schools have taken place under the influence of ICT" (p. 15). Just using ICT does not mean developing 21st century skills in education. The skills teachers and pupils need in the 21st century are not new, and we should know how to help teachers teach self-direction, collaboration and creativity (Rotherham & Willingham, 2010). The idea of training teachers to integrate ICT into teaching subject matter was problematic for many teachers around the world; teachers struggled to successfully integrate ICT into their daily teaching (cited in Haydn & Barton, 2008, p. 440). According to Haydn and Barton (2008), "there is evidence to suggest that within the UK, some of the interventions, policies and investment in getting teachers to embed the use of ICT in subject teaching have not been found to be helpful by teachers" (p.440).

 Regardless of the criticism of using ICT, it is worth knowing the actual changes within the Kuwait context as a result of integrating ICT to develop students' new learning skills for the 21st century. We need the research to

understand the extent of change in teachers' practice or pupils' learning that depends on having such skills. How would the integration of ICT in pedagogic practice promote the 21st century skills in students learning, such as: critical thinking, problem solving, collaborative and communicative skills? What attracts teachers to construct knowledge, master new skills and sustainably change their values, attitudes, and practice? What factors hinder the development in teachers' knowledge and skills, to be more reflective practitioners with a sense of ownership towards improving their pedagogical and technological practice? We need to research and develop efforts to foster genuine change in the Kuwait context.

2.10 Conclusion

This chapter presented the background of the primary education system in Kuwait, with a particular focus on the primary teachers' preparation in the pre-and-in-service programmes. The main purpose of this chapter is to understand the context in which this study was conducted and the gap that exists between teacher preparation and school reality. Kuwaiti teachers are prepared with theoretical knowledge. They have little opportunity to put into practice a variety of teaching methods with technology applications and tools during the practicum, or the in-service PD course. The chapter sheds light on the gap between the nature of teachers' preparation programmes and the demands of the 21st century education skills. The Ministry of Education is attempting to follow the education strategies for 2005-2025, by developing a new competence-based curriculum for the public schools in order be able to cope with the 21st century education for primary schools. Other crucial considerations were mentioned, such as: poor technology and ICT

infrastructure in schools, the challenges of constant changes and developing pupils' 21st century skills and knowledge to be active individuals in the future of Kuwait as a world-wide financial and economic centre. The analysis of the education system in the Kuwait context raised important questions which need more research in teachers' professional development. The focus was on the teacher's role as a reflective practitioner and developing a framework for CPD to foster change in 'future schools' teachers' knowledge and skills to improve their own classroom practice using ICT, and promote 21st century skills in their pupils' learning process.

Chapter Three

Literature Review

3. Introduction

There is a worldwide consensus that ICT holds great promise for education, for teachers and students and the classroom environment. ICT has not lived up to these promises in the Kuwait context, because Kuwaiti teachers did not have the opportunities to learn to maximise its pedagogical value, as well as the absence of direction. Teachers are very much oriented toward using the transmission model of teaching and learning in their classrooms. This chapter aims to review the literature related to the emphasis on reflective practice as a model for continuing professional development. A few studies have been done in this area, and they lack significant detail about the mechanisms that link reflective practice-based CPD to the change process in teachers' beliefs, knowledge and practice while integrating ICT, especially in the Kuwait context. This literature review shows the need for a specific case study of a Reflective Practice-based CPD in the context of Kuwait primary schools. The literature's focus on the theoretical context underpinning this study intends to understand the process of change in teachers' pedagogic practice situated in social context, and building of capacity toward the continuing process of constructing technological and pedagogical knowledge using reflective practice. The literature review shed light on the types of continuing professional development models, teachers' pedagogical beliefs, teachers' knowledge base, professional practice, the concept of the change process

and the pedagogy of autonomy, teachers in a community of learners, teachers as reflective practitioners.

3.1 Theoretical Context

Educational means and aims are changing as societies and political influences change. In the changing era of the 21st century, the Kuwaiti Ministry of Education is introducing a new competences-based curriculum, which is more flexible and focused on 21st century skills for Kuwaiti teachers, as well as for students learning and future careers. Despite the expectation of the new curriculum for teachers and pupils, there is a need to understand the process of teachers learning and developing new pedagogical knowledge and skills related to the new curriculum, which considered as a necessarily element for transforming the new content based on "constructivist, constructionist, socio-cognitive and socio-cultural theories of learning" (Loveless & Williamson, 2013: 123). According to Voogt et al. (2011), that implementation of ICT is part of a comprehensive change in the educational system from the perspective of 21st century learning (p. 3). She argues that ICT has the primary place in 21st century skills and learning, and that the acquisition of ICT skills is not only an educational goal, but also it serves as a tool to support teaching and learning (ibid, p. 2). According to Vygotsky (1987), isolated learning could not lead to any cognitive development. He asserted that social interaction was a prerequisite to learning and cognitive development. This type of learning involves more than one person in a collaborative constructivist-learning environment. The collaborative constructivist learning environment promotes a sense of trust and belonging to a community, encouraging and socially interacting with each other, as well

as reflecting on the progress of constructing knowledge and skills to improve their pedagogic practice using ICT. Therefore, the present study adopted the social-constructivist approach to support teachers learning and developing of new technological and pedagogical knowledge and skills as a continuing process of change.

Social constructivism is influenced by Vygotsky's (1978) ideas about how the individual makes meaning from knowledge within a social constructivist context. The concepts of reflection and collaboration mirror the inquiring, critical thinking and experiencing which are the method and process of engaging teachers in reflective inquiry about their pedagogic practice in order to construct meaning and confirm understanding (Dewey, 1959; Garrison, Anderson & Archer, 2000). Fosnot (1989) argued that constructivism believes that the learners themselves knowledge is constructed in the process of reflection, inquiry and action, and thus it must be seen as temporary, developmental and non-objective (p.21). Postholm (2006) views the context of the social-constructivist perspective as important for learning processes. The substantive theories within the social-constructivist perspective were a suitable vehicle for primary teachers to develop an interactive learning environment to enhance their pedagogic practice using ICT.

The existing literature on ICT use in education shows the positive impact of ICT on pedagogical practice given the right conditions. However, "it is not a catalyst that will necessarily bring such changes" (Law, 2009, p. 320). But how the social constructivist approach is used to promote change in teaching

practice depends on teachers and other factors. These factors can be elaborated both at 'future schools' and at the teacher level to understand the change in context and the pedagogic approach. In order to develop teachers' pedagogical practice, the reflective practice as a model for a professional development programme is being tested in the Kuwait context. The study focuses on understanding the design of a CPD that adopts a social-constructivist approach to stimulate teachers to develop a reflective and inquiring role situated in a collaborative learning community. Moreover, it sets out to investigate the factors that affect teachers' adoption of the reflective practitioner role in order to improve their pedagogic practice using ICT to promote 21st century skills in pupils' learning.

Hence, the understanding of pupils' learning needs, and the contexts of the social situation and learning environment, is related to teachers' professional development. Furthermore, the study will pay close attention to the other individuals inside and outside the schools' borders that these teachers will be interacting and communicating with, in order to understand the process of change in teachers' beliefs, and the knowledge related to integrating ICT into practice that will affect their pedagogy. The next section will show the literature review of previous CPD programmes that were used to develop a CPD model to promote change in the Kuwait context related to teachers' technological and pedagogical practice.

3.2 Models of Continuing Professional Development

The continuous demand for improvement, reform and development of educational quality and standards is a sustainable quest and at the centre of

this quest are the teachers (Andey, 2004,p. 2). However, the literature on teachers' continuing professional development connects between pupils' achievement and effective CPDs programmes. Various writers have defined teachers' professional development: for example, Bell and Gilbert (1994) describe teachers' development as "teachers learning, rather than as others getting teachers to change" (p. 493). They explained that during the learning process teachers develop their beliefs, ideas and classroom practice related to their feelings in an attempt to change. However, Evans (2002) defined teacher development as "the process whereby teachers' professionality and/or professionalism may be considered to be enhanced" (p. 131). Other authors describe the teachers' professional growth as dependent on testing and refining, engaging in sustained reflection (Evans, 2002; Day, 1999). As teachers are the main element and will remain the centre of any reform in education, their continuing professional development will remain essential to educational development (Andey, 2004, p. 3). In the following section I will explore the relevant models of PDs and CPDs and the theoretical perspectives relating to the present study context, aims and questions which inform the design of an alternative model of CPD.

According to Guskey (1998, 2002), the ineffectiveness of most previous professional development programmes is that the designed programmes do not consider two main factors, which are: a) teachers' motivation to engage in the programme and b) the process through which changes in teachers' practice typically occur. These professional development programmes are the main targets for teachers, which they consider promising routes for

professional growth, competence, professional satisfaction and enhancing pupils' learning achievements (Fullan, 1991, 1993; Huberman, 1995). Guskey (2002) pointed out that the "Professional development programmes are systematic efforts to bring change in the classroom practices of teachers" (p. 381), that the changes could be in teachers' beliefs, knowledge, teaching methods and skills or pupils' learning achievements. He provided a model on PD for change in teachers, as shown in Figure 1.The model has four phases aiming for changes in teachers' classroom practice, student's learning outcomes, and teachers' beliefs and attitudes.
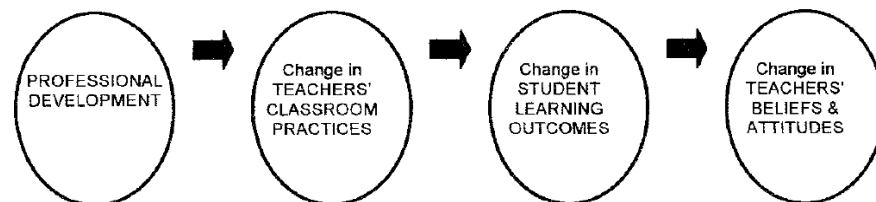
Figure 1: Model of professional development for teachers' change (Guskey, 2002).

The process of change in teachers' pedagogic practice is very important if teacher are involved in the change, rather than being told what to do as the right method for changing practice. It is better for the professional development activities to be designed to initiate the changes in teachers' beliefs, knowledge, practice and perceptions, which is what the developers should aim for to accomplish changes in teachers' practice and skills in serving specific curriculum needs. An alternative model of the professional development programme is needed to meet and sustain the need for teachers' professional growth during the school year. The crucial point is not the kind of professional development *per se*, but the experience of the successful implementation of a professional development programme that

aims to bring effective changes in teachers' beliefs, knowledge, skills, roles and classroom practice with ICT.

However, Putnam and Borko (2000) suggested studying teachers: "we must study through multiple contexts of their classroom, their school communities and their professional development programmes taking into account individual teacher-learning and the social system they participate in, using the multiple context of the situative perspective". Borko (2004) organised a professional development programme for research in three phases. Each one builds on the previous one, representing one way for the research activities, which can progress toward the goal of providing all teachers a high quality of professional development.
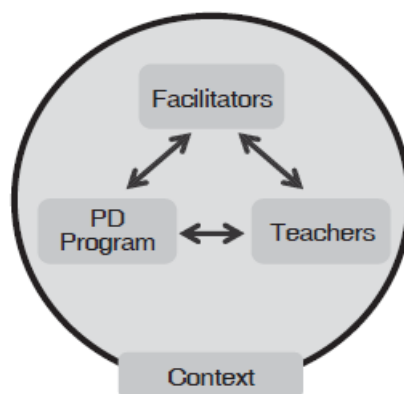
Figure 2: Elements of professional development system (Borko, 2004).

In phase one of the professional development programme, Borko (2004) focused on making researchers explore the impact of participating in the PDP on teachers' learning and knowledge. Phase 2 focused on the multiple sites and facilitators' aims to examine and specify the critical features of the well-defined PDP systems such as activities, facilitators' roles and teacher outcomes measures, and the third phase goal is to provide comparative

information about the implementation, effects and resources requirements of well-defined PDP (see Figure 2). However, Stenhouse (1975) believed that teachers must study their own work, that it is not enough to study their work and provide them with professional development activities: "teacher's professional self-image and condition of work will have to change" (p. 142).

In a study conducted in Queensland (Australia), Lloyd and McRobbie (2005) investigated the effectiveness of a school-based practicum conducted at an ICT teacher Learning Development Centre (LDC). The centre offered a three days intensive face-to-face programme for teachers situated in the school setting, mixing teachers and administrators from different levels in groups of 2 to 3. The model was based on situating training in work place (Greeno, 1997; Borko, 2000), focusing on ICT as being a medium of pedagogy, not the sole medium. The programme provided easy access to classroom observations and teacher consultations by practicum participants. The findings from the study were grouped in three measures of impact: the effectiveness, impact and value of the programme for utilising ICT in the classroom, engaging teachers as learners, meetings the teachers' needs, self-mentoring of the potential changes in teachers' own practice, reflecting on pedagogic practice with ICT, and collaborative learning of using ICT. The practicum course was successful as it created a non-threatening situated learning environment for teachers to learn, without any predetermining of the outcomes, encouraging the participating teachers to ask 'why' rather than 'how' to utilise ICT in their classroom practice and allowing for greater diversity in the outcomes through the translation from theory to practice (Lloyd & McRobbie, 2005). Middlewood

et al. (2005) examined the educational context; they argued that professional development is an ongoing process of reflection and review that elucidates with development planning that meets teachers' needs. The features of the practicum course are relevant to the present study aims, except that this study focused on designing a CPD that promotes critical thinking and inquiry into pedagogic practice among Kuwaiti teachers during their in-service years.

According to Loveless (2003):

> "Digital technologies exhibit features which can be exploited by users in order to make a distinctive contribution to activities. That is, to enable the users to do things that could not be done as effectively, or at all, using other tools. Recognising the potential of these features of provisionality, interactivity, capacity, range, speed and automatic functions is a significant element of ICT capability" (p. 9).

In order to develop creativity in teachers' pedagogic practice transforming the content for their pupils, the development of ICT capacity is a prerequisite "to meet the technological and social challenges of the twenty-first century" (ibid, p. 8). The integration of ICT in the teaching and learning process inside the classroom is not a simple matter because of different methods of integration and utilisation of ICT. The literature shows several professional development programmes that were designed to prepare or train teachers to use ICT and technology in their classroom practice. However, ICT is not being used by many teachers in their daily practice to support pupils' learning, because of the lack of awareness among teachers about the ICT potential to transform the content of pupils' learning. This has relevance to the provision of the CPD model for the Kuwaiti context that promotes a sustainable change process.

The CPD model for in-service teachers should address teachers' individual needs, and self-awareness (critical thinking and inquiry). Hence, special attention should be given to the factors affecting teachers, such as the resistance to change. It is a very complex model to design in order to promote change in the Kuwait context. To understand how teachers learn to change their own practice using ICT, they should be supported to develop their independence and autonomy in reflection and creativity, empowering them to take ownership of their own experiences within the school context, which is the essential point of designing CPD for Kuwait's primary school context.

The literature review helped to explore the previous research related to teachers' professional development and the reflective practitioner model, which could be used in the present study. However, my study is designed to explore the mechanisms that link teachers' reflective practice to a CPD programme, and how it will effectively influence Kuwaiti primary teachers to improve their classroom practice, beliefs and knowledge using ICT through inquiry into and reflecting upon their own practice.

Research has shown evidence of teachers becoming committed to the new innovative approaches in teaching and learning only when they engaged in the change process and saw it work in their classroom practice with their students. Furthermore, teachers' belief change occurred when implementation was combined with the evidence of pupils' improvement (Guskey, 2002; Bolster, 1983; Crandall et al., 2000). However, other studies in teachers' professional development using action research have shown that teachers

were uncertain about taking the risk of doing or trying new and different things in their classrooms (Haggarty & Postlethwaite, 2003). Thus, the approach of this study is towards stimulating Kuwaiti teachers to build the reflective practitioner personality and role inside their classroom, which is new in the Kuwait context, and it is more important to motivate teachers to get involved in the change process and to build capacity.

Educational reform is influenced by the relationship between situational and contextual variables (Huberman & Miles, 1984; Fullan, 1985; Firestone & Corbett, 1987; Guskey, 2002), and the close collaboration between the researcher as a developer of the professional development programme and teachers as inquiring into their classroom practices, researching their own practice and developing new instructional approaches and methods. According to Guskey (2002), to sustain changes in practice is perhaps the most neglected aspect of professional development, thus professional development should be a process rather than an event during the school year (Guskey, 2002; Loucks-Horsley et al., 1987, 1998). The change that holds great promise in educational reform usually takes time and more effort and work to have positive results, and it has to be seen as a sustainable endeavour (Guskey, 2002; Huberman & Miles, 1984; McLaughlin & Marsh, 1978). According to Fullan (1991), most CPD programmes fail to recognise the different impact of positive and negative factors within the school context.

Haggarty and Postlethwaite (2003) worked with a group of local teachers through several cycles of collaborative action research over a period of eight

years trying to improve pupils' learning at the school. They worked with teachers as consultants, discussing the relevant theories that could be used by teachers in a specific situation to find practical and sustainable solutions to complex problems using action research. Haggarty and Postlethwaite (2003) noticed that some teachers were happy to talk about their problems, and chose the best theoretical ideas from discussion with consultants, which was appropriate for their situations and needs, while some of them did not. Although some of the teachers engaged in the study saw action research as a deficit model for professional development, Haggarty and Postlethwaite (2003) suggested from their findings that action research can be valuable as a model for teachers' professional development. Hence, they found that theories, context and teachers' values are very important elements in the reflective process (p. 443).

On the other hand, Kennedy (2005) provided a framework for analysis, identifying nine key models of continuing professional development, which she classified in relation to their capacity for supporting professional autonomy and transformative practice. Kennedy (2005), unlike Eraut (1994), argued that professional knowledge acquisition is not situated exclusively within the three contexts of the academic, institutional discussion of policy and practice or the practice itself (p. 236). Kennedy (2005) identified and categorised nine models as traditional, transitional and transformative based on their characteristics, and the circumstances that each model can be adapted to are: training, award-bearing, deficit, cascade, standards-based, coaching/mentoring, community of practice, action research, and

transformative. Kennedy (2005) explained that the last model - 'transformative' – involves a different range of models together with a sense of awareness of the issues of power and can be categorised as a post-structural approach to CPD (p. 247). The framework for CPD model analysis that Kennedy (2005) proposed consists of five questions:

- "What types of knowledge acquisition does the CPD support, i.e. procedural or propositional?

- Is the principal focus on individual or collective development?

- To what extent is the CPD used as a form of accountability?

- What capacity does the CPD allow for supporting professional autonomy?

- Is the fundamental purpose of the CPD to provide a means of transmission or to facilitate transformative practice?" (p. 247).

Kennedy (2005) explained that the fifth question provides a spectrum along which can be placed the nine outlined models (see Table 4).

Table 1: Kennedy CPD categories (2005: 248).

Model of CPD	Purpose of model	
The training model The award-bearing model The deficit model The cascade model	Transmission	Increasing capacity for professional autonomy
The standards-based model The coaching/mentoring model The community of practice model	Transitional	
The action research model The transformative model	Transformative	

Similarly, Solomon and Tresman's (2006) model of continued professional development stressed the importance of teachers' professional action that has to be built on teachers' values, beliefs and knowledge, and further, how

teachers react to the new changes and challenges (p. 315). Drawing on Schön's (1983) reflection in action, which helped in the idea of reflective practice, Solomon and Tresman (2006) build their CPD model to examine teachers' reflective practice within the teaching profession (see Figure 3) for more understanding of the model's within-schools cycle. The purpose of this CPD is to provide teachers with a chance to learn new skills, knowledge and an effective way to reflect on their own application of their learning in the classroom context (p. 316).
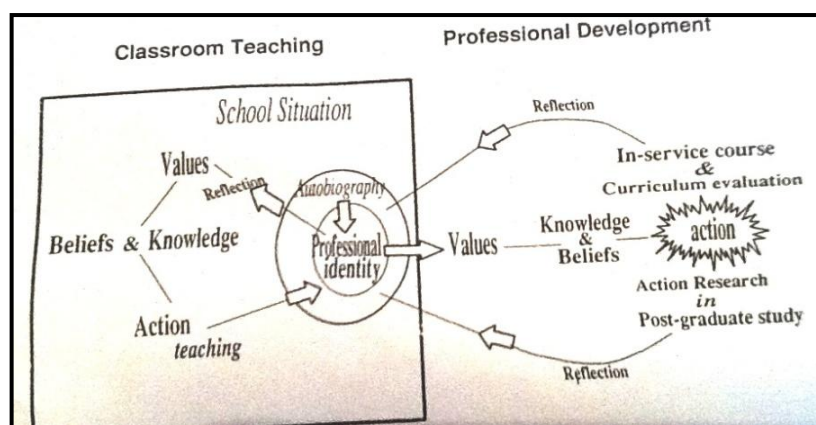
Figure 3: Solomon & Tresman's (2006, p. 316) model of CPD.

Teachers' values, beliefs and knowledge are the main source for their classroom practice and the basis of their professional action. Thus, through a reflection in and on action, teachers will be able to construct new beliefs, knowledge and skills to develop a creative practice with ICT in a social context, in order to prepare teachers and educate them for the new century. Furthermore, Burbank and Kauchak (2003) "argued that collaborative action research provides an alternative to the passive role imposed on teachers in traditional models of professional development" (cited in Kennedy, 2005). Bowe and Pierson (2008) suggested that, in order to positively affect teacher

action in the classroom, teachers must be convinced that these new instructional technologies (IT) will lead to increased student learning (p. 11). Haggarty and Postlethwaite (2003) found that action research was a valued model of professional development to guide and support teachers.

The different models and frameworks of the teacher's professional development and continued professional development that are relevant to my model and study can be summarised in the following table:

Table 2: Overview of the previous models of teacher change, PD and CPD.

Model	Elements of changes & categorisation	Aims of change	Context
Guskey (2002) Model of PD and teacher change	Attitude, beliefs, classroom practice, learning outcomes.	New Instructional Approach, professional autonomy	Classroom
Haggarty and Postlethwaite (2003) Collaboration AR	Practical problems.	Improving pupils' learning	School
Borko (2004) PD & teacher learning	Teacher, facilitators, context, PD programme	Professional knowledge, classroom practice, Collaborative learning.	Situative in classroom
Kennedy's (2005) framework for analysing CPD	Transmission/transitional/ transformation	Capacity for professional autonomy and transformative practice supported by professional learning	School Classroom
Lloyds & McRobbie (2005) School-based practicum model of Teacher PD	ICT as medium, teacher reflection, self-monitoring	Pedagogy, curriculum Collaborative learning.	School Classroom
Solomon & Tresman's (2006) model of CPD	Values, beliefs, knowledge, action	Professional action and identity and autonomy, action research, Reflective practice Social context, sharing practice.	Classroom

The PD and CPD models studied in Table 5 concentrated on the importance of the context where teachers can best acquire professional knowledge and

skills, as well as building reflective capacity to change their practice. The crucial question is what factors affected Kuwaiti teachers' adoption of the reflective practitioner role?

In the following section present a literature review in relation to teachers' pedagogical and technological beliefs and knowledge base, and the concept of changes related to the designing of a reflective practice-based continuing professional development model

3.3 Concepts of change in teacher beliefs, knowledge and practices

This section explores teachers' professional identity regarding their beliefs and knowledge in technological and pedagogical areas, and then discusses the concepts of change related to understanding the process of change in teachers' practice of integrating ICT.

3.3.1 Teacher's Pedagogical Belief

The term 'belief' has different meanings and definitions according to different writers. For example, Dewey (1933) defined belief as the third meaning of thought, "something beyond itself by which its value is tested; it makes an assertion about some matter of fact or some principle or law" (p. 6). However, Pajares (1992) defined belief as based on evaluation and judgment (p. 313). Abelson (1979) defined belief as "people manipulating knowledge for a particular purpose or under a necessary circumstance" (cited in Pajares, 1992: 313). However, Calderhead (1996) explained that beliefs refer to "suppositions, commitments, and ideologies," and knowledge refers to "factual propositions and understandings" (p. 715, cited in Ertmer, 2005,p. 28).

Pajares (1992) described beliefs as a "messy construct" (p. 307) and supported Nespor (1987), Griffin and Ohlsson (2001) and Kagan (1992) in saying that "beliefs are far more influential than knowledge in determining how individuals organise and define tasks and problems, which makes them a stronger predictor" (cited in Ertmer, 2005, p. 28). Loveless (2003) pointed out that teachers' perceptions or beliefs concerning ICT are not influenced by the official documents and guidelines, but they can be affected by teachers' experience with ICT for personal purposes within a professional context, such as school work (p. 315).

According to Pajares (1992), it is difficult to investigate teachers' beliefs because "as a global construct, belief does not lend itself easily to empirical investigation" (p. 208). In order to understand the process of changes in teachers' pedagogic practice during the implementation of the RP-BCPD model, it is important to take into account the beliefs and desires of Kuwaiti teachers over time (Shavelson et al., 2003; Bruner, 1990). Pajares (1992) supported other scholars, such as Bandura (1986), Nisbett and Ross (1980) and Rokeach (1968) concerning the assumption that "beliefs are the best indicators of the decisions individuals make throughout their lives" (p. 307). Drawing on Kagan (1990) and Pajares (1992), teachers' belief systems are a problematic field for research for four specific reasons: 1) teachers' beliefs cannot be accessed directly (Pajares, 1992); 2) teachers' beliefs are usually held unconsciously (Kagan, 1990), therefore, teachers may not possess the language to verbalise their beliefs; 3) teachers can be unwilling to promote beliefs that are unpopular, and 4) beliefs seem to be highly contextualised as

they are associated with specific classrooms, events, materials and students (Kagan, 1990). Mansour (2008) discussed Pajares' (1998) view on beliefs "that belief changes are difficult and successful only when believers are aware of their beliefs and willing to change them" (p. 19-20).

Changing teachers' beliefs is a difficult process that should be taken into consideration by researchers and educators, thus we need to understand what motivate teachers' and affect their beliefs to participate in the change process within the school and social context. Mansour (2008a) argued that it is better in teacher education programmes to move toward a "conceptual change" approach "where a teacher's experiences and beliefs are taken as the starting point for introducing new concepts or pedagogies" (p. 1629). Mansour et al (2014) argued that teachers are more concerned about improving specific skills rather than changing beliefs, "teachers as learners" rethink and review their practice, and learn from interaction to improve skills which is a reflective practice. They found that Saudi science teachers "do not believe there is need for them to change their teaching practice", rather they were "motivated to develop their pedagogical knowledge and skills to implement the changes" (p. 15). On the other hand, Haggarty et al. (2013) explained that the transition from teacher education to the teaching 'induction year' can be dramatic for new teachers, referring to it as a 'reality shock' as they engage in the complex reality of the workplace (p. 937). Haggarty et al. (2013) conducted a study to examine the development in the thinking and practice of new teachers and the influence of mentors within the school context. They argued that teachers' thinking were restricted by mentors who

believe that new teachers should develop behaviour management before pedagogical thinking. Additionally, they indicated that the beliefs and practice of the mentors themselves need to be changed and that they need to develop skills of discussing pedagogical thinking with new teachers. Hence, Kagan (1992) pointed out that a successful teachers' professional development programme has to promote belief change:

> "It must require them to make their pre-existing personal beliefs explicit; it must challenge the adequacy of those beliefs; and it must give novices extended opportunities to examine, elaborate, and integrate new information into their existing belief system" (p. 77).

Research into teachers' pedagogical beliefs and thinking show the use of specific ICT tools was affected by teachers' beliefs and thinking (Beauchamp, 2011; Webb & Cox, 2004). The focus must be on the teachers' knowledge, perceptions, confidence to perform, teaching and learning, pedagogical and technological beliefs which enable them to translate those beliefs to classroom practice (Ertmer, 2005). Similarly, Pajares (1992) noticed that "Few would argue that the beliefs teachers hold influence their perceptions and judgements, which in turn, affect their behaviour in the classroom" (p. 307). However, other researchers found a kind of conflict between what teachers believe and their ability to apply their beliefs which might be related to the contextual factors (Ertmer, 2005). Ertmer (2005) explained that some teachers think about the use of technology the same way they think about other methods, tools or reform initiatives, based on how they classify technology into one of these categories. However, while some teachers might think of technology as a tool to facilitate pupils' learning, others may think of it as one more things to do. He agreed with Windschitl (2002) that no vision of

using technology exists separately from beliefs about learners, meaningful learning and the role of the teacher within that vision (Ertmer, 2005,p. 32).

Ertmer (2005) pointed out that educators should address teacher pedagogical beliefs in order to increase teachers' technology skills and uses. Hence, Nespor (1987) supported the idea of gradually replacing existing beliefs with more relevant beliefs. Hammond (2011) pointed out that there was confusion about social constructivism as an instructional strategy which is a belief about learning and constructing meaning, reflective practice, commitment and the willingness to hold pedagogical principles to critically interact with pupils as learners (pp. 208-209). There is a kind of relationship between pedagogical beliefs and the social-constructivist approach to changing the way teachers teach with ICT (Ertmer, 2005; Hammond, 2011). The involvement of teachers' learning communities might affect how teachers form of their beliefs "to communicate 'desirable practices'" (Hammond, 2011, p. 297). Recent studies on teachers' beliefs have indicated that there are great connections between teachers' beliefs and training sessions which result in great learning and knowledge acquisition (Ertmer, 2010; Loveless, 2003; Tillema, 1995). Pajares (1992) suggested that there is "a strong relationship between teachers' educational beliefs and their planning, instructional decisions, and classroom practices" (p. 326). Therefore, it is not easy to understand which teaching practice is influenced by personal beliefs, how the RP-BCPD programme might promote critical thinking and inquiry skills that might affect teachers' beliefs about their practice using ICT, or even using the ICT to promote 21st century methods in their pupils' learning progress. How might teachers value

the change, agreeing to adopt and change their practice, and how they view themselves during the change process?

3.3.2 Teacher's Knowledge

Loveless (2002) pointed out that knowledge and understanding are important as they provide new opportunities in a changing field (p. 12). Hence, Pajares (1992) defined knowledge as being "based on objective fact" (p. 313). On the other hand, Keys (2006) suggested that the leaders needs to have an understanding of the process of change within the classroom, which requires the understanding of teachers' knowledge to support the reform in education (p. 41). Anderson (1983, 1985) has categorised knowledge as "a declarative or procedural, knowledge *what* and knowledge *how*" (Pajares, 1992; Greeno, 1987). Calderhead (1987) identified the 'knowledge base' as a term that is usually associated with the cognitive science (p. 105). Understanding the subject matter is not sufficient for teaching; teachers must be able to find methods of communicating their knowledge to others and helping their students understand the subject matter (Cadlerhead, 1987). Shavelson and Stern (1981) noted that:

> "Very little attention has been paid to how knowledge of a subject-matter is integrated into teachers' instruction planning and conduct of teaching. Nevertheless, the structure of the subject matter and the manner in which it is taught is extremely important to what students learn and their attitudes toward learning and the subject matter" (p. 491).

Shulman (1987) pointed out that the seven categories for a teacher's professional knowledge base were: content knowledge, general pedagogical knowledge, curriculum knowledge, pedagogical content knowledge PCK, knowledge of the learners and their characteristics, knowledge of the

educational context, and knowledge of educational aims (p. 8). Shulman (1987) suggested four major sources for the teaching knowledge base: scholarship in content disciplines, educational material and structure, formal educational scholarship and wisdom of practice. Shulman stressed that teaching is a learned profession as comprehension, reasoning, transforming and reflection, and emphasised the complexities of the pedagogical process, that the knowledge base has to deal with the purposes of education as well as methods and strategies of education (p. 13).

According to Loveless (2002) "ICT capability is therefore related to a much deeper understanding of information and knowledge, and is not just facility with a range of techniques and skills with particular technologies and software applications" (p. 10). Mishra and Koehler (2006) believe that Shulman did not discuss the relationship between technologies, pedagogy and content, because the issues that surround the technologies were not the same as it happening in the present time and the time that Shulman made his argument (p. 1023). However, Fisher et al. (2012) pointed out that tacit knowledge is a more "important guide to further action" (p. 309), if teachers make their tacit knowledge about ICT more explicit for purposeful use in creating ICT-activities for teaching and learning that promote more critical thinking and interaction.

Mishra and Koehler (2006) developed a model in which they pointed out that the pedagogy, content and technology are central to developing good teaching, as the new approach technological pedagogical and content knowledge TPCK model emphasised the complex interplay of these three

bodies of knowledge. The argument about the technology knowledge issue was discussed by other scholars (Hughes, 2005; Keating & Evans, 2001; Lundeberg, Bergland, Klyczek & Hoffman, 2003; Margerum-Leys & Marx, 2002; Neiss, 2005; Zhao, 2003)who maintained that it could not be treated as context-free, that teachers have to know about the requirements of good teaching and understand the relationship between technology T and both pedagogy P and content C knowledge (Mishra & Koehler, 2006). Mishra and Koehler (2006) have looked at the three bodies of knowledge as pairs: PCK, TCK and TPK, then as a whole TPCK similar to Shulman's work. However, they have developed three pairs and one triad, of which one of them PCK was introduced by Shulman (1987). The three bodies of technological, pedagogical and content knowledge TPCK overlapped to lead to another four kinds of interrelated knowledge. The TPCK framework of Mishra and Koehler (2006) have seven types of knowledge; this study focuses on teachers' acquisition of the technological and pedagogical knowledge TPK type. A review study conducted by Cuban (1986, 2001) on the diffusion of technology in American schools showed that teachers' practical and tacit knowledge play a fundamental role in their decisions to adopt technology into their teaching (cited in Chen, 2010). Therefore, Kuwaiti teachers should have the opportunity to observe, reflect and adopt the best pedagogic practice from cross-cultural teachers' experiences about integrating ICT. Encouraging teachers to develop communities of learners, to communicate their practice, develop pedagogic practice knowledge and skills in using ICT to activate their pupils' learning, as well as promoting 21st century skills in pupils' learning process.

Angeli and Valanides (2008c) conducted several empirical investigations related to the educational use of computer technology. They found that the "TPCK is a body of knowledge different from its constituent components" (2008c, p. 158). Also, they have found that, after specific training for teachers with a computer, teachers with stronger pedagogical skills and better knowledge in content and learners' areas outperformed the less knowledgeable teachers. Hence, they conducting the same experiment with pre-service student teachers and got similar findings, and they conclude that educators of teachers' education must explain how specific technology can be used to transform a specific content domain to specific learners (cited in Angeli & Valanides, 2009, p. 158). Angeli and Valanides (2009) model of ICT-TPCK is conceptualised as a strand for TPCK, in which the ICT-TPCK cannot be considered as independent from teachers' beliefs and practice, its constituent knowledge base included content, pedagogical and technological which are restricted to ICT, in addition to learners' knowledge and context knowledge in which the learning is situated (p. 158). Hence, they conceptualise ICT-TPCK as "a unique body of knowledge [which] makes a teacher competent to design technology-enhanced learning" (p. 158). Pupils in whole class activities do not have the opportunity to learn how to work, learn, or think for themselves. Thus, we need to motivate teachers to learn how to use the potentials of technology or ICT's tools to make learning more understandable by pupils, more active, and more purposive. Therefore, understanding the change in teachers' building capacity and acquiring

knowledge related to ICT advantages, may help to interpret the diversity of pedagogic practice among participating teachers.

3.3.3   The Concept of Change Process

According to Huberman and Miles (1984), innovations are vehicles for a teacher's professional development and change, in which they have to go through a process of several stages to reach the later stage which is more *"masterful"* than the earlier ones, which is the accomplishment stage. Hence, teachers vary in mastering the innovation, and it can be a very long process to accomplish a little. Fullan (1991 - 2013) and Rogers (1995) are the key figures in understanding the process of change in educational reform in response to innovation. Loveless (2001, 2002 and 2003) and Somekh (1997, 2006 and 2007) are specialised in the change process related to integrating innovative ICT into primary classrooms. In this section a general overview is given on the stages and models of the change process. Then the focus will be shifted to the implementation of change related to teachers' pedagogical and technological knowledge and practice.

Fullan (2001) asserted that "[t]he pre[-]service education of teachers has not prepared them at all for the complexities of educational change" (p. 15). He emphasised that the "successful change involves learning to do and to understand something new, such as, the process of implementation is essentially a learning process" (Fullan, 1992, p. 1), which is supported by Windschilt (2002). Huberman argued that "it is with the implementation of change: we need to act in order to create the context for reflection on what our next act should be" (cited in Fullan and Hargreaves, 1992, p. 9). Fullan

(2001) explained that the "putting ideas into practice was a far more complex process than people realised" (p. 5). Teachers construct knowledge from different sources, enabling them to create innovative ideas, but it is difficult most of the time to situate these innovative ideas in the classroom, where teachers themselves constitute the large part of learning and dealing with the challenges of integrating ICT. This is consistent with Mansour et al.'s (2014) findings related to a study conducted in Saudi Arabia regarding Saudi science teachers' perspective of their CPD programme. They found that Saudi science teachers preferred the social construction of professional knowledge through collaboration with colleagues "sharing ideas and experiences with other teachers and working collaboratively as community" (ibid, p. 13). Furthermore, they found that Saudi science teachers used a variety of mechanisms as a way to share ideas and CPD experiences such as: peer-observation, peer-mentoring, study groups, peer-networking through school visits, exchanging materials and newsletters (ibid, p. 13-14).

Fullan (2001) explains that innovation in classroom practice is multidimensional, that there are three components for implementing any programme or policy: 1) the possible use of new or revised materials (curriculum or technology); 2) the possible use of new teaching approaches (strategies, activities), and 3) the possible alteration of beliefs (pedagogical assumptions or theories). The three aspects of change are necessary to represent the means of achieving educational knowledge and skills. Fullan (2001) asserted that any innovation that does not include changes in any of the three dimensions is probably not a significant change, that the real change

involves the changes in conceptions and role, which are very hard to achieve (ibid, p. 40). If leaders want changes to occur at the individual level, they should recognise that educational changes are necessary to provide supportive or stimulating conditions to foster change in practice (Fullan, 2001). The education reform in Kuwait's education system usually focuses on the curriculum change regardless of the reality of traditional Kuwaiti culture and education, where teachers are the transmitters of the curriculum content. The existing pedagogic practice of Kuwaiti teachers is tradition-oriented. In spite of the constructivist orientation of the 'future schools' environment, most of the teachers in the 'future schools' still failed to develop a constructivist-oriented view toward teaching and learning (Mansour, 2008b, p. 245). Furthermore, teachers' pedagogical and professional growth has received less attention from the educators in Kuwait. Most of the reform plans started by the Ministry of Education in Kuwait were forced to end the process before they accomplished their aims, because they did not cover all elements of the educational change. The recent educational reforms in Kuwait, started in 2010 and continued to this day, argue for teachers' and pupils' relationships to be based on constructivist orientation, creating a national curriculum with more learner-based ICT activities, as well as developing new teachers' roles as guide and facilitator of the teaching and learning process and thinking critically about their pedagogic practice. However, the Ministry does not have a CPD model that challenges teachers' thinking and motivates them to critically inquire into their practice to make changes and improve their pedagogic practice. Thus, it is necessary to understand the CPD mechanism of the

change process, and what theories and models might be appropriate and attract teachers to accept and get involved in the change.

In the following paragraphs I will discuss the change process from the point of view of Fullan, Rogers, Loveless, Somekh and others to understand the process of change that leads to effective results in improving education and ICT integration.

Fullan (2001) pointed out that the main insights for the change process that were not predictable are as follows: "changes get initiated, they proceed or not to some form of implementation and continuation, resulting in some intended [of] the factors and processes that affect implementation and continuation" (p. 70):

- The Initiation phase: is the process leading to the start of the change process and includes the decision to proceed with the implementation.

- The Implementation phase: consists of the process of putting into practice an idea, programme or set of activities and structures new to the people attempting or expecting change. Formative evaluation is applied through this stage leading of the modification of innovation and implementation planning.

- The Continuation phase: or institutionalisation of innovations based on whether or not the change gets embedded or built into the structure or part of the system.

Fullan (2001, 2008a) believed that the great effort and incentives of becoming innovative and adopting reforms were beyond many schools. They did not have the capacity related to teachers' knowledge and skills, or the school environment was not ready for change, thus they adopted the surface of the innovation, but not the practice of teaching. This is consistent with the nature of the Kuwaiti 'future schools' context. The committee adopted the idea of 'Smart' or 'Future' schools from cross-cultural experiments with educational reform such as: Singapore, the UK, the USA and Malaysia about the interactive learning environment and learner-centred classrooms. However, the idea was not transformed properly to fit the Kuwait context, which affected the implementation process. Despite the fact that the 'future schools' were designed to accommodate 15 pupils in each classroom with an interactive learning environment, ICT devices and tools were not part of the lesson plan, and too little attention was paid to teachers' real needs. The focus was on preparing teachers to be a classroom teacher and teach all the subjects, even if they were not qualified for this, instead of developing their pedagogical and technological skills. A number of factors affected the continuation phase of the implementation of 'future schools' in the Kuwait context. The committee's aims were to make a learner-centred classroom regardless of the fact that all teachers observed a tradition-oriented pedagogical practice. Teachers were not familiar with the concept of learner or student-centred classrooms, or with the teacher as guiding and activating students' learning which would lead to constructivist pedagogy. Teachers and pupils were used to the traditional learning classrooms and studying for exams. They could not change

suddenly, without any training and orientation, and create constructivist classrooms.

In 2008, Michael Fullan provided six secrets of change: 1) love your employees, 2) connect peers with purpose, 3) capacity building prevails, 4) learning is the work, 5) transparency rules, and 6) systems learn. Fullan (2008a) pointed out that change meant three things: new materials, new behaviours and practice, new beliefs and understanding. In an interview with Michael Fullan regarding the six secrets he stated that he wanted the six secrets to "provide insights that promote understanding, and make the secrets actionable and communicable" (In Conversation, 2008, p. 2). These six steps could be applied in the Kuwait context in order to improve the educational reforms, because current policy is oriented towards the development of Kuwait's economy and educational quality. Thus, it is necessary for teacher-educators to be aware of the change steps and process, and what these mean with regard to teachers' knowledge and skills. In order to encourage teachers to adopt change and develop their pupils' learning style, teacher-educators need to research teachers' capacity for accepting and getting involved in the change process before implementing it.

Hence, Fullan (2008) asserted about the need to understand the six secrets in practice rather than talking and taking surface actions, to get at the deeper meaning by developing individuals. For example, teachers participating in this study usually resisted change because of the overloaded curriculum; they claimed that the 'future school' project had failed to achieve its aims. Fullan

explained that he viewed the six secrets in terms of people, knowledge and skills, and systems as they interact and impact on each other (In Conversation, 2008, p. 4). Thus, the 'future schools' committee needs to be aware of the priorities of the project, what comes first, teachers or pupils or the curriculum or the school's environment, as each of them influences one another to achieve the aims. Fullan (2008) points out "The route to improvement lies in building the capacity of teachers, their knowledge and skills" (In Conversation, p. 5). Authors, such as Fullan and Hargreaves (1992), agree about the reality of teachers' knowledge, skills and attitude towards change as the main elements of any educational reform. Fullan supported Richard Elmore (2004) over the deep connection between learning and context and continuous improvement that there cannot be substantial change without placing learning in the setting where teachers work and collaborate in a reflective method (In Conversation, 2008, pp. 3, 6). This is consistent with Guskey (2002), Haggarty and Postlethwaite (2003), Borko (2004), Kennedy (2005), Lloyds and McRobbie (2005) and Solomon and Tresman's (2006) studies discussed above; teachers' learning, training and professional development programmes should be situated within the school's borders inside the classrooms to get effective results. This is consistent with the result of a study made by Valcke et al. (2007) regarding teacher ICT-training in Flanders. The participants responded that "ICT teacher training should be organised during school hours" (p.805).This approach would be appropriate for Kuwaiti teachers because they can learn most with colleagues in a collaborative and reflective learning environment if they are given the opportunities and right conditions to achieve the change aims.

Fullan urges us to ask, "Under what circumstance will instruction be improved?" Along with the environmental changes and new technologies we need to provide teachers with transparency about teaching practice and results, an empathetic non-judgemental environment for practice, and offer good help. It would help to motivate Kuwaiti teachers if they were empowered with trust and freedom to improve their practice, offering them the opportunity to inquire into their own practice and reflect on their own experience using ICT to promote 21st century skills and knowledge (In Conversation, 2008, p. 6). Fullan (2012) raises the attention of the leaders in educational technology about the relationship between education and technology, which might move education to a new paradigm. He tries to make us focus on what the technological tool can do, rather than on the tool itself, how we can use it and appropriate it for our needs rather than the other way around, which is also supported by Angeli and Valanides' (2009) ICT-TPCK approach. In the Kuwait 'future school' context, the ICT tools such as IWB, which is the only tool used in one of the six 'future schools' are being used like the normal white board, to demonstrate the lesson and for whole class activities. Therefore, the teacher-educators need to be aware of the relationship between pedagogic practice and ICT integration when planning for involving teachers in the change process. In order to enable teachers to take responsibility for their own learning, developing the capacity of 'learning to learn' which is the main feature of lifelong learning, and adopting appropriate pedagogic practice to address globalisation and technological change are equally necessary (Voogt, 2010).

Fullan (2012) pointed out that:

> "As long as digital immersion and schooling function in isolation, and are not steeped in real-life problem solving, we will not see any progress. Sophisticated goals require sophisticated technology" (p. 40).

Fullan (2012) focused on managing the change, aiming to make it easier, and he noticed that technology is not being used effectively in educational reform, that the lack in using technology might cause the higher order thinking skills to remain stagnant. Thus, Fullan (2012) suggests that the pedagogy, change management and technology complete one another and are great benefits for educational change and calls this the 'stratosphere', as technology can be an accelerant on a large scale with minimal costs after initial investments. Fullan (2012) explains "the potential integration of technology, pedagogy and change knowledge can be designed to create experiences that produce high natural yields what is learned" (p. 17). Fullan's (2012) stratosphere idea is very appropriate for the present study's approach to the utilising of ICT by Kuwaiti 'future schools' teachers. The 'future schools' teachers could use the technological tools to learn from cross-cultural teachers' classroom experiences of utilising ICT, constructing knowledge to manage classroom activities and pupils' learning process to achieve the change goals. Teachers can learn from others' experience how to change their pedagogic practice, and the benefits of using ICT to change and develop constructivist-orientation.

The re-thinking of improving teachers' practice can be done with different methods. ICT has effectively influenced the teaching and learning inside the classroom. Loveless (2002) pointed out that the "different models of access of ICT resources lead to different teaching strategies and clarity in planning for

learning experiments" (p. 16). Loveless (2002) identified five features of ICT that can help in the analysis of how it might make a contribution to the teaching and learning process and make it more authentic when engaged in activities, which are: interactivity, provisionality, capacity, range and speed, as explained below:

- "Interactivity can engage users at a number of levels, from the playing of an adventure game on a games console to monitoring of space probes in international space programmes,

- Provisionality of ICT enables users to make changes, try out alternatives and keep a 'trace' of the development of ideas,

- Capacity and range, access to a vast amount of information and the teacher's role in supporting and guiding children searching for and evaluating information, and to understand how to exploit the capacity and range of the technologies, and

- Speed, storing, changing and displaying information to be carried out by technology, enabling readers to read, observe, interrogate, interpret, analyse and synthesise information at higher levels" (p. 11).

Fisher et al. (2012) pointed out the importance of considering the use of digital technologies and ICT in the classroom context in order to understand how it will support the purposeful learning activities, and of course being qualified and developing the ability to make changes in their pedagogical practice. The ICT capability helps teachers to understand how to deal with information and different learning situations inside the classroom (Fisher et al., 2012; Loveless, 2003). Kuwaiti primary teachers need to explore alternative

teaching methods and skills with ICT, and build up their capacity for using technology and ICT tools in order to change their practice and role to be more effective, interactive and attractive to pupils' learning. The teachers participating in the present study were encouraged to use or adopt ideas from Loveless (2002), ICT models about empowering their practice and adopting alternative methods using ICT.

Likewise, Somekh (2007) suggested a six-stage model for ICT innovation drawing upon various theorists (Somekh et al., 1996). The six-stages help to understand the process of change in 'future schools' teachers' pedagogic practice as the result of teachers' participation in the RP-BCPD model. It helps to understand how teachers move through stages toward the development of technological and pedagogical knowledge and skills, and creative integration of ICT to promote 21st century skills in pupils' learning:

1) The orientation stage is when participants seek out information about the innovation;

2) Preparation comes next when participants are getting ready to begin;

3) Routine is the first stage of implementation when participants establish low-level, routine use,

4) The refinement stage is when participants seek to refine and improve their use of the innovation,

5) The integration stage is when participants take step to integrate their use of the innovation fully into their practice, and

6) The creative integration stage is when participants seek more effective ways of using the innovation, going beyond what has been achieved by others. (p. 79)

Somekh explains that in going beyond this stage participants have to do a lot of creative work in refining their use of ICT by thinking it through, changing it, integrating it more with what they are already doing or previously (ibid). In addition, Somekh et al. (1997) identified five key concepts in successful innovation. The fourth key concept was to make teachers' professional development central to the process of planning and implementing change (cited in Somekh, 2007, p. 80). Somekh's (2007) model for ICT innovation was used in this study to encourage teachers to be flexible and think critically about their practice, and to adopt the reflective practitioner role towards the improvement of their pedagogy using the alternative practice with ICT. This encourages Kuwaiti teachers to develop a critical scientific view towards their classroom practice, to impose a hypothesis and search for the best solutions to prove it. They should adopt the habit of observing their own and others' practice and outcomes, understanding the reasons for effective practice and activities. Then we need to understand what inhibits Kuwaiti teachers from accepting change, or what makes them take a long time to get involved in the change process, and whether this would improve if they were offered the right conditions and the freedom to experience the change.

Somekh's (2007) six stage model of innovation was adapted to my study as it agreed with other scholars' research about the innovation stages, such as

Fullan and Schön, and links different mechanisms together that make the innovation take place. These mechanisms can be seen through the six stages as teachers start to seek innovative information to create, participate, implement and reflect, to refine and to improve the innovative practice using ICT, when it is appropriate, and then achieve the full integration of the innovation into their practice. Finally, when the participants seek other innovative ways to adapt to their own practice, this could be elaborated into learning from communities or cross-cultural teachers' innovative practice and experience. Put simply, the six stages focus on the teacher as the main element of the change process using reflective practitioner skills and knowledge. This is consistent with the present study's aim of creating a CPD model to stimulate teachers into changing their existing tradition-oriented pedagogic practice and developing a constructivist-orientation.

Similarly, Lewin et al. (2008) identified a three stage model of pedagogical change with the interactive whiteboard (IWB):

1) Teachers fitting new technologies into established pedagogies,

2) Teachers engaging in collaborative exploration of the new opportunities offered by these technologies, and

3) Teachers using the IWB skilfully and intuitively in ways that extended or transformed their established pedagogic practices (p. 301).

The three models focused on teachers as the ones who, when they are teaching, mediate all the types of interactivity that an ICT tool such as (IWB) can facilitate to stimulate and support pupils' learning. Therefore, when

"teachers can operate at this level, then they inevitably change their pedagogic practices" (p. 301). This could fit with this study, encouraging Kuwaiti teachers to change their pedagogic practice integrating ICT to transform the content into powerful representations (Angeli & Valanides, 2009). The social-constructivist approach was used as a vehicle for teachers to interact in the learning community, which is a way to empower teachers to take responsibility toward improving their pedagogic practice using ICT tools.

The desire that all 'future schools' teachers develop flexible personalities through reflective practice, being adaptable to change and adopting the models of change presented in this study, is the motivation of this study. However, it is difficult to assume that all teachers will feel confident and competent to teach with ICT, or have a good understanding of ICT, even if they are offered access to ICT tools and the Internet (Selwyn, 2008). Changing education in the Kuwaiti context to fit with the demands of the 21st century means we need to understand teachers' needs and how to fulfil them. What are the difficulties and factors that make teachers avoid adopting cross-cultural models of ICT integration?

The nature of Kuwait's culture in relation to involving teachers and pupils in activities using internet access and communication tools, such as video conferencing, might cause problems with parents. But Kuwaiti society has to be prepared for this century's demands and be adaptable to change and develop competitiveness in a globalising economy by creating a lifelong learning system (Selwyn, 2008). The next section will focus on the factors that

affect the change process at the teachers' level within the school context as teachers are the 'key to change' (Fullan & Hargreaves, 1992).

3.3.4 Factors affecting the change process

Fullan (1993, 2012) argued that teachers must become change agents. He defined 'change agentry' as teachers being self-conscious about the nature of change and the change process. It helps teachers to develop better strategies for accomplishing goals (1993, p. 12). Fullan (1993) emphasised that teachers should become activators rather than facilitators, which was supported by Hattie (2012) who emphasised the idea of making teaching and learning visible by making teachers evaluators and activators. Teachers have to know a range of learning strategies to build pupils' knowledge and understanding. The teacher as activator helps to provide feedback for students, help them access their own thinking, and create challenging goals. The teacher as facilitator is focused on problem-based learning, simulations and gaming, and individualised instruction (Fullan, 2012). Fullan (1993) believed there were four core capacities for building greater change capacity: a) personal vision-building, b) inquiry, c) mastery, and d) collaboration making effective change agency (p. 12). Rogers (1995) identified four factors for effective change agents: a) effort, b) client orientation, c) compatibility with clients' needs, and d) empathy. This teacher's role and skills are appropriate to the Kuwaiti context for teachers' pedagogic practice, to understand the meaning of building capacity for a change in education in the digital era. The teacher education programme and the in-service professional development courses in Kuwait failed to fulfil teachers' needs in these areas, to make teachers skilful

and knowledgeable about learning strategies to become more activators and evaluators of the teaching and learning process.

Pelgrum (2001) conducted an international survey and gathered results from 26 countries around the world regarding the obstacles to integrating ICT into primary and early secondary schools. The study revealed that the most frequent problems were the "insufficient number of computers" and "teachers did not have sufficient knowledge and skills regarding ICT" (ibid, p. 173). Pelgrum (2001) pointed out that these countries did not care about keeping teachers up-to-date regarding the new technologies. On the other hand, Drent and Meelissen (2008) conducted a large-scale national study in the Netherlands on the implementation of ICT in primary and secondary education. The study revealed that three factors influence and support teachers' integration of ICT: developing cooperative communities between teachers, stimulating reflective behaviour regarding their own activities, and freeing-up of time and the creation of facilities to experiment with innovation (pp. 197-198). Fullan (1993 and 2012) pointed out key areas of change in pedagogy, technology and knowledge, as shown in Table 3 below:

Table 3: Fullan (1993 and 2012): the process of change.

Change process	Pedagogical change	Technological change	Knowledge change
- Initiating stage. - Implementation of change stage. - Continuations or institutionalisation of innovations stage.	Teacher role as critical change agent: - Knowledge and skills - Plan of action. - Strategies to overcome setbacks. - High sense of confidence. - Monitoring progress. - Commitment to achieve. - Social and environmental support. - Freedom. - Control and choice.	- Ease of use. - Powerful. - Ubiquitous.	- Implementation. - Focus. - Innovation. - Empathy. - Capacity building. - Contagion. - Transparency. - Elimination of the non-essential and leadership.

Fullan (1993 and 2001) provided 12 factors affecting the stages of the process of change organised into three categories consisting of nine critical factors (see Table 4). He explained that the innovations got initiated from different sources and for different reasons; however, the start of the initiated innovation is influenced by eight factors that affect the stating of the change programme. Fullan (1993 and 2013) asserted that it was all about

implementation: the success of the process of change relies on the factors that affect the implementation stage when it comes to integrating technology and pedagogy. He explained that the "[c]hange knowledge is about implementation, which is putting something new into practice" (2013, p. 65). Fullan (2001) stated that the reasons for the lack of continuation were from the same factors influencing the implementation, except that they become more sharply defined (p. 88). The knowledge of Kuwaiti primary teachers about technology and pedagogy is the main concern of the present study, to change teachers' pedagogy and encourage them to integrate technology (ICT). The study is questioning the possibilities of change, and understanding the process of change in teachers' knowledge and skills regarding ICT pedagogy. What affects Kuwaiti teachers' acceptance or avoidance of engaging in change knowledge in order to adopt the alternative pedagogic practice? What could motivate them to get involved, to learn from their own and others' experiences?

Table 4: Factors affecting teachers' process of change, adopted from Fullan (1993-2001).

Initiating stage	Implementation stage	Continuations stage
1. Existence and quality of innovations. 2. Access to innovation. 3. Advocacy from Central Administration. 4. Teacher advocacy. 5. External change agents. 6. Community pressure/ support /apathy. 7. New policy-funds (government-local). 8. Problem-solving and bureaucratic orientations.	1- Characteristics of change: - Need. - Clarity. - Complexity. - Quality/practicality. 2- Advantages (local characteristics): - Beliefs, values. - Knowledge. - Pedagogical approach - Teachers' practice. 3- External factors: - Government and other agencies.	1. Embedded and built into the structure. 2. Generating a critical skill and commitment. 3. Establishing procedures of continuing assistance.

In the present study, I have replaced the second category of Fullan's (1993, 2001) implementation stages, the "local characteristics", with the 'Advantage' (see Table 4, No. 2) in relation to the effectiveness of the RP-BCPD model for Kuwaiti primary teachers' beliefs, knowledge, pedagogical approach and practice.

Similarly, Ely (1990 and 1999) provided eight conditions for the environment to facilitate the adoption of the innovation and implementation as follows: 1) dissatisfaction with the status quo (such as existing pedagogy), 2) sufficient knowledge and skills (for successful implementation), 3) availability of resources, 4) availability of time (time for adopting innovation in a reflective

cycle), 5) reward or incentives (encouraging and motivating teachers), 6) participating (mutual engagement, ownership and community sense), 7) commitment (efforts and time), and 8) leadership (affective support), which are applied to the context of Kuwait's primary schools and teachers' needs, knowledge and skills.

Fullan (2001) explains that there are three fundamental problems with implementation of change: 1) tendency to oversimplify, 2) getting the same factors in the same place in new situations, and 3) absence of passion and commitment. Then he mentions that there are a further four problems that interact with the fundamental issues, which are: 1) active initiation and participation, 2) pressure and support, 3) changes in behaviour and beliefs, and 4) the problem of ownership, which were the main problems for Kuwaiti teachers. However, if we can tackle all these problems and try to find solutions, we still have the most important factor, which is teachers' passion and commitment to change. How can we motivate teachers to become more committed to change with the range of diversity that exists between teachers, the way they are thinking and their approaches to teaching in primary schools?

Rogers (1995) focused on the change process for an innovation in relation to individuals participating in the process. He defined 'diffusion' as the "process by which an innovation is communicated through certain channels over a period of time among the members of a social system" (p. 5). An innovation is "an idea, practice, or object that is perceived to be new by an individual or

other unit of adoption", and "Communication is a process in which participants create and share information with one another to reach a mutual understanding" (p. 11). The way the individuals (teachers) adopt the innovation and adapt it to fit into their context and variety of situations with uncertainty. Rogers (1995 and 2003) offered four main elements of the diffusion of new ideas: 1) innovation, 2) communication channels, 3) time taken for adopting, and 4) the social system. Individuals are the key factors in the communication and social system, thus the effectiveness of each of the four elements is based on the degree of diffusion, adoption and advantage as shown in Table 5:

Table 5: Rogers (1995) elements of diffusion.

Innovation	Communication channels	Time for adopting	Social system
- Relative advantage - Compatibility - Trialability - Observability - Less complexity Well be adopted more rapidly.	- Knowledge of innovation - Attitude towards innovation - Decision adopted or rejected - Implementation of new ideas - Confirmation of decision Well be passes by individuals	- Decision process - Degree of earlier in adopting new ideas - Innovation's rate of adoption.	- Innovators - Early adopters - Early majority - Later majority - Laggards (reject or try to weaken the innovation)

Rogers (2002) elaborates on the adoption of the innovation through communication channels that "[m]ost individuals evaluate an innovation, not on the basis of scientific research by experts, but through the subjective

evaluations of near-peers who have already adopted the innovation" (p. 990). Diffusion is an example of a social process such as the community of practice applied in the present study, in which the participating teachers meet, talk, and spread the innovative ideas among themselves. Some might adopt the innovations earlier than others and some will reject them. This can be related to the teachers' willingness, commitment, and capacity to accept and take advantage of engaging in the change process. Hence, the more teachers engage in communities of practice (learners) the greater the possibility that they will grow a sense of commitment to change in response to their colleagues.

Rogers' (1995) model for the diffusion of innovation is similar to Fullan's (1993) change process and Ely's conditions of the change process, which emphasise learning about the innovation through interaction within an innovative context, developing deep ownership and commitment to the innovation, and accepting the process of change through full engagement in collaborative learning. This would help teachers to "gain more understanding of the meaning of change" (Drent & Meelissen, 2008,p. 196).

Fullan and Hargreaves (1992) offered teachers twelve guidelines and asserted that they should be practised together in combination. The guidelines were: 1) locate, listen to and articulate your inner voice, 2) practise reflection in action, on action, about action, 3) develop a risk-taking mentality, 4) trust processes as well as people, 5) appreciate the total person in working with others, 6) commit to working with colleagues, 7) seek variety and avoid

balkanisation, 8) redefine your role to extend beyond the classroom, 9) balance work and life, 10) push and support heads and other administrators to develop interactive professionalism, 11) commit to continuous improvement and perpetual learning, and 12) monitor and strengthen the connection between your development and students' development. They believed that changing the context of teaching along with the teachers themselves by practising the twelve guidelines would be cumulative and contagious and would make for effective change. This is consistent with the present study aims of developing teachers' skills in a social-constructivist learning context, to improve their classroom practice and build their capacity for change through reflective practice, but we need to know the factors that affect teachers in the process of change.

Fullan (2013) asserts that the new pedagogy is flipping the roles of "students and teachers where students are knowledge workers, learning to learn and think better, and where teachers see assessment as feedback about their impact and engage in dialogue with students about their aspiration and progress" (pp. 67-68). The new pedagogy that Fullan (2013) is calling for is relevant to what the present study is aiming to apply to the Kuwaiti context through an innovative pedagogic approach using ICT. In the next section I will review the literature in relation to the teachers' pedagogical practice and skills in integrating ICT.

3.5 Pedagogical practice

Pedagogical practice deals with teachers' professional action, growth and development in the process of qualifying teachers for teaching. This section

will review the literature on the relevant issues that affect teachers' practice, and how to empower them through a social-constructivist approach to integrate ICT in classroom pedagogic practice.

Selwyn (2012) points out that the potential improvement of education through technology presented by other commentators around the world is an argument about the fact that digital technologies improve young people's learning practice. It cannot be ignored that the educational system is facing a challenge in finding the best way to integrate technology into teaching and learning. Selwyn and Facer (2007) perceived the use of ICT as an important element in effectively participating in the 21st century, by creating opportunities for individual teachers to be technologically empowered and to increase social inclusion. Teachers' must be empowered to exercise the development of using ICT, to develop the ability to promote 21st century skills into their pupils' learning, and the ability of both teachers and pupils to put these skills into daily life (Selwyn & Facer, 2007).

Furthermore, to prepare young people for a future of lifelong learning, building their capacity to participate in a meaningful process of socio-technical change, and using digital tools for learning and experiences in communities outside school (Facer, 2012). Volman (2005) explained that the idea of ICT contributing to more constructivist learning and an increase in activities and pupils' responsibility for learning, means that teachers are expected to abandon the transmission of knowledge and to adopt the role of coaching pupils' learning. Teachers have the ability to transform their classroom

practice into a more learner-centred environment using ICT. Teachers cannot teach pupils everything, but they can let them construct their own knowledge and learn how to learn using ICT inside the classroom, collaboratively learning as a member in a community of learners. The use of ICT can be positive when it is appropriate, thus Kuwaiti teachers should learn how well ICT-based activity 'fits' into the context in which they are operating (Selwyn & Facer, 2007).

Voogt (2010) conducted a study about pedagogical orientation and the extensive and non-extensive use of ICT among science teachers. The pedagogical orientation was "conceptualised as a combination of curriculum goals (beliefs) and pedagogical practice" (Voogt, 2010, p. 461). The study revealed a positive relationship between the frequency of ICT use and the pedagogical orientation which reflected the goals of lifelong learning and practice, and furthermore between ICT competence and the professional engagement of science teachers in professional development activities (ibid,). Teachers are expected as individuals to inquire different skills and knowledge depending on different situations, to cast themselves as lifelong learners and engage in the learning process whenever necessary through formal or informal settings (Selwyn & Facer, 2007). In order for teachers to improve their pedagogical action, they need to develop reflective skills, building a capacity for self-evaluation and self-awareness, learning from and reflecting on their own and others' experience to improve future practice using ICT and the constructivist approach. However, more attention is needed to understand

the factors that inhibit teachers from using ICT if they are offered digital devices and access to the internet (Selwyn, 2006).

Loveless and Williamson (2013) argued that for a teacher to become a member of the learning community required "conceptual depth, contextual scope and pedagogic reach" (p. 139), and that to be ready and willing to teach in this century is about connecting the puzzle's elements and dimensions, as teachers' actions made of their relationships with other in social context, the depth of knowledge, critically inquiring into pedagogy, using digital tools creatively and context; therefore, teaching is about ways of knowing how to teach (ibid). Hence, teaching requires teachers to be imaginative with values, purposes and knowledgeable with abilities to become reflective practitioners (ibid) who develop a sense of commitment and judgment with their learners (ibid). They explained that engaging with communities to construct knowledge and understand how technology becomes part of the subject takes time; however, if we engage with the subject's imagination, we can recognise the affordances of the technological representing and extending concepts (ibid). Loveless and Williamson (2013) pointed out that teachers' engagement in the communities of learners provides a dynamic social and cultural context which affects teachers' values and beliefs when making pedagogical decisions about using digital ICT tools (ibid). However, motivation influences teachers' decisions about accepting and engaging in change. When teachers believe in learning as acquiring new knowledge and understanding new information and concepts, then motivation will be teachers' intrinsic interests to get involved, and the possibilities of potential creativity in teachers' practice. Unlike extrinsic

motivation, the changes occur mainly as a result of anticipated rewards or avoiding punishment (for example, teachers' annual assessments), then the motivation is derived from outside teachers, but it depends on teachers' internal goals and the need to get a reward (Greeno et al., 1996). This study is designed to inspire teachers' intrinsic interest in getting involved, to make teachers want to get engaged to develop their own knowledge and skills to cope with the 21st century skills for primary education.

Nespor (1987) argued that in spite of arguments that people's "beliefs" are an important influence on the ways they conceptualise tasks and learn from experience "little attention has been accorded to the structure and functions of teachers' beliefs about their roles, their students, the subject matter areas they teach, and the schools they work in" (ibid, p. 317). The emphasis is on teachers' practice and roles, and further on their beliefs about the subject matter they teach (Pajares, 1992; Clark & Peterson, 1986; Nespor, 1987). Pajares (1992) agreed with Nespor (1987) that belief has stronger affective and evaluative components than knowledge and that the affect operates independently of the cognition associated with knowledge (p. 309). However, cognitive psychology focuses on studying how people think, understand and know, and on purposeful rather than elicited behaviour related to social cognitive and social constructivist theories. Cognitive studies emphasise ways of learning, how people comprehend and represent the outside world within themselves, and how our ways of thinking about the world influence our behaviour, self-efficacy and social influences (Pintrich & Schunk, 1996; Williams, 1997). Nespor (1987) pointed out that beliefs, unlike knowledge, do

not require group consensus and might be quite idiosyncratic. Furthermore, Ertmer (2005) thinks that it explains why two teachers who have the same technological knowledge might have different beliefs about its use (p.30). For example, two teachers might have the same knowledge of the same discipline but they might teach or present it in different ways and with different methods (Ernest, 1989), which might lead to irrelevant knowledge being learned and not used by some teachers. This could also make beliefs more inflexible and less dynamic than knowledge (Pajare, 1992).

Scholars like Lewis (1990), Pajares (1992) and Pintrich (1990) have argued about the nature of belief and knowledge and which influences which. Knowledge might originally be rooted in belief and ways of choosing values. According to Lewis' argument, Pintrich (1990) asserted that knowledge and beliefs influence a wide variety of cognitive processes (cited in Pajares, 1992). Rokeach (1968) argued that "beliefs have a behavioural component activated when action is required", further he subsumed knowledge as a component of beliefs (cited in Pajares, 1992, p. 314). Clark and Peterson (1986) viewed a teacher's beliefs as a "reflective, socially defined interpretation of experience that serves as subsequent action" (p. 287). Pajares (1992) argued that beliefs are unlikely to change and be replaced unless they are challenged for the purpose of unsatisfactory, and that one cannot assimilate the beliefs into existing conceptions (p. 321). Guskey (1986) found from his work with staff development programmes that it is not possible to make changes in beliefs or attitudes, but when teachers are encouraged to use a certain procedure with their students, if it was successful and led to improvement it affected teachers'

attitudes, but if it was not successful or teachers did not implement it, it would have no effect on teachers' attitudes. Guskey came to the conclusion that changes in beliefs follow rather than precede changes in behaviour. Pajares (1992) argued that the investigation of teachers' beliefs is a necessary and valuable avenue of educational inquiry" (p. 326). He urged educators to make educational beliefs the primary focus in their teacher preparation programmes as they "play a pivotal role in teachers acquisition and interpretation of knowledge and subsequent teaching behaviour" (p. 328). The quality of pedagogic practice includes teacher competences and experiences, hence values and knowledge and other surrounding factors work as constraints and opportunities inside the classroom.

3.5.1 Pedagogy of Autonomy

Teaching is about showing something, making learning visible, the way that teachers and pupils process knowledge of the content in different ways. Knowing how to teach and learn without control of others is the focus of this section. Learning does not depend on teaching; it can be performed alone or with others in a social context, but teaching requires interaction between the teacher and the pupil in a social and communicative process. Teaching pupils of the 21st century requires different pedagogic practice that focuses on the classroom as a pupil-based learning environment. Fullan (2013) argues that 21st century skills are "too vague to be of any use and they almost always leave out pedagogy" (p. 35). He calls for a new pedagogy for the 21st century, which pays close attention to the importance of pedagogical knowledge and skills when utilising technology (ICT). He points out four criteria for the integration of technology and pedagogy: irresistibly engaging, elegantly

efficient, technologically ubiquitous and steeped in real-life problem solving (2013, p. 33). Fullan (2013) asserted that teachers are more important than pupils, as they affect pupils' learning process. Thus, teachers need to be empowered with ICT and constructivist skills to develop their own technological and pedagogical approach to teaching and learning (Ganze, 2008, p. 74). ICT and a social-constructivist approach might motivate teachers to develop critical thinking toward improving their pedagogic practice if they were offered the freedom to investigate and improve their knowledge and skills. This study emphasises the importance of improving Kuwaiti primary teachers' knowledge and skills to cope with the 21st century skills for education using ICT, hence we need to understand how ICT and social-constructivist approach would lead teachers to change and replace the traditional didactic teaching approach to adopt coaching and a guiding role. In order to enable teachers to become free in organising their teaching and learning process, we need to empower teachers with more responsibilities for developing their own quality in pedagogic practice.

Pupils are not typically encouraged to think about what they are learning in the classroom, or to doubt the ways of learning. Teachers talk and pupils listen; teachers ask questions and pupils recall without thought. The pupils' point of view is considered as irrelevant by teachers; teachers often engage pupils in the learning process, because teachers are being controlled by inspectors to follow specific methods and complete the curriculum. Smith (2003) discussed the term 'teacher autonomy' from the perspective of various early writers who focused on different dimensions of autonomy, such as

"capacity for self-directed professional action" (Little, 1995), "Capacity for self-directed professional development" (Tort-Moloney, 1997), and "Freedom from control by others over professional action or development" (Anderson, 1987). Smith (2003) adopted McGrath's (2000) meaning of 'teacher autonomy' which is: "self-directed action or development, and freedom from control by others" (cited in Smith, 2003, p. 3). Smith (2003) explained that professional development is a kind of professional action as action and development are not the same thing. Also, that there must be a distinction between capacity for and/or willingness to engage in self-direction and actual self-directed behaviour (p. 4). He links the pedagogy of autonomy to a teacher's research through an effective network of support, and the reflection on practice (pedagogy) offers a teacher the freedom of learning, which acts as a powerful means to develop a teacher's autonomy (ibid). This study focuses on stimulating teachers to develop the reflective skill toward their practice by empowering them with a sense of freedom and self-directed learning and decision-making regarding their pedagogic skills.

The teacher's role in the constructivist ICT-based classroom is different from that of the teacher with traditional didactic beliefs and in a transmission-based classroom (Cossentino, 2004; Cohen et al., 1993; Gardner, 1991). According to Duffy and Jonassen (1992), instruction "should not focus on transmitting plans to the learner but rather on developing the skills of the learner to construct (and reconstruct) plans in response to situational demands and opportunities" (p. 4). Stimulating teachers to work autonomously requires encouraging them to adopt the constructivist view regarding their instructional

plan. According to Seemts (2005), teachers with constructivist views of teaching are likely to shift their classrooms towards a pupil-centred learning environment, which requires creating "an intellectual environment in which knowledge is acquired" (p. 345). Furthermore, teachers' pedagogic perspective plays a major role in the way they view the contribution of ICT to the learning environment (Seemts, 2005). ICT can foster different learning methods, such as active learning, collaborative learning, higher-order thinking skills and problem-solving activities (Seemts, 2005). However, teachers need to learn how to learn and develop new and alternative roles, learning to be adaptable to change and adapting from observing others within the same community, or cross-culturally. If teachers are able to change their pedagogic practice by changing their own learning through a self-directed approach, then they can easily transfer the new learning methods to their pupils using ICT.

Information and communication technology ICT has the central role in the advancement of the information society and the emerging knowledge-based economy (Roberts, 2000). For two centuries, the teacher's role, practice, beliefs and knowledge were the main issues of technology research for educational development, especially in the context of the classroom. Scholars researching teachers' beliefs and knowledge study the relationship between beliefs and knowledge acquisition and how it affects a teacher's role and practice in the classroom. What should the teacher's role be in ICT-based classrooms? What practice is considered as good practice with technology? What are the methods or skills that teachers have to obtain to enable them to transfer or present knowledge for students using ICT? Watson (2001) argued

that pedagogical knowledge comes first before technology. What do teachers need to know in the 21st century, knowing that technology ICT will be the catalyst to create change? And what do teachers in Kuwaiti 'future schools' have to understand about the teacher's role in the process of learning and teaching in order to cope with the changes in education for the 21st century? (Darling-Hammond, 1997; Watson, 2001)

Fullan and Pomfret (1977) asserted that the relationships between teachers and their students must be changed, "teachers must think of students as being potentially capable of desiring, needing, and exercising more autonomy, Students must think of teachers more as guides than as directors of learning" (p. 228). This is consistent with the aims of the present study. Furthermore, the teacher-educators in Kuwait must also think of teachers as potentially able to build the capacity and desire to practice with freedom and more autonomy. According to Smith (2003), in the pedagogy of autonomy teachers need to let go, and pupils must learn to take control. Hattie (2012) suggested that the act of teaching is to ensure the process of cognitive change in pupils. Teachers should maximise the power of feedback and 'get out the way' when pupils' learning is progressing toward success criteria. Brown et al. (1989) argued that the cognitive apprenticeship approaches "embed learning in activity and making deliberate use of the social and physical context are more in line with the understanding of learning and cognition that is emerging from research" (p. 32).

Cognitive apprenticeship is a method that tries to enculturate pupils into authentic practices through activities in a social interaction context similar to craft apprenticeship (Brown et al., 1989) (see Figure 4). Brown, Collins and Duguid (1989) showed how, in terms of cognitive apprenticeship, the progress of pupils from embedded activity to general principle of the culture. The use of apprenticeship and coaching in the learning situation and scaffolding pupils learning to start the authentic activities. It moves pupils from self-confidence to more feelings of freedom in a collaborative learning as they start to engage in the culture. ICT and the constructivist approach to classroom practice can help to foster pupils' self-confident freedom of learning in an active and collaborative learning environment (Selwyn & Facer, 2007; Seemts, 2005). Rogoff (1990) offered a framework for children's cognitive development based on the work of earlier scholars such as Bruner, Cole, Leont'ev, Piaget, Trevarthen Vygotsky, Wertsch and Whiting. The general perspective of Rogoff's framework is that children's cognitive development is embedded in social relationships and socio-cultural tools where children have the opportunity to a) make use of the social guidance [teacher or adults], b) arrangements of children's activities and participation in skilled cultural activities that are not conceived as instructional, and c) cultural variation in both the goals of development and achieving a shared understanding from the guides and companions (p. 8). Rogoff (1990) developed the concept of 'guided participation' suggesting that the guidance and participation in culturally valued activities are essential to children's apprenticeship in thinking. This involves children and their teachers in a collaborative process of: "a) building bridges from children's present understanding and skills to

reach new understanding and skills, and b) arranging and structuring children's participation in activities, with dynamic shifts over development in children's responsibilities" (ibid, p. 8).

Students' Progress from Embedded Activity to Generality

WORLD/ACTIVITY → apprenticeship / coaching → collaboration / multiple practice → reflection / articulation → GENERALITY
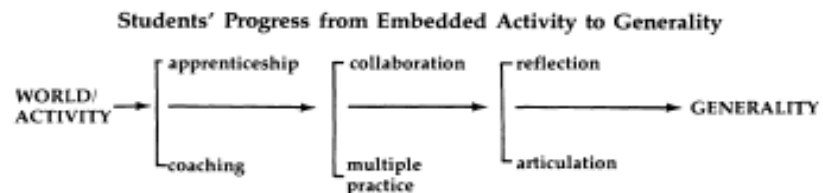
Figure 4: Apprenticeship and coaching (Brown et al., 1989: 40).

Coaching is another aspect of a teacher's pedagogical autonomy. It is a kind of shift from focusing on knowledge transmission to the facilitating of pupils' learning, which could be used in ICT-based classroom activities. It helps teachers to focus on guiding pupils' learning process, and coaching pupils to develop individual learning skills inside the classroom instead of outside (Cossentino, 2004; Ketelaar et al., 2012). Coaching can be considered as part of a constructivist teaching approach in which teachers encourage pupils to construct knowledge and skills, instead of teachers being the "all-knowing controller" (Seemts, 2005). According to Griffiths (2005), coaching is closely aligned with the constructivist approach to learning as it provides a learner-centred situation (p. 58). Hence, Tolhurst (2006) defines a coach as someone who enables learners to take responsibility for their learning and develop an awareness of their situation and increase their skills (p. 3). Similarly, Parsloe (1999) defined coaching as a "process that enables learning and development to occur and thus performance to improve" (p. 8). Beere and Broughton (2013) suggested that coaching was a non-directive continuum when the coach assumed that the learner had the answers even if he/she did not know

them yet, and the answers could be pulled out and explored (p. 15). They described the coach as the one who listens, asks questions, reflects, uses inquiry and challenges, encourages learners to take ownership and be responsible for their learning and find solutions to problems, understanding that coaching is non-judgemental or critical and tries to build relationships with the learners and to develop a sustainable improvement in classroom practice (ibid). This is consistent with the recent curriculum and educational reform in Kuwait, a competence-based curriculum designed to foster more 21st century skills for pupils' learning, preparing pupils for future life and work. Therefore, the teacher's role and pedagogic practice need to be an essential part of the change process, because teachers are the ones to make the change if they are prepared for the change. Thus, we need to understand the mechanism of training teachers to acquire ICT skills and knowledge through a social-constructivist approach in order to help foster change in Kuwait related to the teacher's role in the ICT-based classroom.

Ketelaar et al. (2012) conducted research in the Netherlands regarding the changing world and the impact of new technologies on preparing students for work and life. The main purpose of the study was to explore teachers' perceptions of the coaching role; data were collected from 109 teachers through on-line questionnaire related to the coaching role, goals, and activities. The study finding showed that teachers were promoting and supporting students' meta-cognitive skills, creating a positive learning and working atmosphere, and guiding and actively supporting students (p. 295). The result of the study supports the aims of this study of encouraging Kuwaiti

teachers to adopt the coaching role to foster more autonomy in the teaching and learning process inside their classroom.

Crisfield (1998) pointed out that the processing of knowledge does not lead to effective learning unless coaching skills are acquired by teachers, such as interpersonal skills, planning, problem solving and personal reflection. Hence, teachers' adoption of coaching pedagogy leads them to deploy a wide and subtle repertoire, which is associated with constructivist learning theory, but less typically are clear directives for enacting specific moves (Cossentino, 2004). Cossentino (2004) explained the meaning of enacting as the pedagogy of negation, which is what not to do in the constructivist classroom: "no telling, no phonics, no basal readers, [and] no textbooks" (Richardson, 2002, cited in Cossentino, 2004, p. 464). Cossentino (2004) argued that negation reveals a range of uncertainties involved in enacting the practice of coaching, such as: the complex and reciprocal links of identity and practice entailed in becoming a coach, and a different kind of teacher" (p. 465). Cossentino (2004) examined one US high school teacher (Camille) who attempted to become a coach by enacting the 'pedagogy of negation' to make sense of what it means to become a coach. The examined teacher (Camille) required her students to complete a portfolio to present their completed tasks during the semester. Cossentino (2004) noticed that Camille's students were working on their tasks according to a 'rubric' designed to guide their assembly of portfolios; the students were rarely engaging in curriculum. Furthermore, Cossentino noticed that coaching enabled Camille to become a reformer because of her moral commitment to having real impact on her students' identity (p. 468). She

noticed that Camille constructed a 'language of coaching' to inform her interaction with her students and her conception of herself as a teacher (2004: 465).

For Camille the coach was defined as someone who provides help and guidance for students through the use of critical thinking (ibid, p. 470). Cossentino (2004) focused on Camille's view of the pedagogy of coaching which is a "pedagogy of construction, expression, and transformation" (p. 470), in which Camille encourage her students to be 'on-task' and 'kept up' with several projects as a form of student-centred learning (constructivism approach), while she was the facilitator rather than the knowledge transmitter. Cossentino (2004) argued that being a coach offers great appeal to teachers who adopt the constructivist approach and use the transformative teaching method. However, it also reveals an array of tensions for teachers aiming to enact the constructivist and transformative pedagogies (p. 482). She characterises both the appeal and tensions as a range of uncertainties related to the context and content of the reform which are expressed in the idea of becoming a coach (ibid). This is consistent with the present study's aim of improving teachers' pedagogic practice to become more adaptable to alternative teaching methods and the fostering of an active and autonomous learning environment for their pupils. Hence, to stimulate teachers to work autonomously, to develop learning skills and build their own capacity towards the change process, we need to investigate the factors that affect Kuwaiti teachers to adopt and be adaptable to alternative roles of the teacher in the classroom. Furthermore, we need to understand how the coaching role would

change Kuwaiti teachers' practice, and how ICT tools would help teachers to maintain the coaching role.

Brown and Campione (1994) argued for a middle ground between didactic teaching that leads to passive learning and "discovery learning" (Dewey, 1897) which can be dangerous without guidance. In guided discovery, the teacher takes on the role of facilitator, guiding the learning adventures of his/her charges. This might be a difficult role as the teachers face challenges with orchestrating their intervention during pupils' learning. However, teachers can use the ICT tools to foster creativity, active learning, problem-solving, discovery learning and exploring activities within their classroom learning environment (Smeets, 2005). Constructivism is about how to learn, to think and the process of learning and thinking rather than about the amount of information that a teacher can transmit to their pupils. In the constructivist classroom the teacher does not deliver the content; it is the pupils who uncover, discover and reflect on the content through investigation, inquiring, researching and analysing, actively learning and the ability to think critically in a social context with their teachers (Dewey, 1933; Marlowe & Page, 2005). Volman (2005) points out that the use of multimedia applications can make education more 'lifelike' and exciting, as well as enabling teachers to coach pupils either in small groups or face-to-face, via e-mails or video conferencing settings (p. 21). This type of coaching was part of the present study to encourage teachers and pupils to adapt and try an alternative teaching and learning methods, which are consistent with the new reform approach. The constructivists think it is important that teachers develop the sense of creating

a pedagogical relationship that stimulates the appreciation for others (Neubert, 2003). This might help Kuwaiti teachers to gradually change or adopt coaching practice to replace didactic practice, but how change occurs and what will stimulate teachers to change their role is what this study aims to understand.

Windschitl (2002) pointed out eight outlines related to 'teachers as activators' which are: a) teachers elicit students' ideas and experiences in relation to key topics, and then fashion learning situations that help students elaborate on or restructure their current knowledge; b) students are given frequent opportunities to engage in complex, meaningful, problem-based activities; c) teachers provide students with a variety of information resources as well as the tools (technological and conceptual) necessary to mediate learning; d) teachers make their own thinking process explicit to learners and encourage students to do the same through dialogue, writing, drawing, or other representations; e) students are routinely asked to apply knowledge in diverse and authentic contexts, to explain ideas, interpret text, predict phenomena, and construct arguments based on evidence, rather than to focus exclusively on the acquisition of predetermined "right answers;" f) teachers encourage students to engage in reflective and autonomous thinking in conjunction with the conditions listed above; and then g) teachers employ a variety of assessment strategies to understand how students' ideas are evolving and to give feedback on the processes as well as the products of their thinking (p. 137). Preparing Kuwaiti primary teachers for this difficult task requires introducing them to new methods of self-management, self-experience, self-

perception and self-reflection as part of their in-service continuing professional development and must be an integral part in the teacher education.

3.5.2 Teacher in Community of Practice (Learner)

The community of practice (inquiry or learning) is a group of people who share a common objective or goal in which to advance the collective knowledge to support the growth of individual knowledge. Furthermore, they investigate and solve problems, and share the common knowledge of the community (Scardamalia & Bereiter, 1994; Bereiter & Scardamalia, 1993, Lave & Wenger, 1991). The community of practice involves groups of individuals sharing a mutual practice, beliefs and understanding (Wenger, 1998). Fullan (2001) prized the community of practice as an environment for sharing knowledge as "[t]he collaborative cultures constantly convert tacit knowledge into shared knowledge through interaction" (p. 47). The collaborative constructivist approach and community together are essential for creating and confirming meaning and achieving critical thinking and they are worth further exploration in the Kuwait context as an intervention tool for changing teachers' practice with ICT.

According to Cochran-Smith and Lytle (1999) the notion of inquiry is about problematising the roles teachers play in designing and implementing an initiative for their own learning (p. 295). Also, the idea of teachers learning collaboratively in inquiring communities and struggling to construct meaningful knowledge is regarded as the larger effort to transform and change the culture of teaching, learning and schooling (p. 278). The teachers' continuous

professional development programmes can focus on developing teachers inquiry skills through the reflective practice activities.

The essential character of the concept of community in the field of education is that the responsibility for learning through experience and practising real situations is shared among group members. The community of learners is a "group of individuals who collaboratively engage in purposeful critical discourse and reflection to construct meaning and confirm mutual understanding" (Garrison & Anderson, 2003; Garrison & Archer, 2000). The common culture of the community, in order to promote a sense of collaborative learning among its members, is having: a) members with a diversity of expertise, b) a shared goal of continually advancing collective knowledge and skills, c) learning to learn, d) mechanisms for sharing experiences and what is learned, e) negotiated meanings and practice, and f) an interdependent system of old and new members to maintain the community (Garrison & Anderson, 2003; Garrison & Archer, 2000; Scardamalia & Bereiter, 1994; Cochran-Smith & Lytle, 1999). Wenger (1998) explained that the "practice is always a social practice", it includes the tacit and explicit, what we said and what we left unsaid, and the implicit relations (p. 47). This is consistent with what Dewey believed about learning as an inherently social practice that benefits from the shared experiences among learners (1938).

Fullan (2001) cited the findings from other scholars' research on teachers' practice, such as McLaughlin and Talbert (2001) and Stigler and Hiebert

(1999). They found that teachers involved in a professional community or community of practices tend to share their instructional resources, reflections in practice, what works to support their students' and teachers' learning, and what appears to be essential in their innovative classroom practice (pp. 130-131). Senge and Schrmer (2001) explained the meaning of learning as a community of practitioners where different groups of people meet, nurture and sustain knowledge construction through interaction, researching and building a capacity to achieve practical outcomes. Wenger (1998) defined community of practice as follows:

> "Over time this collective learning results in practices that reflect both the pursuit of our enterprises and the attendant social relations. These practices are thus the property of a kind of community created over time by the sustained pursuit of a shared enterprise. It makes sense, therefore, to call these kinds of communities communities of practice" (p. 45).

Wenger (1998) described communities of practice as the emergent structures that have a life cycle that reflects the process between learning and practice, as the learning is the engine of practice and practice is the history of the learning. Furthermore, Wenger added that it is about a group of people meeting and sharing a passion for something they do and interacting regularly to learn how to make it better: "[t]hey come together, they develop, they evolve, they disperse, according to the timing, the logic, the rhythms, and the social energy of their learning" (p. 96). Lave and Wenger (1991) pointed out that communities continually replicate themselves as members move from new peripheral participants to core members through a process of enculturation, the member participating in authentic activities and creating an identity that moves the individual to become more centripetal to a community

engaging in the practices of the community (ibid). Wenger (1998) elaborated more on communities of practice that are the "prime context in which we can work out common sense through mutual engagement. Thus, the concept of practice highlights the social and negotiates the character of both the explicit and the tacit in our lives" (p. 47). He explained the relation between theory and practice as complex and interactive as one influences the other. Likewise, the community of practice is more or less reflective on its own practice (ibid). He discussed the practice as meaning, as community, as learning, as boundary, as locality, and knowing in practice. He introduced three concepts of the making meaning: negotiation of meaning, participation, and reification (ibid). Wenger (1998) argued that practice should be seen as a learning process, the source of the coherence of a community, and he offered three dimensions of the relationship between practice and community as follows: a) mutual engagement, b) a joint enterprise, and c) a shared repertoire of ways of doing things. The application of the constructed knowledge, not the retention of it, is the benchmark for evaluating the effectiveness of the community of practice (Lave & Wenger, 1991).

The members of a learning community can offer their collective knowledge to solve a problem presented by one of the members. However, it is not necessary that each member assimilate everything the community knows and does. However, each member should be able to learn and know which member of the community has the relevant expertise to help with common problems. According to Jenlink and Jenlink (2008), in the learning communities teachers engage in shared inquiry and collaboratively sharing

beliefs and values, they observe and reflect on each other's practice, methods of teaching and philosophies of education. Furthermore, teachers in these communities explore alternative methods, generating new knowledge and cultivating more democratic teaching practice (p. 312). The democracy associated with such communities involves a communicative action and the sustaining of democratic activities; democracy is shared by the committed members experiences in the learning communities (ibid, p. 313; Dewey, 1916). This is a radical transformation from the traditional view of pedagogic practice as a private issue and performance, and the expectation that teachers will collaborate in constructing knowledge and enhancing their practice with ICT.

Little (2002) examined the theory-building potential of recording the situated interaction among teachers in the professional community. The purpose of the study is to examine the opportunities and possibilities of teachers' development through these communities and learning from everyday work. The multi-level case study focused on knowledge, practice and learning among English and mathematics teachers in two high schools. Teachers were engaged in professional communities focusing on how teacher groups might collaboratively produce and support instructional improvement (ibid, p. 918). Little (2002) explained that engaging teachers in professional communities and collaborative work is an opportunity to make their work (practice) visible to others and how learning is situated in classroom. According to Lave and Wenger (1991), the "'transparency' of the socio-political organisation of practice, of its content and of the artefacts engaged in practice, is a crucial

resource" (p. 91). Little (2002) pointed out that visible practice and working collectively have the possibility of strengthening the knowledge and performances of teachers, especially the novices in the communities. Hence, Little (2002) found that tracing trajectories of development (representation of practice, orientation to practice and norms of interaction) provides a frame for analysing and describing teachers' learning resources in the professional communities of everyday collaborative work.

Similarly, Ali (2011) presented an example of an educational improvement project in Pakistan started in 1985, which is built on the idea of communities of practice (CoP) as a "novel idea that highlights the importance of informal learning and working groups in organisation" (p. 70). The project used the strategy of the formation of clusters based on the community of practice to offer teachers training and enhance their learning through participating in the clusters (ibid, p. 71). The project showed that teachers engaging and forming clusters of communities based on the pedagogical practice of their subject area, and the value of training increased (ibid, p. 81). In addition, teachers were sharing their practice and building capacities to deal with daily uncertainties, practice problems and developing innovative solutions collaboratively. Ali (2011) suggested that communities of practice should not have any formal control, as was suggested by Wenger (1998), which would run against the nature of the community of practice. The aim of the study is to examine the potential for developing a community of learners and inquirers into their practice among Kuwaiti teachers in order to explore the implications of community for the design of the CPD.

3.5.3   Teachers as Reflective Practitioners

Reflecting with others on pedagogical practice, professional action, experiences and knowledge is an essential part of the community of practice. Reflection refers to the continuing process of critical thinking and examining of current and past professional practice as a method of improving future practice and gaining knowledge (Buysse et al., 2003). Reflection urges teachers to share personal theories, ideas, and to question and seek answers beyond oneself in a collaborative and democratic construction of knowledge (Pine, 2009). It is a combination of the teacher's role and the researcher's role in order to investigate the quality of classroom practice and pupils' understanding (Fosnot, 1989). It is a shift from a culture of doing to a culture of learning and doing (York-Barr et al., 2006). The idea of knowledge generated from professional experience and observing others' experiences, learning from theory and research and informing one's own and others' practice (Buysse et al., 2003).

Buysse et al. (2003) explained that the term "reflective practice" is associated with the writings of Donald Schön (1987), who is influenced by Dewey's (1933) notion that the science of education resides in the inquiries of all practitioners" (p. 268). Schön (1987) pointed out that reflection refers to the "reflection on one's spontaneous ways of thinking and acting, undertaken in the midst of action to guide further action" (p. 22). Reflection promotes a sense of active thinking about the situation in hand and trying to connect between what we do and the consequences of results, which becomes a

continuous process of learning, understanding and subsequent improvement of practice (Dewey, 1916; Schön, 1983; York-Barr et al., 2006).

Elliot's (1991) model of professionalism pointed out the "holistic understanding of situations as the basis for professional practice, rather than understanding them exclusively in terms of a particular set of specialist categories" (p. 311), suggesting that reflecting on the present teaching might not only be using classroom evidence, but using other imported theories to see the evidence in a new light (Kuhn, 1986; Solomon & Tresman, 2006). Dewey (1916) explained that writing a reflection is to look back on what has been done to extract the meanings that are the capital stock for dealing with further experience. Reflection on action is a way of framing a problem, considering the alternatives, planning and testing proposed action and re-thinking about the outcome of the alternative actions (Pine, 2009).

Dewey (1933) defined reflection as a "specialised form of thinking that is precipitated by a state of doubt or perplexity, leading to active and purposeful inquiry" (cited in Pine, 2009). Reflective practice concentrates on how teachers' skills, knowledge and beliefs are reflected in their work, how teachers can appreciate and develop the sense of reflecting and rethinking their practice through the context of the collaborative relationship between teachers and researchers (Loudwn, 1992). It is about the means of continuous learning and improving one's own practice through development of knowledge and skills, which influences one's beliefs to some extent. Learning from others and one's own experience, further, reflecting on one's own and

others, and disseminating what is being learnt and constructed from research (Laurillard, 2008).

Reflective practice supports growth and professionalism through questioning problems and the consequences of actions in relation to the different teacher's role inside the classroom, such as guide, coach, activator and facilitator. Reflective teaching is a cyclical process as the teacher monitors, evaluates and revises her/his own practice continually (Pollard, 2002). Organising, planning and acting upon it is an essential part of the reflective practice. The reflective practice process has the potential to encourage Kuwaiti primary teachers' appreciation for different methods and styles of teaching, hence the influences of observing others' practice, communicating their own practice with others, and being exposed to a variety of alternative classroom practices with ICT.

The primary purpose of this study is to investigate the conceptual and theoretical context of reflective practice as a model of change for CPD, understanding how changes in teachers' professional action and pedagogic practice occur. The essential part of practising reflection on action is teachers agreeing to adopt the new role as reflective practitioners, collaboratively building capability and commitment to the new approach aiming empower teacher to be responsible for their professional action "capacity for self-directed professional action" (Smith, 2003, p. 8). Teachers learn effectively when they have the chance to communicate and reflect on the constructed knowledge that is implicit in the good practice of expert teachers' action, and

the alternative innovative strategies. In a reflective practitioner context, knowledge and skills are generated through a collaborative social-constructivist environment, learning the best methods of integrating ICT from observing colleagues and cross-cultural counterparts to adopt alternatives and change their pedagogic practice, as well as to promote 21st century skills in pupils' learning processes.

3.6 Conclusion

This chapter has reviewed the educational theories, concepts and models of teachers' continuing professional development used by other researchers, which are related to teachers' in-service training and preparation focusing on their technological and pedagogical knowledge and practice. Theories of education and learning are there to guide our research and provide us with what we need to make teaching and learning more effective and interactive to support lifelong learners' needs. In order to narrow the gap between Kuwaiti primary teachers' education, in-service reality and professional development toward integrating ICT, the chapter presented a review of the different models of teachers' CPD for preparing and training teachers to utilise ICT into their classroom practice, which were designed and implemented by scholars around the world. The review of the literature showed that reflective practice-based continuing professional development is the best for Kuwaiti primary teachers' situation to empower teachers and improve their beliefs, knowledge, skills and practice to meet the 21st century's education skills. In addition, the literature review appeals for an RP-BCPD case study in Kuwait's context to understand the mechanism of such a CPD model and how it might influence teachers as they are trying to integrating ICT. Furthermore, the study aims to

bridge the gap between teachers' education and in-service professional development through the implementation of the innovative CPD model, which also raised questions and objectives to be discussed and answered through empirical study in the Kuwaiti 'future schools' context.

The literature review opened avenues for more research in relation to teachers' technological and pedagogical beliefs, knowledge and classroom practice, hence, teachers' attitude toward the change process using ICT. Furthermore, previous studies regarding teachers' professional development, teacher education and preparation programmes for integrating ICT and technology into teaching and learning in the UK and the USA, as well as studies related to preparing teachers for 21[st]century education and skills were used to design and adopt the best research methods, such as questionnaire, interview and observation questions that helped to collect data to answer the researcher's questions and aims. The study raised several questions regarding the innovative RP-BCPD model that could be used for Kuwait's primary school context which need further investigation; the impact of the reflective practice-based continuing professional development RP-BCPD has on teacher's pedagogic practice; the factors that lead to the integration of ICT into classroom practice; and the factors that lead teachers to engage or disengage in the process of change. Exploring these questions will contribute to the existing knowledge and literature, especially in the Kuwaiti context.

Chapter Four

Research Design and Methods

4. Introduction

This chapter presents the rational for the methodology approach for the thesis. The design of the study focuses on developing and evaluating a CPD model to promote change in Kuwait context regarding teacher's pedagogic practice integrating ICT. The chapter starts with the research questions and aims followed by the research paradigm, the philosophic assumption of the study. Then, the description of the research methodology, instruments employed, the design of the study, the data collection and analysis methods, and issues related to ethics, reliability and validity of the study. The methodology chapter describes the process of designing, developing implementing and evaluating a reflective-practice continuing professional development model in the context of Kuwait primary 'future schools'. The focus of this methodology is to study the process of change in Kuwaiti teachers professional practice integrating ICT in the classroom pedagogic practice and to evaluate the value and impact of the designed model. If it does promote change in teachers pedagogic practice then this gives an opportunity to investigate how teachers change, why teachers change and what leads teachers to engage in the process of change.

4.1 Research aim and questions

The aim is to explore the nature of the process of change in teachers' pedagogic practice due to using reflective practice-based continuing

professional development intervention focusing on integrating ICT, to understand the socio-cultural context of the change process in the Kuwaiti 'future schools', and to achieve the aims by answering the research questions as follows:

1   What impact does the reflective practice-based continuing professional development RP-BCPD have on teacher's pedagogic practice?

2   What factors lead to the integration of ICT into classroom practice?

3   What factors lead teachers to engage or disengage in the process of change?

4.2 Research paradigm

Pring (2000) pointed out that we must make sense of the situation that we find ourselves in by constructing meaning through experience. His point is that we understand and create facts, we not simply discover them   (p. 46). This reflects his support for a constructivist paradigm against a classical positivist paradigm which tends to assume the givens of reality and conducts research on the model of the natural sciences (Pring, 2000; Crotty, 1998). The constructivist paradigm denies the absolute separation of researcher and the researched such that findings are understood as created and not simply discovered, facts do not exist independently of researcher constructs, and solutions cannot be generalized from one setting to another because they have to be understood only within the construct with which and through which it was constructed.

According to Dewey (1897) "[e]ven when a person builds a castle in the air he is interacting with the objects which he is constructs in fancy" (1897, p.44).

Deweyan pragmatism implies skepticism towards ontology and the idea instead of a '*transactional* framework, which allows for understanding of knowledge as a function of and for human action, and an understanding of human interaction and communication in thoroughly practical terms' (Biesta & Burbules 2003: p107). Biesta & Burbules (2003) argue that "pragmatism provides us with different way to think about the objects of our knowledge" (p. 108), as the objects of knowledge are the instruments of the action and the different objects provide us with different opportunities for the action, which may influence the choices of mixed methods of enquiry in research methods to construct our different perspectives of the problem in hand. According to Badley (2003) the "pragmatists see no point in making one form of inquiry any more important or valuable than any other since they are all ways of helping us to cope with aspects of the world" (p. 300).

Rodgers (2002) emphasizes the process of reflection that happens through an interaction with others for the purpose of increasing one's understanding of the experience, to observe and describe an experience, then analyzing it in order to construct meaning and theories. Davidson (1990) emphasizes the pragmatist point of view of the three sides of the triangle: researcher, teacher and the context. The triangulation along with reflective practice will be used to understand and describe the effectiveness of reconstruction of individuals' technological and pedagogical TP knowledge on their classroom pedagogical practice.

Dewey (1897) explained that what one learned "in the way of knowledge and skill in one situation becomes an instrument of understanding and dealing effectively with the situations which follow" (1897 p. 44). My study is seeking to construct understanding and interpretation of the process of potential changes in teachers' practice once they were placed in a more innovative learning environment. Reconstructing the teachers' technological and pedagogical knowledge TPK and beliefs, and understanding the impact on their classroom practices. Thus, a cautious interpretive approach to the understanding of the process will help to describe the features and aspects of the innovative contexts for the integration of ICT pedagogy, and the generalization from one context to the others. The study will develop a model of continuing professional programme framework that rely on teachers as reflective practitioners, reflecting on pedagogical action, to gain more insight and understanding the relationship between the RP-BCPD and teachers' beliefs, knowledge and practice with ICT.

4.3 Epistemology

The epistemological assumptions underpinning the interpretive constructivist approach suggest that the world is knowable only through the interaction of knower and experienced phenomena (Windschitl, 2002). Biesta and Burbules (2003) argue that "pragmatism provides us with a different way to think about the objects of our knowledge" (p. 108), as the objects of knowledge are the instruments of the action and the different objects provide us with different opportunities for the action, which may influence the choices of multiple tools of inquiry in research methods to construct our different perspectives of the problem in hand. Thus, people learn from reflecting on their experience

(Dewey, 1910, 1933), they construct new knowledge from reflecting on and interpreting different events and then acting according to their understanding. However, our interpretation of the process of changes in people's practice in a different environment, and their reflections on their actions, is a way of helping them to reconstruct new effective actions.

The epistemology of my study focuses on understanding the process of change in Kuwait context related to teachers' beliefs, knowledge and pedagogic practice as they gradually develop new pedagogy using ICT. Furthermore, to understand the features of a learning community within a social context of Kuwaiti primary 'future schools', my study focuses on understanding the beliefs, knowledge and practice that the individuals share within this community. Thus, the research focuses on understanding the factors that make teachers continue learning and developing new views, knowledge and skills within a specific cultural context. I was listening to them in order to interpret their actions and experience to understand the mechanism of change and the similarity of interests and problems within the community.

4.4 Ontology

Crotty define ontology as the "study of being" and concerned with 'what is' with the nature of the existence (1998; 10). Guba & Lincoln argue realities are not objective but are constructed by people who are influenced by the social and cultural factors they live in. In addition, the reality depends on the observers and whatever existence they may have (1989: 12-13). Pring (2000) argued that in the constructivist paradigm, there are as many constructions

and realities as there are individuals. The study presents my interpretation of the participants' actions and the meaning they make from their ways of understandings during the CPD activities. In order to understand the mechanism for the process of change in teachers' pedagogic practice using ICT in Kuwait context, I used mixed methods approach to gain deep understanding of the change process reality. During the enquiry I intended to be the trainer and the coach, and offering feedback when it was needed. The knowledge that I seek was neither of reality in itself nor merely of subjective feelings, but it was of the social realities that was generated through interactions, such as, teachers practices, which were needed to be interpreted as they were not things in themselves.

4.5 Methodology

According to Crotty (2003) methodology is "the research design that shapes our choice and use of particular methods and links them to the desired outcomes" (p. 7). Ernest (1994) defines methodology as "a theory of which methods and techniques are appropriate and valid to use to generate and methodology is aiming to help understand in the broadest possible terms not the products of scientific inquiry but the process itself (Cited in Cohen, et al., 2007: p.47). Yin (1994) pointed out that those case studies that were using multiple sources of evidences were rated more highly, in terms of their overall quality, than those relying only on single sources of information (p. 92). Yin (1994) argues that case studies are both descriptive and exploratory strategies and they could be used for three purposes exploratory, descriptive and explanatory case studies and experiments. He also, pointed out three conditions for using each strategy: (a) the type of research question posed,

(b) the extent of control an investigator has over actual behavioral events, and (c) the degree of focus on contemporary as opposed to historical events (ibid, p. 4). The unique strength of case study is its ability to deal with multiple source of evidence as a way of triangulating to support finding showing the validity and consistence between the methods of data collection (Yin, 1994; & Miles and Huberman, 1998).

A case study could be an event or a programme, a time period that seeks to describe a situation in depth, holistically and in context (Patton, 2002). Teachers career like human's life full of points of changes, people learn from different sources in formal and informal social life which leads to changes in the ways they deal with life and learning. Therefore, knowing the narrative history, and understanding the action or the initiation of a person in a certain point, would give us the opportunity to interpret it and make meaning of it, to make it known to understand the process of change in specific context of Kuwait primary schools (Clandinin & Connelly, 2000). Wellington (2000) emphasizes the importance of the context of the unit when defining case study, also, the consequent problematic nature of generalization (P. 91). The case study helps to track and to draw the time line series to understand the changes that occurred based on the patterns of the thematic analysis in order to provide in depth individual meanings as the researcher answering research's questions (Patton, 2002: Yin, 1994).

The case study is relevant to the exploratory nature of the present study, questions and aims. The study seeks to understand the process of change

related to primary teachers' beliefs, knowledge, skills about pedagogic practice integrating ICT in the context of Kuwaiti' primary 'future schools'. In addition, it seeks to understand in depth how participants developed and used the reflective practice skills to inquire and investigate into their classroom practice to improve it using ICT. Furthermore, understanding how did the community of practice sessions contributed to participants' development of the knowledge and skills related to the technology (ICT) to improve their pedagogic practice, and promote 21st century skills into their pupils learning? The aims of the study focus on looking at the process of change to understand the mechanisms, as Skinner (2010) explained that the "Case study… is valuable because of the insight it can provide into the processes occurring in a particular context" (p. 290). Understanding the process of change helps us to understand teachers' needs and provide them with the best mechanisms for CPD model to prepare them for the 21st century demands.

I have used the case study methodology to study the process of change in teachers' beliefs, knowledge and pedagogic practice, and what motivated teachers to engage and change. The study of the intervention model had five phases explained in more details in the research design section and RP-BCPD intervention section in this chapter. The investigation of the potential changes in classroom pedagogic practice used a purposive sample of teachers from different subject matters from 'future schools'. I have used multiple sources of data collection, qualitative and quantitative methods, questionnaires, interviews, observations, videotaped practice, teachers

observation list (TPOR), the videotaped community of practice sessions, teachers' journals and my field note. The analysis of the case study will be presented in chapters' five to eight reflecting on the ADDIE study of the RP-BCPD intervention model. The purpose of using multiple sources in my study is to build a case study, to gain in-depth understanding of the potential changes in teachers' pedagogic practice as a result of participating in the intervention model. Thus, based on the pragmatic choices the triangulation techniques were applied in the current study between the findings from qualitative and quantitative data analysis and used as "case records" (Wellington, 2000).

4.6 Research methods and Data Collection

Levin and Robinson (1999) argued in relation to the arguments about the use of the two dominant paradigms and their associated methodologies, that the "quantitative"--"qualitative" dichotomy is a false one. This is because, in brief, a) data that are essentially qualitative in nature can almost invariably be categorized, tallied, or quantified for statistical analysis; b) information derived from traditional "quantitative" methodologies and methods can lend itself to the same "rich" interpretive or narrative accounts that are said to characterize the "qualitative" research perspective; and c) quantitative and qualitative evidence can be profitably combined within a single investigation, to the mutual enhancement of each other in bolstering an investigator's argument (cited in Liven et al., 1999: 153). Bell (2004) emphasized the important and great demands of the mixed methods work that crosses the traditional boundary lines which enable us to advance our understanding of the learning across the various theoretical perspectives (p. 250).Similarly, Cobb et al.,

(2003) suggested that 'Multiple sources of data ensure that retrospective analysis conducted when the experiments has been completed will results in rigorous, empirically grounded claims and assertions' (p. 12). Furthermore, the multi-methods evaluations scheme can inform changes in the theoretical conjectures and research design and the refinement of the RP-BCPD redesign (Bannan-Ritland, 2003). Collins et al., (2004) emphasize the need for the use of quantitative and qualitative methods in the design experiments as the amount of collected data is too great to be fully analyzed and many there are variables that cannot be controlled. Hence, he suggested that research has to 'try to optimize as much of the design as possible and to observe carefully how the different elements are working out' (cited in Peterson et al., 2005: 19).

This is a mixed method approach, which is recommended for this type of research because they allow researchers to apply triangulation of data. According to Tashakkori and Teddlie (2003), "mixed methods designs evolved from the notion of 'triangulation' of the information from different data sources", and they are also more likely to capture the complexity of the research. I have applied mixed methods of quantitative and qualitative data collections to gain in-depth information and evidence supporting the potential effectiveness of the new proposed continuing professional development programme approach and to answer the research questions. Furthermore, the aim was to understand the process of change in teachers' beliefs and classroom practice, to see "What is actually going on" (Bereiter, 2002) while teachers are conducting an reflective practice experiments. In addition, the

mixed methodology is flexible in the collection methods which reflect the pragmatic principle of the research. The combinations of qualitative and quantitative data collections are appropriate for better understanding and evaluations of the social context, more reliable and minimize the chances of biased findings (Grix, 2010). Quantitative method is generally aimed at comparison and causality while qualitative methods involve in-depth investigation of knowledge (Grix, 2010). For these reasons, both of these methods are appropriate within the design of the current study.

4.6.1 TBS Questionnaire

During my research through previous scholars' studies around the world about constructivist theory and the implementation of this theory on teaching and learning at the primary level education, I have found a study carried out by two American professors about developing and testing a questionnaire for pre-service and in-service teachers' education related to constructivist and behaviourist (traditional) teacher beliefs about classroom practice, which was used by other researchers around the world. The Teacher Belief's Survey (TBS) questionnaire was adopted from Mansfield University - USA. I have been given the permission to translate and adapt it to Kuwait future schools environment and to use it in my study by the Associate Professor Jane Benjamin (one of the two developers of the TBS) at Mansfield University through her university e-mail (see Appendix A). The questionnaire is a self-reported data-collection that, in this case, was applied seeking to "assess teachers' beliefs related to constructivist and behaviourist (traditional) theories of learning" (Benjamin, 2003). The TBS was used in this study to understand

'future schools' teachers' beliefs about pedagogic beliefs, and to identify their needs, which were considered in the designing of the CPD programme. Hence, it helped to understand the potential changes in teacher beliefs related to their self-imaging themselves as traditional or constructivist practitioners after participating in the RP-BCPD model. Furthermore, the survey results helped to understand teachers' beliefs about the roles of teacher and pupils during the learning and teaching process inside the classroom before and after participating in the RP-BCPD. The results were used in triangulation with TPOR and classroom observations to understand the change process in teachers' pedagogic practice.

The 48 items of the TBS survey were revised by the developers to assess teachers' beliefs relating to constructivist and behaviourist theories [traditional] of learning, and then they have validated the revised version of TBS (Benjamin, 2003). The revised 48 items are divided to four parts: constructivist teaching (CT) 17 items, behavioural teaching (BT) 10 items, constructivist management (CM) 10 items and behavioural management (BM) 11 items.

Pilot Study of the TBS's questions

The pilot study was undertaken to help examine and revise the research instruments such as: teacher beliefs survey TBS questionnaire, the semi-structured interview questions, and the teacher practice observation records TPOR. The findings from the pilot study shows that the translated and examined Arabic TBS version support Benjamin (2003) conclusion that it can be sued to assess changes in teacher's beliefs (p.7). Furthermore, that the

triangulation between the three examined instruments revealed a sense of confident and credibility while constructing the data to report the findings and answering the research questions (see Appendix E for more details). For example, a triangulation between the three methods were done for one of the two science teachers (ScTP2 pilot study only) participated in the pilot study. The triangulation revealed that there were a contradiction between the way that the science teacher self-imaged her pedagogic practice in the TBS questionnaire and interview data analysis, and the results from the structured practice observation data analysis, which support the confidentiality and credibility of the research methods to be used for the main study.

The revised TBS questionnaire of 48 items (Benjamin, 2003) was translated into Arabic, and then piloted in four Kuwaiti's future schools. The feedback from the experts and the pilot study revealed with some difficulties and confusion with the wording of some of the survey items and was used to re-revise the survey in the Arabic language. The 48 items were modified and revised to become 50 items (see Table: 6 below) with some changes in the words to suite the Arabic language (See Appendix A, for final version).

The results from piloting the Arabic version of TSB helped to modify the type of the followed scale in the original version. The revised Arabic version is organised along a five Likert scale responses: strongly agree, agree, undecided (often), disagree and strongly disagree (Gliem & Gliem, 2003). This helped to avoid the confusion of the six Likert's scale responses of the original TBS that might happen for the participants based on the feedback

from the three experts. Furthermore, the Arabic wording of the TBS questions was changed to apply to the teachers' mother tongue to make it easier for them to understand and respond to all items. Some items were modified and revised based on teachers' suggestions as it limited their choices and they preferred not to respond (see Appendix E, for pilot study).

Table 6: Categories of TBS.

Categories of the TBS	N=50 Total
CT (Constructivist Teaching)	N= 18
BT (Behavioral Teaching)	N=10
CM (Constructivist Management)	N=11
BM (Behavioral Management)	N=11

150 self-selected in-service teachers accepted to participate in the pilot study as a representative of 'future schools' teachers from all subject matter such as; maths, languages, science, social studies and computer literacy. Four of them accepted that the researcher videotape their classroom practice, while three out of the four accepted to be interviewed (Science, maths and English teachers).

The outcome from the pilot study suggested that teachers hold different beliefs about the meaning of constructivist and the use of ICT tools in the classroom. There is a problem with teacher pedagogical and technological beliefs, knowledge and practice, which suggested for more investigations and study.

4.6.2 Interviews

Interviews are used and designed to elicit views, perspectives and perceptions to gain more clearly in-depth information and understand the lived experience of the participants and the meaning that they make from it (Seidman, 2006: 9). Wellington (2000) argues that the group interview has more advantages than one-to-one interview and that the interviewees might feel safer and confident when they are with their peers, the group interview make participants more relaxed and jog each other memories and thoughts (p. 81).

The questions for the semi-structured interviews were determined based on the relevant literature from previous researches on the integration of ICT in teaching, learning, improving classroom practice with ICT, reflective practice, action research, community of practice and professional development (Burnaford et al., 2001; Borko, 2004; York-Barr, 2006; Somekh, 2007, 2006; Somekh & Davis, 1997; Somekh & Sunders, 2007; Lave & Wenger, 1991; Wenger, 1998; Sutherland et al., 2009; Loveless & Dore, 2002; and Loveless 2003) . Also, the questions were piloted with three future schools teachers (see Appendix E for the Pilot study).

I have applied focused groups semi-structured interviews for both teachers and sample of pupils from the three classrooms involved in the study. According to Brown, Collins and Duguid (1989) group interviews give rise synergistically to insights and solutions that not come about without them (p.

40). Watts and Ebbutt (1987) argued that group interview has the advantage of developing a discussion among interviewees as a group of peoples have been working together in the same place for a period of time. The semi-structured interview provides a researcher with more control while preparing a guide of questions, more flexibility over the range and order of questions, and also, it allows the development of new questions during the progress of interviewing based on what develops from the topic under discussion (Wellington, 2000). The teachers' interview protocol was developed to cover two stages, and each stage responded to specific phases of the study. The protocol helped to guide the research's interviews and the questions related to each phase. The questions were developed to follow up with the changes in teachers' practice, the action research progress and the development of technological and pedagogical beliefs and knowledge. The pupils' interview protocol was developed into two stages before and after the study to grasp pupils views about their teachers practice utilizing ICT-based activities (See interviews' protocol Appendix B).

The first teachers 'semi-structured interview titled as 'Identifying the problem', was conducted with the participant teachers at the beginning of the exploration stage prior to the implementation stage. The interview was purposive and in a conversational style which is less systematic in away but provided relevant information (Cohen et al., 2007). The interview conducted in focused groups of three or four teachers to gain more in-depth understanding about the problems with teachers' current practice and its impact on pupils' learning style. The purpose of the first semi-structured interview was firstly; to

identify the existing problem that faces future schools' teachers' classroom pedagogy with the integration of information communication technology. Secondly; it aimed to identify teachers existing beliefs, knowledge and any problems associated with skills regarding the innovative practice with ICT. The impact of teachers' classroom practice on pupils learning style was part of the identifying stage as the study aimed to accommodate semi-structured interviews for teachers and pupils from the same classrooms that participated in the study.

The second and third teachers 'groups' semi-structured interviews titled 'Understanding the process of Change' were used as a follow-up to the process of the development, implementations and evaluation stages. The purpose of the second and third interviews were: to follow up with the teachers as they were conducting their action research during the continuing professional development programme that was designed to empower teachers' research and technological skills and analyzing their own implementations of innovative ICT-based lessons, and also, to examine the impact of teachers' innovative practice on their pupils' learning style and the potential enhancement in the level of achievement.

The nature of the interview provided me with flexibility in changing the wording and order of the questions based on the situations and the explorative nature of the study itself. Pupils' group semi-structured interviews' questions were limited to the maximum of sixth and were explained to the pupils in the local language to make it easy for them to understand and give answers (see

Appendix C). The groups' interview for children enable them not only to participate, but also to challenge and encourage each other, which might not happen when using one-to-one interview (Cohen et al., 2007).

The interviews were audio taped and transcribed, and then the transcriptions were e-mailed to each one of the three participants from the 'Alfarsi schools' for the purpose of confirmation and validity. I took notes from each interview to use it in updating the follow-up questions in the next scheduled interview during the development and implementation stages, as the first semi-structured interview altered me to issues that I did not anticipated to appear in schools that were designed to be future schools. The language of the interviews was the mother tongue (Arabic), and for the purposes of accuracy I have translated one of the nine interviews and let my colleague looks at the translation for the purpose of validity in relation to the Arabic version. Furthermore, to make sure I had the right procedures of the coding stages and categories, and then I continued the coding of the interviews in Arabic version to ensure the clarity and credibility of the words' meaning that serve each code and category (see the data collection section in this chapter for more explanations).

Furthermore, the researcher conducted pupils' focused groups' semi-structured interviews. The pupils' samples were from the three classrooms from the three 'future schools' involved in the present study. Pupils were interview before and after the RP-BCPD innovative model, and they were self-selected to accept being interviewed. The pupils' semi-structured interviews

were videotaped for the purpose of validating and confirmation of pupils' words during the transcription of the interviews, with consideration to pupils age and grade, and their abilities to review the transcribed interviews. Furthermore, to catch the body gesture among pupils and their face expression about their learning and teachers classrooms practices. Then, pupils' interviews' transcriptions went through the same analysis, categories and coding procedures that was done for the teachers' interviews' transcriptions, taking in consideration the language's issues to ensure the clarity and credibility of the words' meaning. Finally, the categories and codes of pupils' interview were integrated with other themes in order to answer the research questions, also, to understand the process of change in teachers' practice and how it affected pupils learning style.

4.6.3 Observation

According to Cohen et al. (2007), the distinctive feature of observation method is that it provides the researcher with the opportunity to gather 'live' data from a natural situation (p. 397). Observation as a method of collecting data is appropriate for exploratory research (Silverman, 1993). The observation method allows the researcher to study the participants' behavior in complex situations such as classrooms learning situations (Wellington, 2000). Chambers (1979) pointed out that there is a growing awareness of the possibilities of learning a great deal from close life observation of classrooms, which requires a participant observer who won the confidence of the teacher and lives daily in the classroom (p. 39). Observation could be of facts these facts; could be pupils' number in the class, events that happen, teachers' and pupils' relationships and talk, the nature of learning situations and classroom

settings, teachers' and pupils' behaviors and qualities (Cohen et al., 2007: 397). It enables the researchers to understand the situations and the context of the model under investigations, looking close into things that might be hidden or that the participants might not mention it in the interviews, observed activities, interactions and what does not happen (Cohen et al., 2007, & Patton, 2002).

In the present research I have implemented two types of classroom observation: a structured and the videotaped observations. The implementation of the two types of observation enabled me to understand the changes that appeared in teachers' practices, classroom settings, pupils' learning style, and any events in the classroom. The advantage of the two types of observation was that if I missed something during the structured observation and in the field notes, I could look back at the videotaped classroom practices for each of the participant teachers. It also helped me to see the consistency between teachers' beliefs and practice and what they say and do in reality compared to what they have mentioned in the interviews. Furthermore, it is a good practice to take screen shots of each teacher as evidence of consistency, change and improvement of teachers' beliefs and the innovative practice. The participant teachers tried to be natural during the experiment though they were under heavy workload, and lack of teaching and ICT knowledge and skills.

After receiving official approval, all participant teachers and their pupils were informed in advance that their classroom practice will be videotaped and

observed by the researcher for research purposes only, and that it was not related in any way to the Ministry of Education evaluation systems. Classroom observation were scheduled with the classroom teachers and arranged by the school manager to make sure teachers were ready to perform once they have completed their ICT-based lesson plans.

4.6.4 Structured checklist observation (TPOR)

The teacher practice observation record structured checklist is very systematic process that enables researchers to generate numerical data from an observation schedule, which could be used to make comparisons or describe a setting or a situation, where the observer would act passively noting down the incidents happening during the observed events (Cohen et al., 2007). The Brown's Teacher Practice Observation Record TPOR observation tool was used to follow up the teachers' classroom practice based on seven categories designed by Brown to measure the differences between teachers' beliefs and their classroom practice. Hence, It "measures the congruency of teachers' observed classroom behaviour with educational practice advocated by John Dewey" (Brown, 1970: 14). The observation tool is made of 62 items of teacher practices (Brown, 1970). The items are divided to 31 even numbers representing the constructivist practice and the other 31 odd-numbers representing the traditional practice. (see Appendix D). For the purpose of the subsequent statistical analysis, the odd-numbers are the negative "non-Dewey" items and the even numbers are the positive "Pro-Dewey" items.

Brown (1970) suggested 30 minutes of class time for observation and divided it to three periods of ten minutes. Furthermore, he asserted that the observer should mark the items as the behaviour occurs and not to wait for the second five minutes of the marking period, and then the observer should take the last minute of a marking period to run down over the list of items to make sure all items are checked. The weakness of TPOR is the process of observing and checking period, which does not provide a complete picture of what is happening during the observation in the classroom. This procedure might lead to false judgements about teachers' practice, which in this case could be supported by videotaping classroom practice for better results to understand the change in the practice as it occurs.

In Kuwait's future schools the class period is 40 minutes only: it is five minutes less than in other public schools which are part of the future schools theoretical framework and design. In order to overcome this weakness the TPOR tool was piloted to fit with the future schools' design. The pilot study results suggested using the observation tool as it is, because of the nature of class time in future schools; it shows that the actual teaching and learning start after the first 5 minutes of class time and it lasts exactly for 30 or less minutes. The nature of the lesson plan starts with five minutes revision of what was learned in the last class or preparation for the new lesson. In any way the first five minutes are actually not considered from the actual time of the new lesson. Thus, I had to follow the Brown's suggestions and support my observation with videotaping the entire observed classrooms practices of the nine participant teachers. I have also considered the idea that the TPOR

observation marking time can be re-arranged and adjusted to fit with the class time in the other public schools which is 45 minutes class time, for future implementations.

4.6.5 Videotape classroom observations

The video was used as an instrument of data collection and generation to support other data collection methods. The advantage of the videotaping over other qualitative data collecting methods is the availability of nonverbal behaviour for additional analysis (Crabtree & Miller, 1999). This nonverbal behaviour may indicate teachers' and pupils' relationships, classroom settings, the used pedagogy in classroom and the type of ICT tools used. The use of the video has the possibilities to detect contradictions between discourse and behaviour through the use of videotaping and interview, i.e. what teachers say in interviews and what they actually practice in their classrooms. Furthermore, teachers' communication in the community of practice was videotaped to have a complete picture of teachers' collective works towards receiving and reflecting on colleagues' practice, learning process, and building knowledge. I have videotaped all nine teachers' classroom practices, the sessions of the community of practice and the workshops, to capture the ongoing occasions of collective work, and collecting data to understand the process of change, and to answer the research questions.

4.6.6 Field notes & teachers' journals

The field notes were taken by the researcher throughout the teachers' reflective practice- based continuing professional development programme,

the schools' visits and the process of preparation for the designed study in the future schools. In addition, they were made during the observation of teachers' classroom practice and the community of practice sessions. The field notes helped me to record any events while observing teachers during their practice with ICT, communication style between teachers, the progress of preparing the classroom and lesson plan for the innovative ICT-based lesson, and the teacher and pupils' relationships.

Teachers' journals (see Appendix J. ScT1) were very limited to a reflection on the designed ICT-based lesson after each completed lesson as they were overloaded with work and teaching obligations. Teachers preferred to add a column or a row in their lesson plan to write about the strength and weakest points of the lesson plan and process to help them for next ICT-based lesson plan.

4.6.7 Evaluation of the interventions

After the participation in the innovative RP-BCPD, the nine teachers had to evaluate the RP-BCPD model's interventions, such as workshops and community of practice CoP using quantitative instruments. Teachers were asked to respond to two checklists of seven statementsevaluating two interventions (workshop and CoP). The instruments were developed based on reviewing the evaluation instrument literature that is related to professional development (Guskey, 2000). The statements of the two instruments were limited to seven sentences as teachers were very busy with teaching more than one subject matter and textbooks for each subject, with 26 pupils that they have to teach and check their in-class and homework. The two

instruments were analysed manually and then explained qualitatively responding to the research questions. Teachers were asked to use the rating scale (1 strongly disagree - 2 disagree - 3 sometimes – 4 agree – 5 strongly agree) in order to evaluate the reflective practice - based continuing professional development' interventions. The analysis of the two instruments was done manually as the number of the evaluators was consisted on only nine participants (see chapter Eight).

The purpose of evaluating the instrument is as follows:
- To empower teachers by giving them the opportunity to talk about and evaluate the type of the professional development activities that are offered to them and whether they are relevant to their existing needs.
- To be helpful in the refinement of the innovative model's intervention for future implementation.

4.7 Research design

The present study design applied a mixed method approach to understand the process of change in teacher pedagogic practice. The focus is on the potential changes in teacher beliefs and knowledge that might affect teachers' skills and improve the technological and pedagogical practice during the RP-BCPD. The main study started with TBS' questionnaires. The aims of using the TBS' survey were as follows:
- To understand 'future schools' teachers existing beliefs about classroom pedagogic practice from the traditional and constructivist theories of learning.

- To understand the potential impacts on teachers beliefs (self-image) after participating in the RP-BCPD interventions.

Teachers were instructed to complete the two main parts of the questionnaire: first the demographic information, then the revised 50 self-reported items. 204 teachers responded to the first pre- TBS questionnaire study, and then the purposive sample of nine participating teachers from the first sample responded to the second post-TBS questionnaire study. The nine teachers had the chance to examine the constructivist approach from the learners' perspective, and had the opportunities to build new knowledge related to ICT utilization in classroom practice, which might affect their beliefs based on their reactions and reflections as an reflective practitioners inquiring into their classroom pedagogy, to improve and develop an innovative practice using the potentials of ICT. Therefore, the second post- TBS was undertaken to see the changes if it happened on teachers pedagogic beliefs and understanding the process of the changes from teachers' classroom practice and reflections.

As the research has to consider carefully a study design I have used the exploration model of analyzing- designing- developing- implementing and then evaluating the innovative RP-BCPD model: analyzing of and educational situation for the purpose to identifying a problem, designing a framework for the study, developing an appropriate solutions for the study design, implementing the solution model and evaluating the outcome. The implementation of the designed RP-BCPD model for the 'future schools' teachers, as they were inquiring into their own classroom practice situating in

a social context of community of practice within three future schools context; and using the inter-subjectivity world where teachers live, act, interact and share responsibility in the educational reform (see Figure 5).
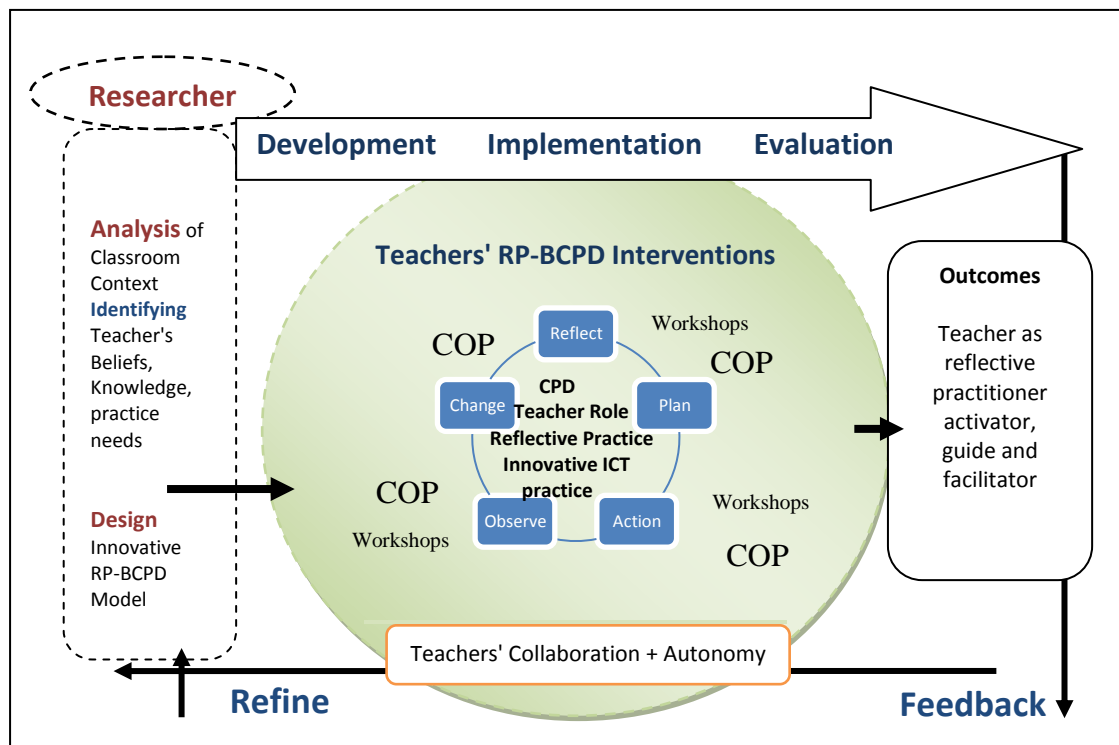
Figure 5: Framework for the implementation of RP-BCPD model.

The systematic ADDIE's phases (see Figure 5 guiding the researcher in developing and implementing the RP-BCPD model as following:

1- Analysis: identifying problems and needs.

2- Design: the framework of the RP-BCPD model.

3- Development: using RP-BCPD's interventions for developing teachers' professional knowledge and skills.

4- Implementation: of the RP-BCPD model using the interventions (teachers experiencing the change).

5- Evaluation: usability and effectiveness of the implementation of the innovative RP-BCPD model (teacher understanding the change).

The process of ADDIE phases are illustrated and elaborated in section the design of the study Figure 6 in this Chapter. It explains in more details the five phases that guide the researcher in designing, implementing and evaluating the innovative RP-BCPD.

4.8 RP-BCPD interventions

The present study was based around the innovation *Reflective Practice-Based continuing professional development* model (RP-BCPD) for Kuwait's Primary Future Schools' Teachers was conducted in three future schools, and the nine participant teachers were involved in all the RP-BCPD model phases and stages.

Table 7: the stages of RP-BCPD model and interventions.

Stages& Date	Aims	Data collection & analysis
Exploration Phase *September 23, 2009.* *(Pre- data collection)*	**Meeting with school managers and teachers** to introduce and arrange the dates for the purposed professional development programme that are suitable for teachers needs.	
Stage 1: *Analysis* *October 2009.* *aims* *Identifying Teachers Needs* *Identifying Knowledge needed*	**Starting pre-data collection**: teachers' existing beliefs, knowledge and classroom practice, and pupils' learning style.	**Teachers:** 2TBS questionnaire, Semi-Structured interviews with 9 teachers in groups, Observation of teachers' classroom practice, Videotaping teachers' classroom practice. **Pupils:** Semi-structured interview or/and learning style questionnaire.

Stage 2: *Design*	Using the appropriate theoretical framework to design the professional development programme for teachers.	
Stage 3: *Development* *October 2009.*	Developing the RP-B CPD interventions. **Developing teacher:** **First & Second workshop: 2-3 hrs each.** - Enlightening teachers about the use of ICT (computers activities and internet) in classroom practice. - Introducing innovation theory. - Introducing alternative classroom practice from UK schools and experiments and other studies. - Introducing the reflective practice and action research. - Discussing individuals and whole class-teaching and learning activities with ICT. - Groups and individuals learning activities.	**Teachers:** Attend and evaluate the workshops.
Stage4: *Implementation* *November 2009.* *Teachers designing ICT-based lessons*	**Teachers' pedagogic practice (experiencing the change).** - Designing lesson with ICT. - Searching their practice and adopting alternative practice to their classrooms. Applying new practice **First community of practice: 3 hrs.** topics for discussion such as: - What is good practice with ICT integration in classroom practice? - What are the benefits from Reflective	Videotaping the innovation practice. Teachers' journals. **Teachers:** Building critical thinking and reflecting on own and each other exiting practice. Evaluating the community

	practice and action research cycle? - What is the benefit from community of practice?	of practice.
(First data collection) *December 1-24, 2009* 	Collecting data : Analyzing data from previous steps.	Teacher: Semi-structured interviews, Classroom observation and videotaping, Collecting teachers' journal.
***December** 20 or 24, 2009.*	**Second Community of practice:** Topics for discussion will be about teachers' innovation practice in step 2.	**Teachers:** Critical thinking and reflecting on own and each other innovation practice. Evaluating the community of practice. Videotaping the session. Teachers evaluated the workshop.
December 27 or 30, 2009	**Third Workshop: one hour** **This workshop based on teachers' needs** The aims, activities and materials for the second workshop depend on the result from the collected data and teachers needs.	
Teachers were working alone from January to the end of March 2010 without the researcher's observation. *Researcher: data analysis in UK*		
Second ***Teachers innovative*** ***ICT-based lessons*** *April 4-22, 2010.* *(Second data collection)*	Teachers working on: - Designing lesson with ICT. - Searching their practice and adopting alternative practice to their classrooms. Applying new practice Data Collection:	Classroom observation and videotaping, **Teacher:**

	Third Community of practice:	Critical thinking and
	Divided into two sessions as teachers	reflecting on own
	were divided into two groups (Science	innovation practice.
	and Literacy)	
	Teachers sharing their own experiences,	
	and the integration of ICT in the	
	classroom practice. The effective ways	
	and methods of using ICT in the teaching	
	and learning process.	
	Fourth Workshop: 1 hour	Teachers evaluated the
	Workshop was provided by a computer	workshop.
	studies teacher demonstrating how to	
	convert normal white board to interactive	
	white board.	
Stage 5:		**Teachers:**
Evaluation	(Teachers understanding the change)	Evaluating the community
May, 2010.	Data Collection	of practice.
	Interview, TBS survey & reflection and	TBS Questionnaire
	evaluation of the programme by teachers.	Semi-structured interviews,
		Pupils:
		Semi-structured interview.

Figure 6 below is illustrating in more details the framework for the implementation of the innovative RP-BCPD model that shown in Figure 5 in the research design section above.
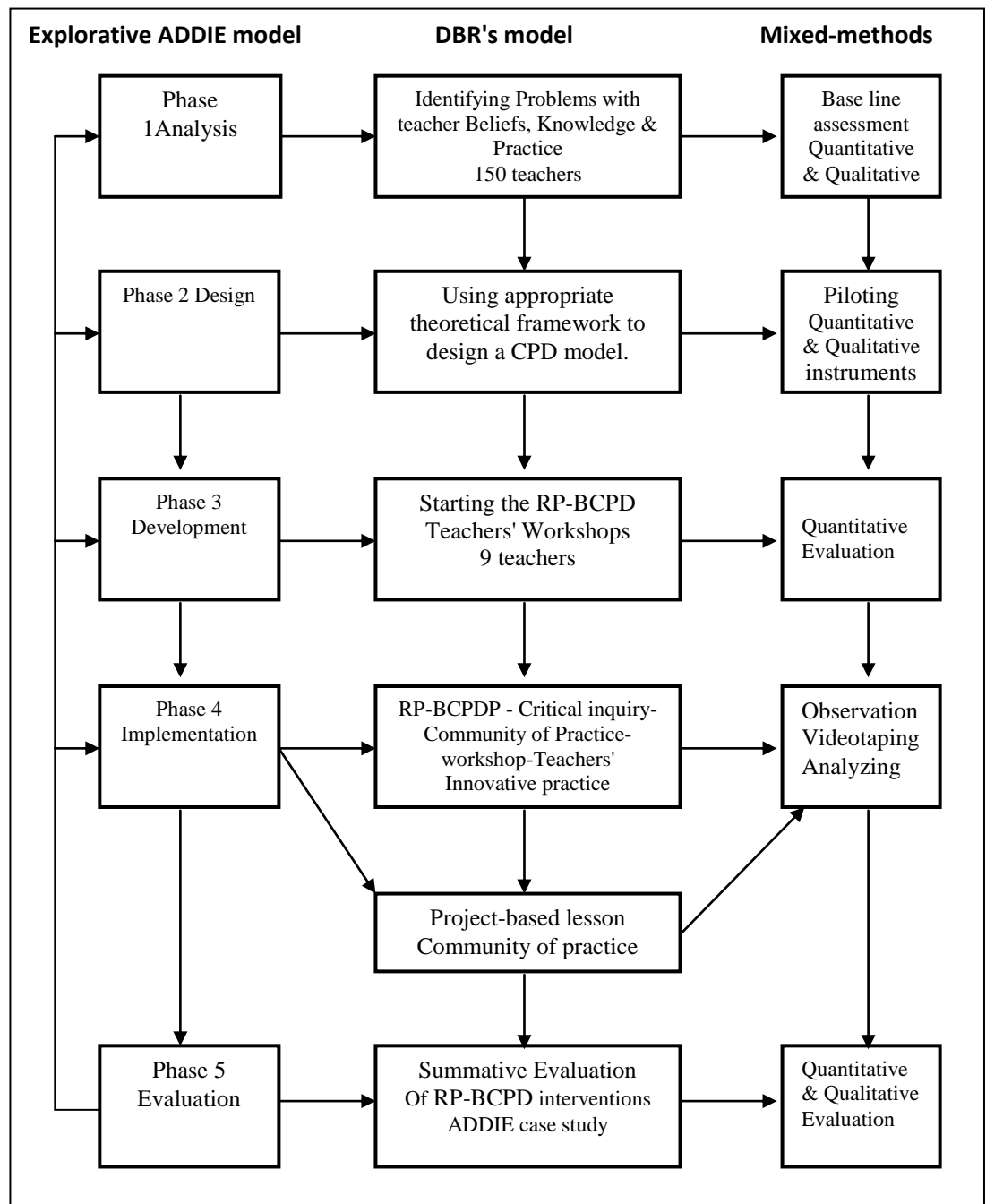
Figure 6: The Design of RP-BCPD model and interventions.

The systematic ADDIE explorative model's five phases guided the development of the RP-BCPD model as each phase leads to the next phase. The first phase acted as the base line assessment for identifying the educational problem using mixed methods: TBS questionnaire to a sample of 204 teachers, and qualitative purposeful sample of the nine teachers. The findings from the first phase were used to compare with the some of the

findings from the last phase (Evaluation) to understand the changes in teachers' technological and pedagogical beliefs and knowledge (see Chapter five). The findings from the first phase were also used to design the innovative RP-BCPD model's interventions in the second phase using theoretical framework (see above). The third phase acted as a development stage for the purposeful sample of nine teachers (see above), and teachers' evaluation of the RP-BCPD interventions (see Chapter Eight). The fourth phase represented the implementation stage of the nine teachers' RP-BCPD model as teachers experiencing the change process through reflecting on their pedagogic practice. The finding from the fourth phase analysis of interviews, observations tools: TPOR and videotaped classroom practice, teachers' journals, teachers' reflective activities, and researcher's field notes helped to have in-depth understanding of the process of potential changes and shifts in teachers' beliefs, knowledge and pedagogic practice. The fifth phase was used as an evaluation stage, the findings from the interview, videotaped observations, teacher reflective activities, researcher's field notes, and teachers' evaluation of the RP-BCPD interventions was used among other qualitative data for understanding the key characteristics for designing CPD to help prepare and train teachers for ICT integration in Kuwait context (see Chapter Eight). Teachers' evaluation of the RP-BCPD enabled them to understand the changes that occurred to their pedagogic practice.

4.8.1 Teachers' as Reflective Practitioner

Teachers as reflective practitioners were introduced during the workshop; the reflective practice model was adopted from York-Barr et al., (2006) and refined to suite the present study. Figure 7 presents the teachers' reflective

practitioner framework which was used during the RP-BCPD as a mechanism for change. Teachers were trained during the workshop to use the reflective practice activities suggested by York-Barr et al., (2006) during their action research (see Appendix F). Teachers were instructed to use their reflections on action activities in their journal to reflect on their own and their colleagues' action, and ICT-based lessons during the RP-BCPD model. As the teachers did not have the time to keep up with the daily journals it was a good opportunity to educate the participants about reflective practice and encourage them to be aware of its benefits to their classroom practice, including the following aspects: to understand how they should act as a reflective person in a constructive manner toward themselves and their colleagues aiming for development and improvement; inspiration and sense of inquiry toward their own practice and collaboratively raising the sense of critical discourse among their community of practice, as Habermas refers to it a community that shares a common understanding of "who we are" and "who we value being" (Habermas, 1975, 1984). Similarly, Kemmis (2001) continues to add that the communicative action is the "process by which participants test for themselves the comprehensibility, accuracy, sincerity, and moral appropriateness" (p. 95).

```
                    ┌──────────────┐
                    │ Description  │
                    │ of problem   │
                    └──────────────┘
       ┌──────────┐                    ┌──────────┐
       │ Redesign │                    │ Inquiring│
       └──────────┘                    └──────────┘

    ┌────────────┐                      ┌──────────┐
    │ Evaluating │                      │ Thinking │
    └────────────┘                      └──────────┘

          ┌────────┐          ┌──────────┐
          │ Acting │          │ Planning │
          └────────┘          └──────────┘
```
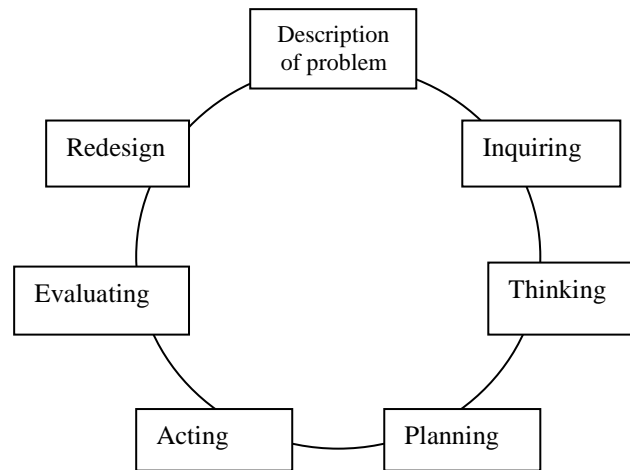
Figure 7: Teacher's as reflective practitioner framework.

I have explained for teachers the reflective practice which related to teachers' thinking about their pedagogical practice and the integration of technology and ICT. Teachers were encouraged to reflect on their practice and lesson plans in the social context by describing the problems they have or face from their inquiring into practice. Then, teachers were directed to use the steps of the reflective practice framework. I emphasized the importance of reviewing their context and beliefs, and consider alternative theories of teaching and learning such as the constructivist lessons-based ICT.

I have encouraged teachers about peer observation, which goes beyond implementing an idea from a workshop "staff development experiences that build on collegiality, collaboration, discovery and solving real problems of teaching and learning summon the strength within a staff, instead of just challenging them to measure up to someone else's standard" (Fullan, 1991, p. 318). They had the opportunity to observe each other's ICT-based lessons and reflect on each other's actions, or learn from each other experiments.

4.8.2 Workshops

Workshops are important tools for presenting information and teaching skills that can help people improve quality of work and practice. During the development phase of the RP-BCPD model, the nine in-service participant teachers were invited to attend workshops within the future schools' context, to receive training on integrating ICT into their classrooms and developing their technological, pedagogical and content knowledge. At the workshops teachers were introduced to new concepts and skills of reflective practice, TPACK, and community of practice, as well as observing innovative videotaped practice with ICT pedagogy from a UK primary school's in UK, other videos from different UK and USA classrooms, then reflecting on and discussing their own current practice. The workshops were designed in response to the nine teachers' needs in order to help them engage in changing their pedagogic practice. The workshops were used to enlighten the teachers about advancement in the education system around the world in the twenty first centuries and to enable them to cope with the new innovative instructional design and instructional technology. Teachers were given the opportunity to talk about their needs, the factors and barriers that influenced their classroom practice. Each workshop was based on the teachers' needs to develop their knowledge and skills about various instructional design and technology purposes. After each half-day workshop teachers were asked to complete a reflective activity and evaluate the workshop, then the teachers were returned to their schools or classrooms to design and prepare their new ICT-based lesson plans based on the innovative instructional design and technology they were exposed to during the workshops. As the teachers were

not limited to national curriculum content, they had the autonomy to design their own instructional design for their lesson plan, the freedom and ownership of changing their classroom practice using different pedagogy, presenting the content of the lesson using ICT tools they choose, and think what suites their pupils' levels and needs best.

4.8.3 Community of practice (learner)

Learning how to use a tool as Brown et al. (1989) suggested accounts for more than we think; it is how members of certain community see the world, determining how the tool is used, as the way the tool is used reflects the particular accumulated insight of the community itself, meaning that it is not possible to use a tool appropriately without understanding the community, or culture, or context in which it is being used (p. 33). Teachers need to be involved in community of practice to discuss and reflect on their own practices, feel the ownership and learn to acquire knowledge in a historical nature of motivation, desire and socially oriented context (Lave &Wenger, 1991; Maslow, 1987, 1943). Teachers need to understand how to deal with new skills, knowledge and practice. The social context urges teachers to negotiate meanings, interested thought and actions, promote learning and change, thinking and knowing and adapting new ideas, skills to their own classroom practice (Lave & Wenger, 1991).

According to Little (2002) that the " naturally occurring interaction among teachers should enable us to understand how and to what extent professional communities afford opportunities for teacher learning and innovative in teaching practice" (p. 919).The nine participant teachers were scheduled to

meet in three communities of practice sessions during the RP-BCPDP after implementing ICT-based lessons. During the community of practice session, teachers were given the opportunity to present their classroom practice either by videotaped practice or creative ICT-based activities, which they have developed for their pupils learning. Teachers were encouraged and asked to provide written or verbal reflection on their own or on their participating colleagues practice and work, taking into consideration the rules of presenting their reflection in a positive and constructive way to avoid any embarrassment for their colleagues. The aim was to share practice, and develop new knowledge, skills, and ideas and adopt it to improve their own practice. In addition, they were encouraged to understand the changes that might occur as a result of engaging in the community of practice and the amount of cognitive learning among teachers in the social context with a sense of autonomy.

4.9 Data Triangulation

The effectiveness of the triangulation methods rely on the premise that the weakness of one collecting method will be compensated by the other counterbalancing strength of the other method (Jik, 1979 and Rohner, 1977). Jik (1979) found from his investigation of anxiety that using triangulation provided him with more confident interpretations for testing and developing hypotheses, and for unpredictable and context related findings (p. 608). Thus, the purpose of applying triangulation method is to overcome any potential weakness or intrinsic biases and problems that might occur from single methods as well to obtain confirmation of findings through the convergence of multiple sources and different perspectives that represent reality in a particular context. In

addition, it helps to avoid the subjectivity of certain methods such as interview over other methods. In the present study, a combination of two or more methods was used in presenting the findings using the intersubjectivity between methods to understand the process of change and to support the findings with strong evidence.

Cohen et al (2007) define triangulation 'as the use of two or more methods of data collections in the study' (p. 141). The origin of the term triangulation as Cohen et al (2007) stated, is a "technique or physical measurement" (p.141), while Huberman and Milles (1984) define it as multiple sources and modes of evidence (p. 235). However, as everything in research, this method has to be used with care. For example, Patton (1980) emphasizes the "centrality and problematic nature of triangulation as the evaluators using different methods to investigate the same methods, he also suggested that it is to 'study and understand when and why there are differences' (p. 331)" (cited in Mathison, 1988: 13).

Denzin (1987) suggested a typology of four types of triangulation: a) data triangulation which includes (time, space and person); b) investigator triangulation; c) theory triangulation; and d) methodological triangulation (p. 294-307). Cohen and Manion (2007) identified six types of the triangulation: a) time triangulation; b) space triangulation; c) combined level of triangulation; d) theoretical triangulation; e) investigator triangulation; and f) methodological triangulation.

Mathison (1988) defined Denzin's (1987) data triangulation type as something that:

> "[R]efers simply to using several data sources… the inclusion of more than one individual as a source of data. However, Denzin expands the notion of data triangulation to include time and space based on the assumption that understanding a social phenomenon requires its examination under a variety of conditions. So, for example to study the effect of an in[-]service program on teachers, one should observe teachers at different times of school day or year and different settings such as the classroom and the teachers' lounge" (p. 14)

In the present study, I tried to use triangulation method that helps me to understand the process of changes in teachers' practice and beliefs based on the constructed knowledge, as well as, to understand when, why and where the changes have occurred. Thus it was more appropriate to use Denzin's (1987) type of data triangulation which combined three types advocated by Cohen and Manion (2007). However, I have adopt the methodological triangulation which both of the scholars used, which refers to using multiple methods to examine a single phenomenon, because "the use of appropriate multiple methods will result in more valid research findings" (Mathison, 1988; Denzin, 1987 and Webb, 1966).

In addition to the qualitative and quantitative methods of collecting data, I have used the nine participant teachers' reflections on colleagues in the RP-BCPD programme, as they observed each other's practices. Also, I used the pupils' point of view on their teachers practice before and after the study, in order to collect different views and reflection on the same practice and to understand the process of change from different perspectives beside my own.

The biggest advantage of using multiple sources of evidences and data collection methods is the development of "converging lines of inquiry" (Yin, 1994: p. 94). Mathison (1988) emphasizes the value of triangulation as that which "lies in providing evidence such that the researcher can construct explanations of the social phenomena from which they arise" (p. 15). Flick (2002) argues that triangulation is an "alternative to validation and that it is a strategy that adds rigor, breadth, complexity, richness, and depth to any inquiry" (cited in Denzin & Lincoln, 2008: 7). For better understanding of the process of changes or shifts in teachers beliefs, knowledge and classroom practice, I have followed a map of triangulation between the methods of collecting data (see Figure 9). The analysis of each undertaken method of data collection was done separately according to the order of the design study Figure 6, and then each method was studied alone to understand the changes before and after the implementation of the innovative RP-BCPD. The results from each method were used to support the evidences of the process of change that might appear in teacher's classroom practice, beliefs, skills and knowledge. Finally, the findings from all research methods were used to build three case study in order to understand the process of the potential changes resulted from engaging in the innovative RP-BCPD model.

```
┌─────────────────┐                    ┌─────────────────┐
│  Questionnaire  │◄──────────────────►│  S.S. Interview │
│     I & II      │                    │     I & II      │
└─────────────────┘                    └─────────────────┘
```
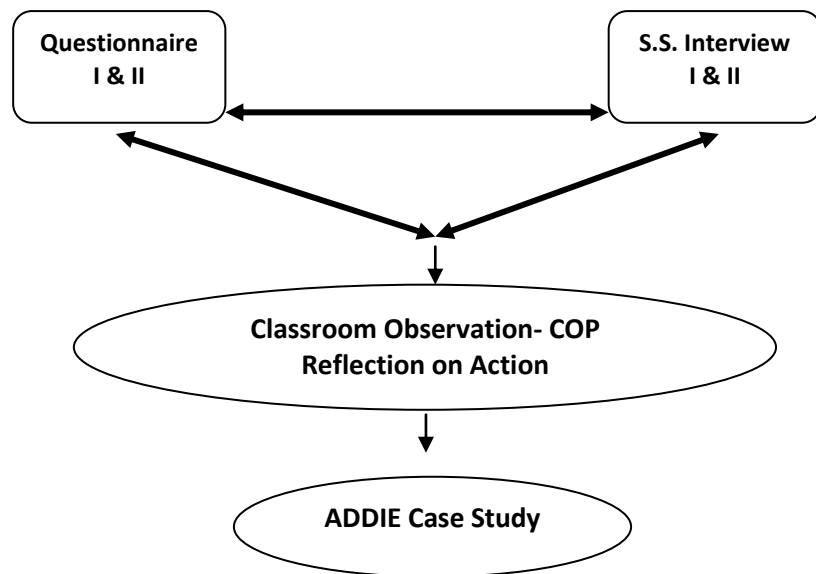
Figure 8: The triangulation map for the present study

4.10   Research sample

Cohen et al., (2007) emphasise the importance of sample size when the researcher attempts to examine the relationships between subgroups and that the "researchers must obtain the minimum size that will accurately represent the population being targeted" (p. 102). The present study required two samples; the first sample for the quantitative study TBS questionnaire, and the second sample was the purposive sample for the qualitative study which were part of the same teachers' samples that participated in the first phase and responded to the first TBS questionnaire study.

4.10.1 Quantitative Sample

The study was introduced for 362 in-service female teachers from four 'future schools' participated in the study from various subject area. A total of 204 self-selected in-service teachers from four Kuwait's primary future schools

responded to the Teacher Beliefs' survey. The sample was limited to female teachers as the Kuwait's primary schools nominate only females teachers to teach both genders at the primary level, which was implemented in response to the suggestions made by the 1998 Educational Indictors study carried out by the Kuwait Institute for advanced Arabic childhood.

The purpose of the first quantitative (Pre) sample of 204 female teachers for the future schools was:

- To understand how teachers 'future schools' self-image themselves as practitioners, practicing teaching and learning inside the classroom.

- To understand how 'future schools' teachers view their pedagogic practice from the traditional and constructivist perspectives.

- To understand what is teachers' status and needs to help design a CPD programme that suites their needs.

The purpose of the second quantitative (Post) TBS completed by the nine participants' teachers was:

- To understand how teacher self-image themselves after participating in the intervention model.

- To investigate the process of change in the nine teachers' pedagogic practice as the result of engaging in the innovative CPD model.

- To use the results of the pre and pro TBS to triangulate between the qualitative and quantitative data collections to understand the factors that affect teachers practice.

4.10.2 Qualitative sample

The qualitative method of inquiry usually seeks an in-depth study focusing on the purposeful sampling (Patton, 2002 and Cohen et al., 2007). The "purposive sampling" as (Cohen, 2007) or the "purposeful sampling" as (Patton, 2002: 230) put it are used by researchers in order to access the "knowledgeable people" (Cohen et al., 2002) who have knowledge about certain issues. Patton (2002) argues that "the logic and power of purposeful sampling lie in selecting information-rich cases for study in depth" (p.230), from which the researchers can learn and its great value is that it results in an in-depth understanding (Patton, 2002).

The purposeful sample of nine teachers was used as a representative of the future schools teachers from different subject areas (see Figure 9). The sample was undertaken based on the study aims and resource of information-rich cases. The purposeful sample included teachers with different specialization in subject matters, years of experience and age, as Patton (2002) suggested that the maximum variation (heterogeneity) in the purposeful sample is a strategy that "aims at capturing and describing the central themes that cut across a great deal of variation" (p. 234). The nine teachers were each as an example of certain subject who could offer an insight about how different subjects affect the integration of ICT. The aim was to explore the impact of the proposed programme on teachers with different subject areas, to understand how teachers with different subjects would change or shift their practice through the integrating ICT.

I have decided to interview teachers in groups based on their schools as it was impossible to meet them separately, as well as to enable the teachers to speak with confidence, to support each other and to generate more valuable data from the groups. Similarly, the pupils from each school were gathered as groups. I have applied nine group interviews with teachers during the study period of six months, and six group interviews with the three groups of pupils.

I was guided by observations and therefore the study sample came from three future schools; nine teachers who were teachers of three classrooms, as each classroom have two main class teachers (science & maths, Literacy and other teachers for other subject matter). The research sample was gathered in three stages based on the research aims. The first two stages of the sampling procedures were based on self-selected participant teachers who agreed to join the study. Schools' managers encouraged teachers to join the study as a professional development course and to learn how to integrate ICT in classroom practice. Then, based on the analysis of the qualitative and quantitative data analysis (see Chapter five & six), three teachers were used as case studies, and representatives of the traditional and constructivist groups emerged from the analysis (see Figure 9 for three sample stages).
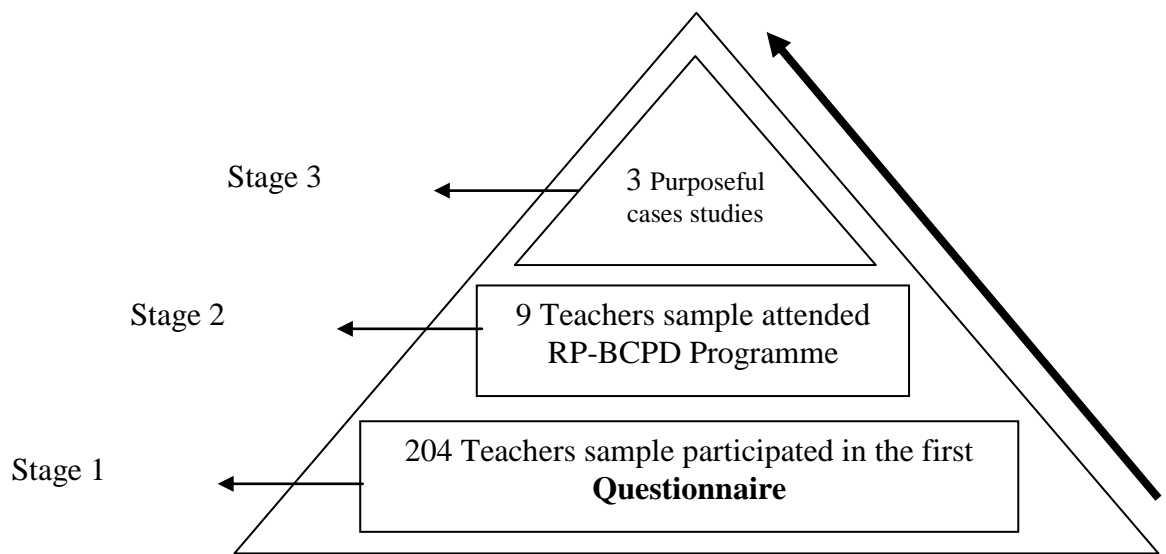
Figure 9: Research sample 3 stages.

4.11   Data analysis

The nature of the collected data, depending on whether it is quantitative or qualitative, predicate the strategy by which the data can be analyzed, depending on whether the way the data was collected concurrently or sequentially (Driscoll et al., 2007). The process of analysing the qualitative data involved the quantitizing of the qualitative data codes to count the number of times that certain code appeared or repeated by the participants (see Chapters Five, Six and Seven). Furthermore, using the quantitizing process to describe the converting of the quantitative data from the participants' evaluations instruments of the RP-BCPD interventions to answer research question (see Chapter Eight). One method can be nested within another method to provide insight into different levels or units of analysis through sequential, concurrent, and transformative procedures (Tashakkori & Teddlie, 1998; Creswell, 2003).

For the purpose of confidentiality, the nine teachers' names were changed and replaced with abbreviated codes. The nine participant teachers' new names were derived from their schools and subject matters, coding as it shows in the below Table 8:

Table 8: Coding of the nine teachers' names.

School name	Teacher's according to subject matter	Code
Al-Farsi = 1	Literature teacher = LiT Science teacher = ScT English Teacher = EnT	LiT1 ScT1 EnT1
Al-Fadel = 2	Literature teacher = LiT Science teacher = ScT English Teacher = EnT Computer Literacy teacher = ClT	LiT2 ScT2 EnT2 ClT2
Assma = 3	Literature teacher = LiT Science teacher = ScT	LiT3 ScT3

Table 9: Types of qualitative and quantitative data collected.

Methods of data collection.	Type of data	9 Teachers	19 Pupils
S-S Interview	Qualitative data	9 SS interviews tape recorded for Teachers in 3 groups	6 SS-interviews videotaped & tape-recorded for pupils in 3 groups
Videotaped Observation	Qualitative data	72 classroom videotaped sessions- 7 videotaped observation of each teacher, 9 videotaped observations LiT2	
Community of practice videotaped and recorded sessions	Qualitative data	3 sessions videotaped or tape-recorded	
Reflective-practice activities		98 reflection activities	
TPOR Structured Observation	Quantitative Data	- Teachers' classroom practice	
Teacher's Beliefs survey (TBS) questionnaire.	Quantitative Data	Pre. 204 T Post. 9 T	
1 Evaluation of COP	Quantitative Data	- Teacher reflection	
2 Evaluation of workshops	Quantitative Data	-Teacher reflection	

4.11.1 Questionnaires TBS data analysis

The revised TBS 50 items questionnaire was conducted to collect data regarding Kuwaiti's future schools teachers' self-reported beliefs survey. The collected data was fed into the SPSS programme version 16.0. The statistical analysis provided descriptive (such as means, standard deviations, frequencies and percentage) and inferential (Chi-square) analysis. The statistics were used to obtain future schools' teachers' perceptions (self-image) of their practice either traditional or constructivist, and whether it was influenced by teachers' years of experiences or degree. A follow-up analysis was undertaken of the nine teachers' responses, to understand the impact on their beliefs (self-image) as a result of participating in RP-BCPD interventions model, as well as to triangulate the results of the questioners with the qualitative findings to understand the process of change(see chapter Five-Seven and Eight, for findings of the SPSS analysis and TBS).The data was saved in my computer and other two places laptop and external hard-desk to keep it safe and for easy access.

4.11.2 Reliability

Cronbach's alpha coefficient was computed for the total scale and the sub-scale to examine the inter-correlations among the items within each construct. The reliability for the total 50 items of the Arabic TBS revealed with r= .87 (see Table 10). According to Gliem and Gliem (2003) an alpha of .8 is a good and probably a reasonable goal (p. 87).

Table 10: The reliability scale statistics.

Reliability Scale Statistics

N of Items	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Mean	Variance	Std. Deviation
50	.860	.870	180.73	314.572	17.736

4.11.3 Normality

The test of Normality, the results of the Kolmogorov-Smirnov statistic, which assesses the normality of distribution of scores, in this case, the Sig. value is .000 (see Table 10), suggesting violation of the assumption of normality which is quite common in larger samples (Pallant, 2007, p. 62). The violation of normality suggests a need to use non-parametric analysis.

Table 11: shows the Tests of Normality of the TBS questionnaire.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Subject in group	.277	196	.000	.834	196	.000
Degree in group	.465	204	.000	.534	204	.000
Age in group	.306	203	.000	.807	203	.000
Years in group	.303	204	.000	.752	204	.000

a. Lilliefors' Significance Correction

4.11.4 TPOR observations data analysis

The analysis of the structured observation TPOR was based on Brown's (1970) analysis method of the observation tool. I have used the Brown's procedures to record the observations and used the descriptive analysis including the frequencies and percentages of teachers' traditional and constructivist practices using Excel software. The scoring of the TPOR is

carried out by first adding the number of check marks for each item, placing a 0, 1, 2, or 3 in the column headed TOT (see Appendix H for results). The totals for all odd-numbered items are reversed (traditional practices), changing 0 to 3, 1 to 2, 2 to 1 or 3 to 0. This reversing procedure permits the absence of traditional practices to be credited to the score and subtracted from the total, and then the totals for all items are added to get a net score. A maximum score of 62*3= 186 indicates a complete constructivist practice and a score of 0 indicates a complete traditional practice. A score of 94 or above indicates the observed practice is constructivist more than traditional, and a score of 93 or below indicates the opposite (Brown, 1970, p. 19).

4.11.5 Teachers' Evaluation form of RP-BCPD interventions

The analysis of the two evaluation instruments of the RP-BCPD model's intervention: workshops and community of practice's evaluation checklists. I have used the descriptive analysis including the frequencies using Excel software to know the number of teachers' responses to each item, in order to understand teachers' views of the PR-BCPD effectiveness in relation to their pedagogic practice. The purpose of the evaluation procedure is to understand teachers' attitude and reflections on the effectiveness of the interventions model, and how it affected their pedagogical and technological knowledge and skills to improve their pedagogic practice. In addition, teachers were the main beneficiary of the intervention model, which is important to understand how to improve and refine the RP-BCPD model based on their assessment to meet their needs (see Chapter Eight).

4.12   Qualitative data analysis

Radnor's (2001) approach to data analysis is based on helping others to order the data so that it is possible for the researcher to consider it clearly and encourage rigor without rigidity. This approach of systematically arranging the data helps the researchers to make sense of the data, to arrive at carefully considered analysis, and to justify their interpretation to the community (ibid, p. 68). According to Ezzy (2002) that "theories are developed through an ongoing dialogue between pre-existing understanding and the data, derived from participation in the world" (p.28). I have applied the thematic method for analyzing the qualitative data collected in my study as Braun and Clarke (2006) suggested that the "thematic analysis should be seen as a foundational method for qualitative analysis" (p. 78), hence, they argued that it "should be considered as a method in its own" (ibid). Braun and Clarke (2006) define thematic analysis as a "method for identifying, analyzing, and reporting patterns [themes] within data" (p. 79). It helps to organize the data and offers the chance to categorize it with flexible steps and codes (ibid). The thematic analysis makes researcher role more active searching thinking of and about the data and creating codes and links from own understanding of the data, understanding participant experiences and realities in rich details in order to answer research questions (ibid, p. 80). The thematic analysis enabled me to move back and forth throughout the entire qualitative data and the analysis phases in order to capture ideas and write down notes (ibid, p. 86). I started by the transcription of the data in order to be familiar with the whole data, and then I moved to the next phases of generating open codes, searching for themes and reviewing them, categorizing and naming themes and writing

down notes and ideas to respond to the research questions. I have used the Nvivo software to organize my thematic analysis and coding system before I transfer it to the Microsoft word software.

In order to use the Nvivo software I have attended a course provided by the Graduate School of Education at St. Luke's College-University of Exeter. I used the notes from the Nvivo course and Bazeley (2007) to manage the analysis of qualitative data collected from the five phases in the ADDIE's. The purpose of the coding analysis with Nvivo is to organize the process of the analysis through generating of codes, categories, themes, and evidence to answer the research questions and objectives.

Coffey and Atkinson (1996) stated "Coding can be thought about as a way of relating our data to our ideas about these data" (p. 27 cited in Boyatzis, 1998: 5). The analysis and coding procedure took several stages starting with the collecting and preparing the data, transcribing the audio recorded interviews and other data such as teachers' reflective activities, journals and the researcher's field notes. Then I translated one interview and the teachers' reflective activities, journals and the researcher's field notes. I have read listened and observed all the interviews and other collected data to identify the main interesting aspects and concepts correlated between the different methods of data collection. This approach was helpful to highlight the most often used repeated actions and methods of teaching and learning for each of the participating nine teachers.

After transcribing and translating the collected data and preparing other data such as videotaped practice and community of practice sessions, I imported all into Nvivo 8, qualitative software for coding and classifying, connecting ideas, creating trees and themes, and making memos and links. To start the with coding of the qualitative data, I decided to code each method of collecting data separately and then linking it to the emerged coding to avoid any confusion that might occur during the managing and reflecting on certain method's findings, as it was my first time to analyze qualitative data and to use the Nvivo software. I have lost my first coded qualitative data because of computer crash, but then I managed to recover most of the first codes and continue with the Nvivo coding system (see Table 9 for more information about the coded data). The coding of the collected qualitative data was based on the interview data analysis and coding categories, as the interview data was coded first and them the rest of the collected data.

4.12.1 Interview data analysis

The semi-structured interviews (SSI) of teachers' and pupils' groups from the three participated future schools formed the main volume of the qualitative data. Three SSI before and six SSI after the implementation stage of the RP-BCPD was conducted over a period of field study. All the interviews were recorded in Arabic language; I translated the first transcribed SSI from Alfarsi' school teachers' group to English (see Figure 12). In order to be sure of the coding classification of the data I gave a few pages of the translated transcribed interview to my Arabic-speaking PhD colleague with the research question, asking to do the coding and then to compare it with my own codes

to ensure that I was on the right track. Then, I completed the rest of the nine SSI thematic analyses using the Arabic version of the transcribed interviews for the purpose of the trustworthiness and credibility of research findings (see Figure 11). Care had to be taken with the accuracy in translating some local Arabic words to English language and back because it might affect or change the meaning of the Arabic words (see Appendix L for the translated transcription of Alfarsi School's group, p. 468). I started with creating free nodes (open codes) from the transcribed and translated interview, and then I repeated the same step with all Arabic transcribed interviews adding under the created codes, as well as creating new codes. Furthermore, the codes that were created from other qualitative data collecting methods added under the same open codes for triangulation purposes (see Figure 10 for open codes).
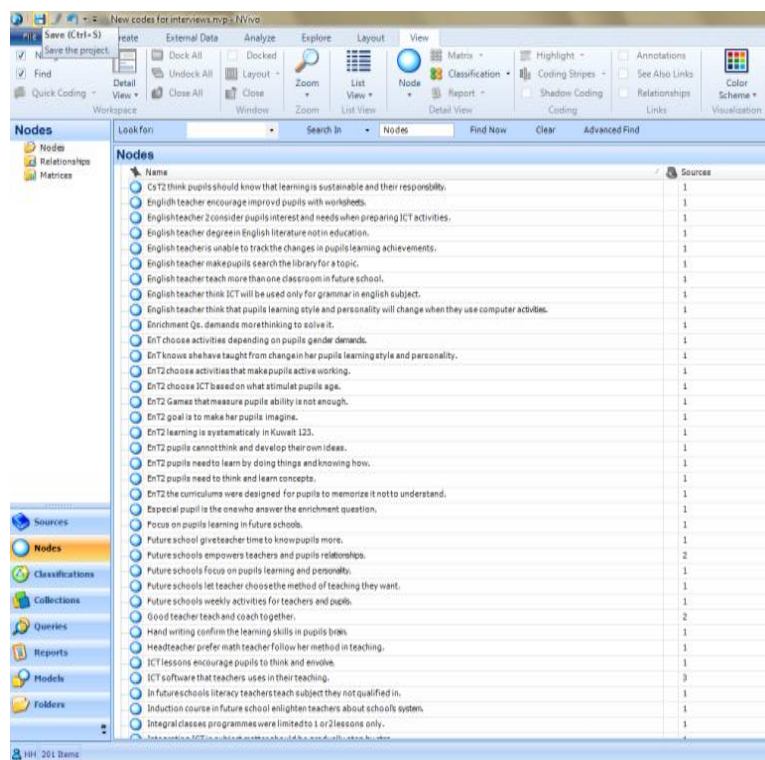
Figure 10: Nvivo coding analysis: Open codes
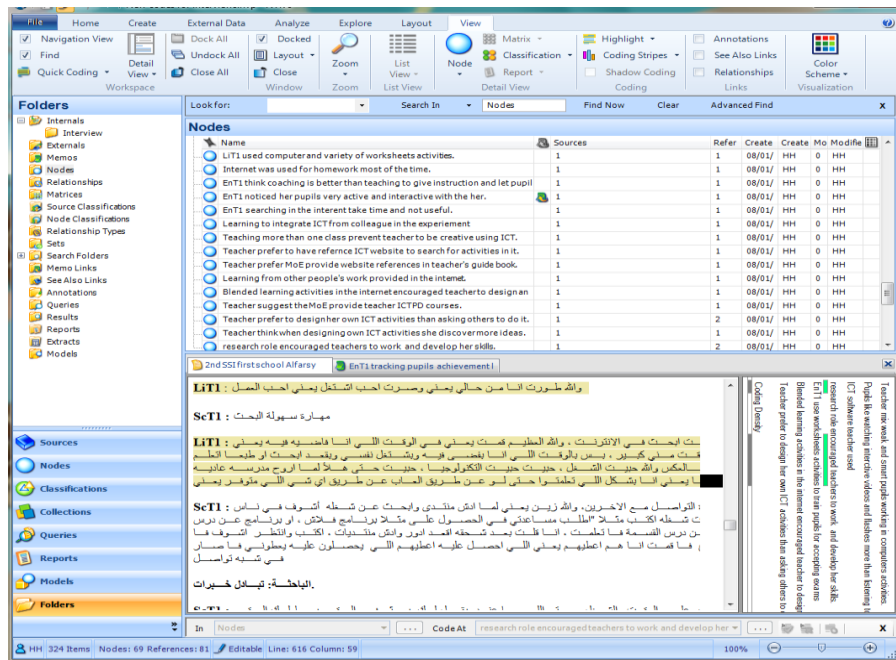
Figure 11: Nvivo Arabic coding free nodes.
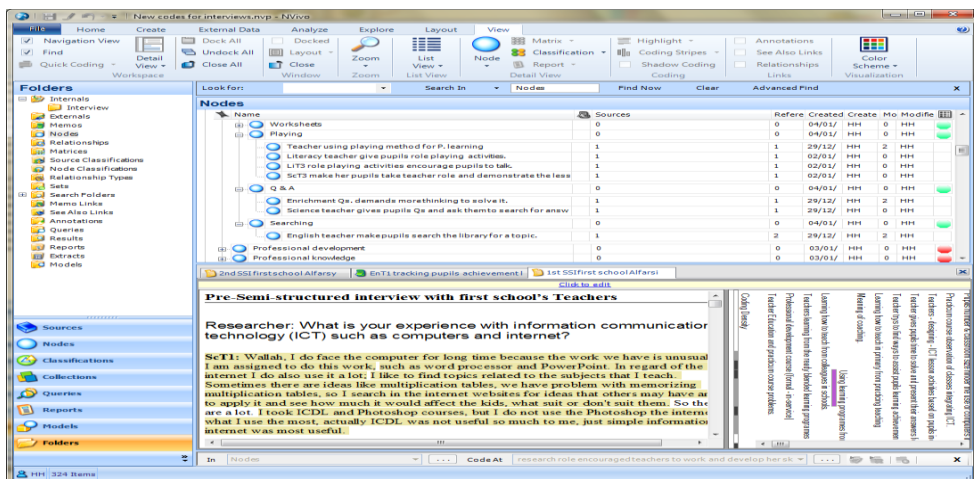
Figure 12: Nvivo English coding free nodes.

The topics and categories of the coded data were done inductively and deductively: inductively which are the topics and categories that initiated from the research questions and methods; and deductively for the ones that emerged from the dialogue with the data as I became more familiar with the transcribed content (Radnor, 2001). The same procedures were repeated with all transcripts of teachers and pupils' semi-structured interviews using the first codes, topics and categories that have emerged from the first coding, then, the new emerged codes and topics were linked to the previous ones or new

topics and categories were developed depending on the new coded data (see

Figures 13 and 14).
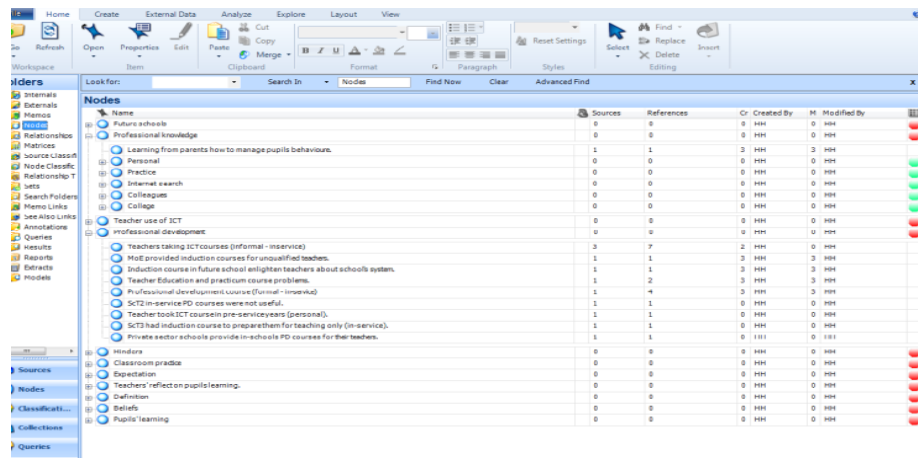
Figure 13: NvivoSecond coding making tree nodes (Categories step).
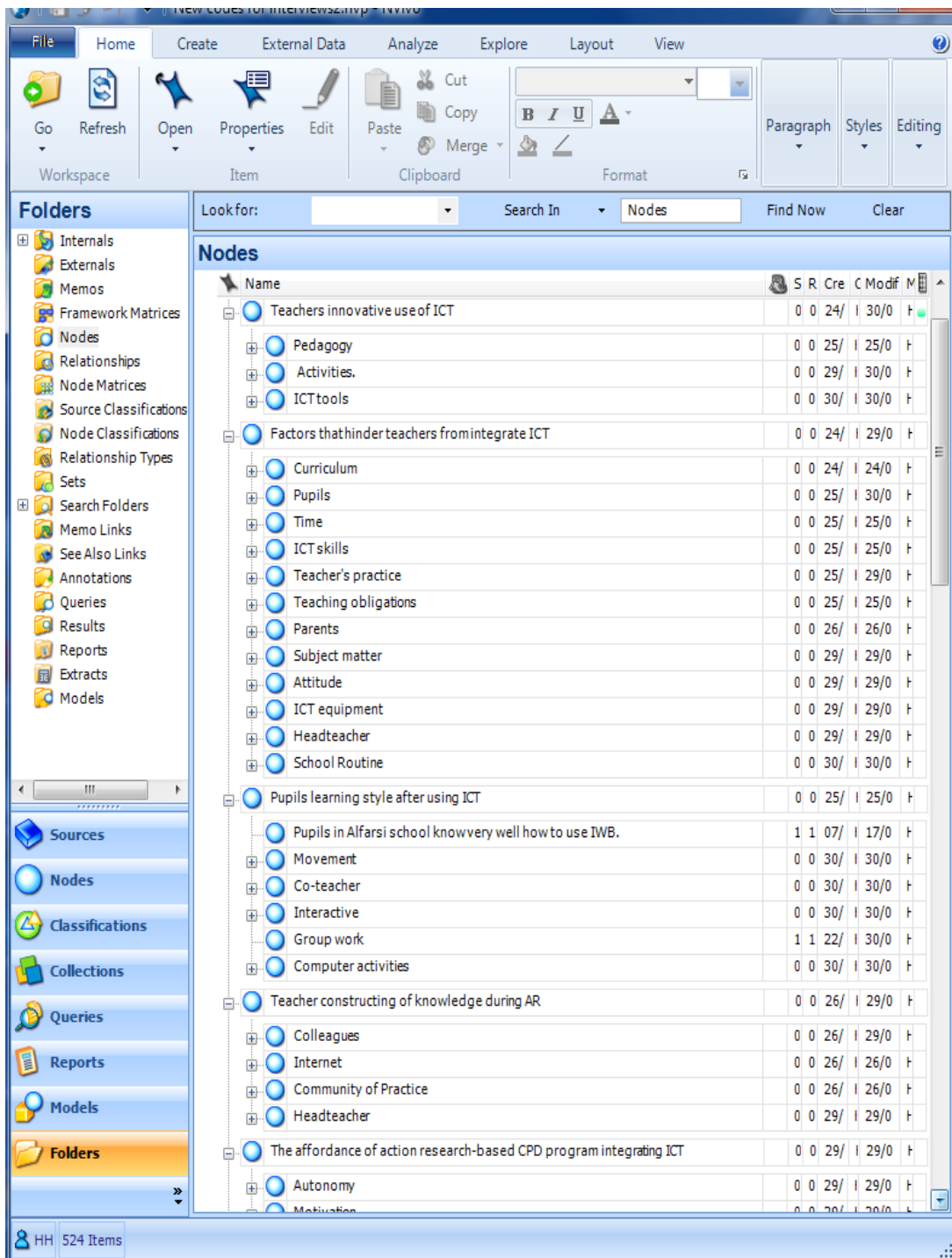
Figure 14: Nvivo Final coding (Themes' stage)

4.12.2 Observations and audio analysis:

For the triangulation purposes and the validity of data I have videotaped all the classroom observation sessions taking in considerations teachers, pupils,

parents, schools' managers and district agreement, the videos were converted from VR_MOVIE.VRO to VC or WMA or MPEG to be suitable for Nvivo use. The tracks of the videos and audio recorded sessions were coded and added to the related sub-categories and categories which were created from the interview coding to develop the relationship between the emerged aspects and concepts, with attention to the new emerged codes, and sub-categories.
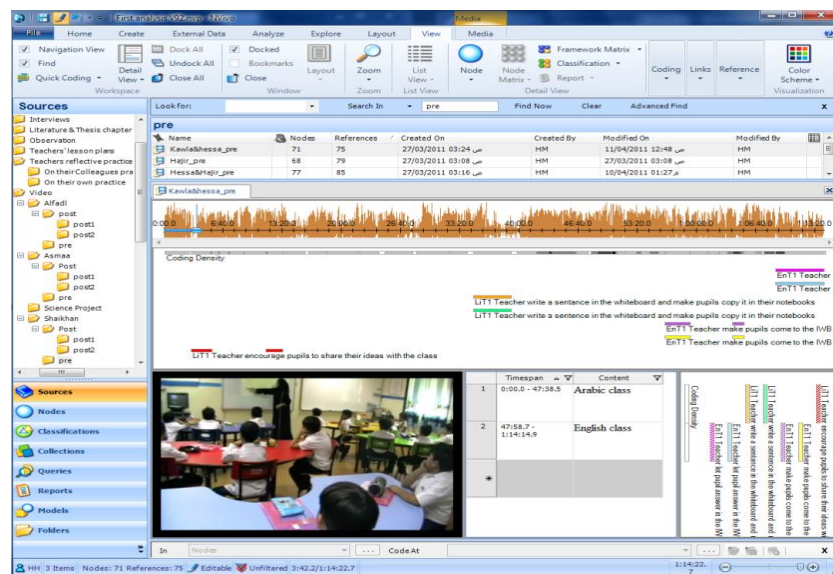
Figure 15: Example of coding videotaped classroom practices.

In relation to the Tape-recorded Community of practice sessions I have applied the same procedure of coding with the tape-recorded community of practice session and then I gathered the coding separately.

4.12.3 The Reflective practice activities data analysis

The data from teacher RP activities were typed into Microsoft word processor imported into Nvivo and coded separately. I coded each method separately then linked it under the sub-categories and categorised separately to be able to use them and link them for the triangulation purposes between methods.

4.12.4 The researcher's field-notes data analysis

The researcher kept a dairy for field-notes, the field-notes were used for the triangulation purposes, improving research instruments and giving feedback. The research's field-notes were coded similarly to the semi-structured interviews (content analysis), in order to add the richness and trust wordiness of the data and presentation.

The categories were grouped separately under each method and linked to each others, then copied to the Microsoft word processor to be used and presented in the findings chapters to answer research questions and aims Table 12 shows the coding system that was created for each qualitative method, in which were used to answer the research questions using the triangulation techniques between methods in order to support the evidences of changes.

4.13 Validity, Credibility and Reliability

Research credibility, validity and reliability are key attributes of a rigorously carried out studies, accepted by academic peers and wider community. Onwuegbuzie and Johnson (2006) explained the set criteria presented by Lincoln and Guba (1985) for the mixed methods approaches which can be more acceptable to the qualitative researchers. The four criteria types are: credibility (replacement for quantitative concept of internal validity); transferability (replacement for quantitative concept of external validity); dependability (replacement for quantitative concept of reliability); and confirmability (replacement for quantitative concept of objectivity) (p. 49). Maxwell (1992, 2005) identified another five types and classification for the

qualitative research validity. For the present study, Maxwell's definition of the generalizability in the qualitative research is particularly pertinent which is to what extent the researcher can generalize the account of one situation, context or population to other individuals, context, time and settings. Maxwell (1992, 2005) referred to internal generalizability as a conclusion within the underling setting or group, as rather more important than external generalizability of qualitative research which is beyond the group, setting, time or context. As the reliability aims for repeatability, stability and similarity of measurements in the quantitative research, it is used for the purpose of generating understanding when applied to the qualitative research. furthermore, while the validity is used to determine whether the measures are accurate and measuring what they are intending to measure in quantitative research, when it is applied to qualitative research it means the quality rigor and trustworthiness of the research (Golahshani, 2003; Lincoln & Guban, 1985). Golafshani (2003) pointed out that in qualitative research reliability and validity is replaced by the idea of trustworthiness, which is defensible and recommended triangulation as a way to establish this trustworthiness of the results of a study.

4.13.1 Validity

For the purposes of establishing the trustworthiness of the research, I have taken in consideration to make notes during the progress of the research to update my research instruments and have accurate records of participants responds. In addition, to ensure the validity of collected data from interviews, I have sent the transcribed interviews for three of the participants for the

purpose of confirming the accuracy of the data before analyzing and building case studies.

4.13.2 Credibility

Applying combined levels of triangulations between and within the research methods increased the credibility of the exploration model. The analysis from three principles levels are used in the social sciences: the individuals, the interactive, and the collectivities levels (Cohen et al., 2007). I have applied multiple sources of data collection: interviews (teachers and pupils); two methods of classroom observation (structured TPOR and videotaped practices); reflection in and on practice in two levels (individual reflection and community of practice reflection), and the pre and post-questionnaire surveys (TBS) for the triangulation of the data. Strauss et al. (1964) argued that employing different observers to observe the same event independently from each other and then comparing their observations increases the reliability of observations. The richness of the data offered me a chance to review and examine the data from different perspective to gain an understanding of the process of changes in teachers' beliefs, knowledge and how it might affect teachers' classroom practice as a result of using ICT. The triangulation method helped to produce a variety of case studies that could be used to support the research objectives and aims, and provide answers for the research questions. In addition, it helped to evaluate, the effectiveness of the RP-BCPD model.

4.13.3 Reliability

In order to establish the dependability of findings when answering research questions. In the pursuit of the reliability of the coding process of the qualitative data, I have used the help of a senior PhD researcher colleague at the University of Exeter, who has an experience with coding interview data, to check the reliability of the development of coding system categories and sub-categories "[t]he code development process is typically better when it is done with others" (Boyatzis, 1998: 11). I have provided details of data collecting and analyzing, the creating of coding system, the emerged categories and sub-categories and explained procedural I undertook in my data analysis for other researchers to follow.

4.14   Ethical issues

The ethical issues are raised from the kind of research problem investigated by social scientist and the methods they are using to obtain the credibility, validity and reliability of the collected data (Cohen et al., 2007). In an attempt to collect data about the participants, researchers have to pay close attention to the matters of responsibility, safety, and rights related to the participants who are being investigated in the study and the researchers themselves. (see Appendix K for Ethical Issues). The ethical part of the design research implementation and data collection has to include several procedures, as follows:

Informed consent

As the design research involved a variety of data collection methods such as interviewing, classroom observation, videotaping practices and community of practice, recording and videotaping interviews, it was the researcher's

obligation to acquire the respect and trust of the teachers and pupils involved in the study by requesting a written acceptance and permission from teachers, and informing parents and schools managers to implement the data collection methods (Cohen et al., 2007). (see Appendix K for Ethical Issues).

Gaining access

In order for the researcher to access the Kuwaiti's public primary schools, permission from the Ministry of Education, schools districts and parents had to be obtained prior to undertaking the research in the targeted schools and community (Cohen et al., 2007). I have submitted a letter to the Kuwait Embassy's Culture Office in London explaining the research title, aims, methods, and the benefits of the study for the schools, teachers and pupils. Also, I have explained, about my obligations toward the participants' anonymity and data confidentiality, as well as the target school's level and names, and the districts in which the schools are located in Kuwait. The letter went through the official procedures from London to Kuwait Civil Service Commission, to the Ministry of Education, to schools districts, and finally, to the four public future schools and the parents. (see Appendix K for Ethical Issues).

Confidentiality

The teachers were assured about the voluntary nature of their participation in the research process as the RP-BCPD was implemented in six months of the school's academic year 2009-2010. The teachers were granted to leave withdraw from the experiment for any reason they considered as important for them, as well as guaranteed the right for personal confidentiality, and the right to withdrawn part or all of the collected data related to her practice. The

teachers were also provided the right to review the interview drafts or videotaped session, and practice and offer comments or suggest changes regarding their official approval to use the data (see Appendix K for more information about the Ethical certificate)

4.15 Conclusion

This chapter outlined the research paradigm, methods for the model. The discussed from the philosophical perspective of the paradigm and the justification for the chosen methodology, as well as outlining the practical methods for data collection and the analysis process using SPSS and Nvivo software. Furthermore, the chapter presented the design research framework, models and the design of the study. The ethical considerations were highlighted, within the approved framework. The following chapters Five to Eight will focus on the PR-BCPD intervention model case study.

Chapter Five

Case study: Phase 1. Identifying Teachers status in 'Future Schools' and needs

5. Introduction

This chapter is the first of four chapters to present the five phases of the case study of the ADDIE intervention model. The first section in this chapter will explain the presentation of the findings chapters based on the five phases of the ADDIE model. Then, the chapter will focus on the findings from the quantitative and qualitative analysis of the first phase such as: Teacher beliefs survey TBS, the teacher practice observation records TPOR. Furthermore, the chapter will present the themes which emerged from the open-ended semi-structured interviews. The findings from the first phase of the ADDIE model begins with the first teachers' survey TBS, which covers a large sample of the Kuwaiti' teachers from the 'future schools' to have an over view about teachers beliefs and self-image toward their pedagogic practice, as they are situated in such an advanced schools in relation to the learning environment, and the use of technology tools. Then, the chapter will focus in-depth on the findings from the first phase related to the nine participant teachers from the three future schools, in order to understand the process of potential changes and improvement in teachers' pedagogic practice. The triangulations between the quantitative and qualitative findings from the first phase were used to identify the current future schools status, teacher's needs and problems with the existing pedagogic practice.

5.1 The structure of the finding chapters based on the ADDIE model

In order to examine the intervention RP-BCPD programme and its impact on the 'future schools' teachers' pedagogic practice, the findings are presented as a case study according to the five phases of the explorative ADDIE model in Figure 6 (see Chapter Four, p.172). Chapter Five focuses on identifying the existing problems and the nine participant teachers reflection on their beliefs, knowledge and practice related to the analysis phase of the 'future schools' context. Chapter Six explains the process related to the design of the RP-BCPD programme phase based on the results from the analysis phase, furthermore, the developing phase related to teachers skills and knowledge through workshops and the learning communities, and the nine teachers' reflection on their pedagogic practice which is related to the implementation of the model phase. Chapter Seven and Eight present the findings from the evaluation phase: Chapter Seven focused on the teachers engaging in or disengaging from the change process related to evaluating of the RP-BCPD, while Chapter Eight presents teachers' reflection on and evaluation of the RP-BCPD interventions, which helps to improve the RP-BCPD model for the Kuwaiti context.

5.2 Process of analyzing TBS questionnaires

204 self-selecting teachers from various subject matter area participated in the first TBS questionnaires from four 'future schools'. Teachers were asked to respond to the 50 item self-report questionnaire using a five-point rating scale (1 strongly disagree - 2 disagree - 3 sometimes – 4 agree – 5 strongly agree). The teacher beliefs survey consists of four categories as it explained

in the methodology (Constructivist Teaching – Behavioural Teaching – Constructivist Management – Behavioural Management). The first TBS was undertaken to understand the current teachers' beliefs (self-image) regarding their pedagogic practice, and if it were influenced as a result of involving in the 'future schools project'. However, it also helped to understand this study can contribute to teachers existing reality and what it can offer them. Furthermore, the survey was used to track the changes in nine participant teachers' beliefs (self-image) regarding their pedagogic practice, after participating in the proposed intervention model of a reflective practice- based continuing professional development, which were presented in Chapter Six. The following Table 12 shows the demographic variables of the 204 participants.

Table 12: The demographic variables for the 204 participants in TBS.

Variables	Sub-variables	Number	Percentage
Gender	Female	204	100
Age	22-25	44	21
	26-35	124	60.8
	36-45	31	15.2
	45-above	3	1.5
	Missing	2	1.0
Degree	College	8	3.9
	University	172	84.3
	Higher Diploma	22	10.8
	Master	2	1.0
Teaching experience	Less than 5	107	52.5
	Less than 10	60	29.4
	Less than 15	22	10.8
	Less than 20	12	5.9
	20 and above	3	1.5
Subject	Literacy	66	32.4
	Science &math	81	39.7
	Computer studies	4	2.0
	English	34	16.7
	Others	11	5.4
	Missing	8	3.9

The teachers had to complete the demographic information such as age, level of higher education, teaching experience and subject matter they are teaching in future schools. Teachers' age range was between 22-45 years old. The teachers were classified into four degree categories: 180 (88.2%) out of 204 teachers had undergraduate degrees from university and college, 22 teachers had a higher diploma in education and two of the teachers had a master degree. Teaching experience for the sampled teachers were mostly new teachers 107 (52.5%), with less than five years and the rest were between less than 10 to 20 years and above. The participants in the quantitative sample included teachers teaching a variety of subject matters such as literacy, science and maths, computer studies and other subjects; eight teachers did not specify what they teach. The quantitative sample of 204 teachers from the four future schools were a sample representative of the 'future schools' population as they were a collection of all subject areas which was very helpful to have the qualitative sample of teachers from the overall number of participants. The study was implemented in 'future schools' only, which are six primary schools (boys' and girls' schools), are allocated in three school's districts out of six districts. The other three school's districts did not have any of the primary schools accepted to join the national project of 'Future Schools" project. In general, the quantitative sample can be considered as a good sample of Kuwait's public schools' teachers as the six 'future schools' are part of the public schools having the same education system and curriculum.

5.2.1 Findings related to teachers' beliefs about constructivist teaching

Teachers' responses to the first category of the TBS Table 13 shows that they tend to be more constructivist in their teaching as their responses to CT's 18 items around (Sometimes, Agree and strongly agree). Teachers responses to item 11 shows that the majority of 'future schools' teachers beliefs are not aware of the overlaps of the content and skills between the subjects that they are teaching as the science and literacy teachers teach more than two subjects each. 49.5% of teachers responded with 'disagree' while 34.8% responded 'sometimes' to item 11. This underlines the importance of content knowledge on teachers' practice which prepares and enables them to understand and teach more than one subject and be aware of the overlaps of content and skills between subjects (see Table 13).

Table 13: Frequency and percentage of teachers' responses to Constructivist Teaching.

	CT (Constructivist Teaching)	SD	D	ST	A	SA	N/A
2	I believe that expanding on students' ideas is an effective way to build my curriculum.	0	9 (1.0)	36 (17.6)	89 (43.6)	69 (33.8)	1 (0.5)
4	I invite students to create many of my bulletin boards.	4 (2.0)	14 (6.9)	64 (31.4)	80 (39.2)	39 (19.1)	3 (1.5)
8	An essential part of my teacher role is supporting a student's family when problems are interfering with a student's learning.	1 (0.5)	-	18 (8.8)	61 (29.9)	121 (59.3)	3 (1.5)
11	I teach subjects separately, although I am aware of the overlap of content and skills.	27 (13.2)	74 (36.3)	71 (34.8)	18 (8.8)	8 (3.9)	6 (2.9)
13	I involve students in evaluating their own work and setting their own goals.	8 (3.9)	17 (8.3)	73 (35.8)	80 (39.2)	24 (11.8)	2 (1.0)
17	I adjust my lesson plan based on results of homework assignments.	7 (3.4)	24 (11.8)	58 (28.4)	79 (38.7)	35 (17.2)	1 (0.5
18	I make it a priority in my classroom to give students time to work together when I am not directing them.	11 (5.4)	31 (15.2)	69 (33.8)	72 (35.3)	20 (9.8)	1 (0.5
21	I make it easy for parents to contact me at school anytime.	29 (14.2)	48 (23.5)	52 (25.5)	48 (23.5)	25 (12.3)	2 (1.0)
22	I make it easy for parents to contact me at home only if it urgent.	57 (27.9)	42 (20.6)	50 (24.5)	40 (19.6)	12 (5.9)	3 (1.5)
23	I encourage students to discuss conflicts in group meetings.	3 (1.5)	11 (5.4)	52 (25.5)	101 (49.5)	36 (17.6)	1 (0.5
28	I invite parents to volunteer in or visit my classroom almost any time.	15 (7.4)	49 (24.0)	61 (29.9)	60 (29.4)	19 (9.3)	-
29	I guide students in finding their own answers to academic problems.	4 (2.0)	6 (2.9)	30 (14.7)	125 (61.3)	38 (18.6)	1 (0.5)
34	I encourage parents to follow up on classroom activities with students at home.	3 (1.5)	9 (4.4)	21 (10.3)	91 (44.6)	80 (39.2)	-
35	I believe in developing my classroom as a community of learners.	2 (1.0)	4 (2.0)	44 (21.6)	100 (49.0)	37 (18.1)	17 (8.3
36	I encourage students to suggest ideas for arranging our classroom.	3 (1.5)	1 (0.5)	26 (12.7)	104 (51.0)	69 (33.8)	1 (0.5)
39	I often create thematic units based on the students' interests and ideas.	-	4 (2.0)	36 (17.6)	106 (52.0)	57 (27.9)	1 (0.5)
41	I encourage discussions of different opinions and reasons.	1 (0.5)	9 (4.4)	40 (19.6)	106 (52.0)	46 (22.5)	2 (1.0)
42	I believe it is important to involve students in revising classroom rules as needed.	2 (1.0)	10 (4.9)	74 (36.3)	89 (43.6)	28 (13.7)	1 (0.5)

5.2.2 Finding related to teachers' beliefs about behavioural teaching

The teachers' responses to Items 10 and 46 in the Table 14 show teachers responses was 90.2% and 57.4% (agree and strongly agree) respectively, as well as item 43 with 88.7% (disagree and strongly disagree), which indicate

beliefs in a more behaviorist textbook orientation (traditional) approach beliefs. Teachers' responses to the second category of the TBS survey indicate that teachers tend to have a mix of constructivism and behaviorist approaches about classroom practice, but the constructivism is overshadowed by the behaviorist approach (traditional classroom practice).

Table 14: Frequency and percentage of teachers' responses to Behavioural Teaching.

	BT (Behavioural Teaching)	SD	D	ST	A	SA	N/A
1	It is important that I establish classroom control before I become too friendly with students.	91 (44.6)	73 (35.8)	19 (9.3)	9 (4.4)	10 (4.9)	2 (1.0)
7	I base student grades primarily on homework, quizzes, and tests.	51 (25.0)	107 (52.5)	32 (15.7)	9 (4.4)	3 (1.5)	2 (1.0)
10	To be sure that I teach students all necessary content and skills, I follow a textbook or workbook.	3 (1.5)	1 (0.5)	12 (5.9)	111 (54.4)	73 (35.8)	4 (2.0)
16	I believe students learn best when there is a fixed schedule.	60 (29.4)	83 (40.7)	34 (16.7)	17 (8.3)	7 (3.4)	3 (1.5)
30	I generally use the teacher's guide to lead class discussions of a story or text.	26 (12.7)	95 (46.6)	57 (27.9)	19 (9.3)	5 (2.5)	2 (1.0)
31	I prefer to assess students informally through observations and conferences.	7 (3.4)	17 (8.3)	59 (28.9)	91 (44.6)	28 (13.7)	2 (1.0)
33	I find that textbooks and other published materials are the best sources for creating my curriculum.	9 (4.4)	49 (24.0)	89 (43.6)	43 (21.1)	12 (5.9)	2 (1.0)
43	I believe students learn most effectively when learning tasks are broken down into small sequential steps.	72 (35.3)	109 (53.4)	20 (9.8)	2 (1.0)	-	1 (0.5)
46	It is more effective to provide students with the information they need to know, rather than encouraging them to experiment.	7 (3.4)	24 (11.8)	55 (27.0)	85 (41.7)	32 (15.7)	1 (0.5)
49	I believe that encouraging competition among students motivates them to learn more.	116 (56.9)	69 (33.8)	16 (7.8)	3 (1.5)	-	-

5.2.3 Finding related to teachers' beliefs about constructivist management

Teachers' responses to constructivist management category indicate that teachers hold constructivist beliefs toward the category's items. However, teachers' responses to items 26 and 32 (see table 15) are 69.1% and 63.2% respectively (agree and strongly agree) indicate that teachers' beliefs tend to be constructivist about classroom managements, though it shows the

contradiction with teachers' responses to item 46 (see Table 14) in the behavioral teaching category. It shows teachers role as provider and hold traditional classroom teaching beliefs than facilitator and constructivist. They preferred not to encourage pupils to experiment, and then they expect that pupils able to work independently when they did not have chance in practice. In addition, they view themselves as learning with their pupils in the classroom, while they preferred the transmission of knowledge. It is a conflict between how teachers self-image themselves in teaching and classroom management (see Table 15).

Table 15: Frequency and percentage of teachers' responses to Constructivist management.

	CM (Constructivist management)	SD	D	ST	A	SA	N/A
9	I operate a democratic classroom because I believe it promotes social learning.	1 (0.5)	4 (2.0)	28 (13.7)	88 (43.1)	82 (40.2)	1 (0.5)
12	I encourage students to propose and negotiate new classroom rules if they feel the current rules are not working.	6 (2.9)	14 (6.9)	47 (23.0)	84 (41.2)	51 (25.0)	2 (1.0)
19	I encourage students to solve internal problems independently when doing group work.	5 (2.5)	9 (4.4)	49 (24.0)	95 (46.6)	43 (21.1)	3 (1.5)
20	I would describe my students as co-managers of classroom procedures and events.	4 (2.0)	13 (6.4)	58 (28.4)	87 (42.6)	39 (19.1)	3 (1.5)
24	Cross-curricular activities are important to a student's development (e.g., writing in social studies, reading in math).	5 (2.5)	6 (2.9)	44 (21.6)	97 (47.5)	48 (23.5)	4 (2.0)
26	For assessment purposes, I am interested in what students can do independently.	2 (1.0)	8 (3.9)	50 (24.5)	105 (51.5)	36 (17.6)	3 (1.5)
27	I encourage students to resolve conflicts independently.	7 (3.4)	20 (9.8)	83 (40.7)	62 (30.4)	31 (15.2)	1 (0.5)
32	I function in my classroom as a learner and partner in learning with my students.	-	13 (6.4)	57 (27.9)	100 (49.0)	29 (14.2)	5 (2.5)
44	When children request my assistance, I turn the decision-making responsibility back to the child.	4 (2.0)	20 (9.8)	67 (32.8)	86 (42.2)	26 (12.7)	1 (0.5)
47	I view conflicts between students as opportunities to foster their social and moral development.	8 (3.9)	23 (11.3)	50 (24.5)	79 (38.7)	40 (19.6)	4 (2.0)
50	I encourage students to monitor their own behaviors rather than comply with my authority.	1 (0.5)	6 (2.9)	38 (18.6)	73 (35.8)	86 (42.2)	-

5.2.4 Findings related to teachers' beliefs about behavioural management

The majority of teachers' responses, 56.4% (disagree and strongly disagree), 27.9 % (sometimes) to item 6, 61.3% to item 14 (disagree and strongly disagree) and 68.6% to item 25 (agree and strongly agree) shows teachers beliefs as approaching behaviorist (traditional practice) transmission of knowledge. Teachers' responses to behavioral management category indicated more behaviorist beliefs (traditional classroom management) than constructivist. Teachers' responses to items 37, 38, 45 and 48 (see Table 16) show a contradiction with reality of teachers practice, as the majority of teachers responded 'disagree' and 'strongly disagree' about the importance of enforcing classroom rules, when they do enforce classroom rules in reality. The findings from the observation instruments: teacher practice observation records TPOR and videotaped classroom practice show that teachers spend most of the class time to manage pupils' behavior, or prizing pupils for right answers and following rules (see Chapter Seven case studies as an example).

Table 16: Frequency and percentage of teachers' responses to Behavioural management.

	BM (Behavioural management)	SD	D	ST	A	SA	N/A
3	I prefer to cluster students so they can work together in groups.	9 (4.4)	12 (5.9)	74 (36.3)	70 (34.3)	38 (18.6)	1 (0.5)
5	I prefer to use one table so they can work together.	24 (11.8)	52 (25.5)	74 (36.3)	40 (19.6)	11 (5.4)	3 (1.5)
6	I like to make curriculum choices for students because they can't know what they need to learn.	24 (11.8)	91 (44.6)	57 (27.9)	23 (11.3)	6 (2.9)	3 (1.5)
14	I wait for students to approach me before offering extra help.	48 (23.5)	71 (34.8)	33 (16.2)	27 (13.2)	23 (11.3)	2 (1.0)
15	When there is a dispute between students in my classroom, I try to intervene immediately to resolve the problem.	79 (38.7)	83 (40.7)	28 (13.7)	9 (4.4)	4 (2.0)	1 (0.5)
25	I immediately tell students the correct answers when they cannot figure them out by themselves.	7 (3.4)	12 (5.9)	40 (19.6)	100 (49.0)	45 (22.1)	-
37	It is more important for students to learn to obey rules than to make their own decisions.	23 (11.3)	73 (35.8)	63 (30.9)	37 (18.1)	8 (3.9)	-
38	When rules don't work, I change the rules based on my professional judgment.	43 (21.1)	95 (46.6)	56 (27.5)	5 (2.5)	5 (2.5)	-
40	Rewarding students for being good citizens is a good way to teach students to care about one another.	2 (1.0)	2 (1.0)	32 (15.7)	79 (38.7)	89 (43.6)	-
45	It is important for teachers to reward students for following classroom rules.	106 (52.0)	81 (39.7)	14 (6.9)	-	3 (1.5)	-
48	It is very important that teachers enforce classroom rules once they are established.	44 (21.6)	81 (39.7)	50 (24.5)	19 (9.3)	8 (3.9)	2 (1.0)

5.1 Findings related to the nine participant teachers

5.1.1 TBS survey

The nine teachers who participated in the study were a representative of the future schools teachers from different subject areas to join RP-BCPD. The purpose of the survey was to track the changes and shifts in the nine teachers' beliefs and how they self-image themselves after participating in the RP-BCPD interventions model (see chapter Seven and Eight for more details). The analysis of the survey data shows that the nine participant teachers self-image themselves as a constructivist in their pedagogic practice and classroom management.

Table 17: The demographic variables of the nine teachers participating in the RP-BCPD.

	Subject Teaching	Degree	Age	Yr of experience
LiT1	Arabic, Islamic, social, national, life skills	B. Arabic literature	22-25	Less than 5
ScT1	Science, Math, life skills	B. Science Ed	26-35	Less than 10
EnT1	English	B. E Literature	26-35	Less than 5
LiT2	Arabic, Islamic, social, national, life skills	Master in Arabic	26-35	Less than 15
ScT2	Science, Math, life skills	Master in Math	26-35	Less than 10
CIT2	Computer, life skills	B. Business administration	26-35	Less than 5
EnT2	English	B. E Ed	26-35	Less than 5
LiT3	Arabic, Islamic, social, national, life skills	B. Arabic literature	36-45	Less than 20
ScT3	Science, Math, life skills	B. Science Ed	22-25	Less than 5

The shaded cells in Table 17 show that only five certified teachers out of the nine participants who are graduated from Educational or Basic Education College. This gap was emerged from data, which needed more consideration when interpreting the research findings related to uncertified teachers. Furthermore, it was used to understand the differences between both certified and uncertified teachers' self-image, as they were involved in the intervention model inquiring and finding solutions of integrating ICT (see Chapter Seven).

5.2 Teacher perception of their pedagogic practice

The first qualitative analysis was undertaken to grasp the nine teachers' existing beliefs and knowledge about classroom practice and ICT pedagogy which underpin their teaching methods. Teachers' perception of teaching and learning with ICT was the first topic under the initial qualitative analysis. Three main Themes were constructed from the first qualitative and quantitative data

analysis under this topic which is teachers' beliefs knowledge and reflection on their existing pedagogic practice. This section presents the three themes with the categories and sub-categories to enable readers to understand the 'future schools' teachers' status, and needs according to their cultural context before participating in the RP-BCPD intervention model.

5.2.1 Teachers' existing Beliefs

Knowing teachers existing beliefs helps to have a better understanding of teachers' pedagogic practice and how their existing beliefs inform their classrooms practices. Four sub-categories emerged under beliefs theme: teacher's beliefs about teaching definition, pedagogy and roles which are presented below.

a) Beliefs about teaching

Five out of the nine participated teachers expressed their beliefs about what teaching means for them. Three of them think that teaching means how they make pupils learn independently from the teacher:

> *"Teaching means how I make the kid learn, if I have a concept how would I deliver it, and what the method that I use to teach" (LiT1).*

> *"Teaching for me, to teach the kid how to learn, it says: teach me how to learn. So he will not need me all the time, needs the teacher to repeat the lesson, and so he might have the ability to learn and search" (ScT1).*

And EnT2 said:

> *"How can pupil do and present things alone" (EnT2).*

Also EnT2 thinks that teaching is *"to acquire things"* meaning that the teacher has to make pupils master a skill, or experience, or to think, while ScT2 thinks that teaching is *"The process of communication between teacher and learner*

to reach a conclusion based on the availability of external conditions and internal mutually inhibitory or stimulating". CIT2 is one of unqualified teachers for teaching in primary schools. She has a different definition of teaching, and she thinks that *"the pupil must understand that education is something continuous, it is not important that learning has to be inside the school but he/she can learn all the time in and out of schools".* EnT1 is also an unqualified English teacher, and she thinks that teaching is to *"teach the pupil and lead him to reach his goal".*

Teachers' beliefs about learning were one of the codes that emerged from the analysis. Learning from the teachers' point of view in general had a constructivist meaning. Six out of the nine teachers shared their beliefs about pupils' learning that it is to acquire a skill or knowledge:

> *"Learning should not be just a transmission of knowledge and expecting pupils to learn. I mean I am the information provider most of the time" (LiT1).*

Also, EnT2, ScT1, ScT2 and CIT2 defined learning as a way that pupils should *"acquire"* skills and knowledge through classroom activities, and that they [pupils] should have the *"desire and enthusiasm for learning".* Conversely, learning for LiT2 and LiT3 is that:

> *"pupils should master the given lesson and recall the information at the end of the lesson".*

The definition of coaching was one of the main inquiries in the study as it is one of the key features of constructivist teaching. For all nine teachers coaching in general means training pupils, though they had different points of view about the way they thought about using coaching in their practice. Two

of the nine teachers' believe that good teacher is the one who teaches and coaches pupils at the same time:

> *"The good teacher is the one who coach, who teach, I mean from textbook and life, and for me teaching much better than coaching" (EnT1).*

Other two teachers think of coaching as training after teaching the lesson:

> *"I have to teach the lesson for the pupil, and then when he/she masters and understand it, he/she would practice by answering the questions" (LiT2).*

Maths and Science Teachers think that coaching is better used with activities or when teaching skills:

> *"Coaching means I teach the solution, I taught him, now he learnt, and then the kid has to solve it alone. I can change the method, not only worksheet, but also, the kids can compete using interactive white board, completing game's worksheet, so the pupil can play and practice the solution" (ScT1).*

> *"Coaching is useful for teaching Maths, Science and Language Skills"*
>
> *(ScT2).*

b) Pedagogy

This section present teachers' pedagogy beliefs about teaching methods and the type of activities that are included in designing the lessons, which formed two sub-categories: preparing and interactive.

Preparing lesson plans was very important for teachers as they take into consideration several criteria when they choose the activities for their pupils. The nine teachers' lessons' plans were guided by the pupils' individual differences, gender, age, levels, needs, interests, thinking and abilities to

work, understanding of concepts and the available class time for pupils to complete the activity.

> *"I take into consideration the individual differences between the kids" (ScT1, ScT3).*

LiT2 thinks that the nature of the lesson and the class time are the two main elements for preparing the lesson.

> *"The nature of the lesson for Arabic subject and class time are things that I take in consideration" (LiT2).*

Also, LiT1 thinks that the process of the lesson is important for lesson preparation:

> *"I will consider the process of the lesson" (LiT1).*

ScT2 has three main factors affecting the lesson preparation:

> *"Talking about maths, there are three factors for pedagogy, teacher, pupil and subject matter. To make pupils master the subject matter and the existing activities in the lesson, this encouraged me to search for the best technology tool and utilize it into the lesson plan, also, to make pupils understand the activity's concept" (ScT2).*

EnT2 consider her pupils interest and needs:

> *"When I prepare activities for my classroom I usually choose something, before I choose the activity I basically had to feel kids, like their interest their needs, what stimulate them, like their age. For example, last year I used to teach fifth grade, they were much older and more mature, this year they are younger, they don't want to set down and lesson, they want to do things, they're very active. So I would normally choose in best situation I choose activities that require them to work to do things, or to do something which depend on gender I am teaching"(EnT2).*

LiT3 thinks that group work has to be based on mix abilities:

> *"I do not divide them in weak and smart groups, I have to mix them, it helps to make them collaborate more" (LiT3).*

Pupils' levels of thinking are one of the factors that few teachers take into account:

"I give them activities that suit pupils level of thinking" (ScT3).

Interactive is the second sub-category under pedagogy theme, the nine teachers' beliefs that pedagogy has to promote pupils engagements in the classroom environment. This implies that the pedagogy must include interactive and interesting activities for pupils.

"I try not to be traditional; we must have activities in the lesson" (LiT3).

"I use the PowerPoint to deliver the lesson, it makes pupils more interactive, it has moral motivation which is clapping for right answer, it makes pupils engage better than traditional method" (ScT3).

EnT2 and LiT2 think that internet sites have ideas and worksheets that are very interesting and motivate pupils to learn:

"Worksheets, and there is an interesting site you can just enter the world you want and download the worksheet, which is technology, I don't go for style of teaching, I look for ideas, to make classroom more interesting" (EnT2).

"Teacher should try the internet programs, I mean to have varieties and interesting pedagogy to motivate pupils for learning and make them engaged" (LiT2).

c) Roles

Teachers' respondents to semi-structured interview regarding teachers' beliefs about their role in ICT-based classroom, and how they view themselves in such context, shows that teachers have different views about the different roles of teacher and pupil in the classroom. Six out of nine participating teachers think and believe that teacher's role will never end,

however, it could take different forms, and they have shared their beliefs about their roles and their pupils' role:

> "Of course not, I am not always the centre of the teaching process, I am the guide and I plan the instructional, I mean, I just put the basic guidelines and other matters and details will be attended by pupils and many other factors, especially with the information age, there is considerable scope for students to access a large quantity of information, but with adults supervision" (ScT2).

EnT2 prefers to give her pupils some freedom:

> "Give them space to learn" (EnT2).

Also, ScT3 and LiT3 believe that their role inside the classroom will not end,

> "Teacher role will not end, you have to check on pupils' work, walk around and see what obstacles he/she has and try to help" (ScT3).

> "Teacher has two jobs teaching and nurturing, if the technology possessed the teaching, teacher still has the nurturing. It is a human thing; the child cannot deal with the machine all the time" (LiT3).

ScT1 and EnT1 think that the new national curriculum for maths and English affected the roles in the classroom:

> "Because of the new curriculum the role of the teacher is changed, the teacher is no longer the provider and pupil is the passive recipient, the pupils started to be more self-learner, and the teacher became a guide" (ScT1).

> "But the pupil started to take place in demonstrating the lesson" (EnT1 & ScT1).

5.2.2 Teachers' existing technological and pedagogical knowledge

How teachers learn to teach? Is one of the questions that were raised by Shulman (1987). He pointed out that teacher's existing knowledge is the base for teaching and classroom practice, which is the combining technological and pedagogical knowledge TPK (ibid, 1987). The teachers were asked to answer

questions about how they learn and construct knowledge about teaching with ICT, and if they had any pre-or-in-service courses regarding technology integration. An attempt was made to establish the two key factors: firstly, the ICT knowledge base for Kuwait's future schools' teachers, and secondly, how they construct or develop their knowledge and skills to use technology in classroom practice. Two sub-categories under the knowledge theme: Technological and Pedagogical knowledge emerged, which in turn were divided into sub-categories presented below.

a) Pedagogy

Classroom pedagogy is the first category under technological and pedagogical knowledge TPK theme which consists of two sub-categories: formal and informal knowledge.

The **formal knowledge** of the in-service teachers about methods of teaching was developed in college, from colleagues and from their working practice. This type includes professional knowledge about classroom pedagogy (methods of teaching), classroom action, reaction and interaction between teacher, pupils and learning condition, and knowing what the methods are optimal for pupils' learning and achievement. The nine participating teachers had different qualifications; four of the nine teachers were unqualified to teach at the primary level as they were not prepared in college for teaching or preparing the right classroom pedagogy.

LiT3 and EnT2 did not learn in college how to teach, their studies focused on the Arabic and English literature:

"My studies in college focused on Arabic literature and how to master the function of the language. As for the teaching and connecting with pupils we did not have any courses" (LiT3).

"Me too my certificate is not in education but from English Literature College" (EnT1).

Also, other qualified teachers had the same problem with pedagogy knowledge at college level:

"We used to hear about using the playing method, but we did not know how" (ScT1).

"I mean basically there is all theoretical, too much of Skinner, Plato, not enough practical teaching methods" (EnT2).

ScT3 asserted that what she learned about teaching methods differed from the classroom reality:

"We did not take anything in Arabic even the teaching methods that they taught us in college different than teaching methods in schools and what we are teaching is something else" (ScT3).

Learning from colleagues was the second sub-category under the formal learning. Two out of the nine teachers praised learning from their colleagues or first teachers:

"I got more ideas from my colleagues and my head-teacher helped me…. I learned from her how to manage the classroom. Also, from my observations of other's colleagues practices" (ScT1).

"If there is any missing thing my colleague would teach me" (EnT1).

Learning from practice is the third sub-category under formal learning. The nine teachers explained that they learned and gained more experience to use

the computer from their practice, rather than from the college or other informal courses.

> *"In my practice I am using computer, as much as I use it as much as my experience increases" (ScT1).*

LiT1 learned how to teach at the primary level from her experience and practice in future schools:

> *"I did not teach in any other primary public schools, I didn't have any ideas, I taught in this school directly" (LiT1).*

Also,

> *"Of course experience by practice was much better" (EnT1)*

> *"What they gave us in college is different from reality, everything you learn from your experience, you see your pupils need, you know it, college and courses were not useful to us" (LiT3).*

> *"Communicating with pupils, and teaching from our experiences"*

> *(LiT3).*

ScT1 learned how to use the new interactive white board in her classroom from her own experience with the IWB:

> *"In the second year when they equipped the classrooms with interactive white boards we had another problem, so you need to learn and acquire new skills, ask here and there because we did not have any experience" (ScT1).*

The **informal Pedagogy** knowledge is the second category under teacher's existing technological and pedagogical knowledge TPK in which teachers explain how they develop their own pedagogical knowledge and skills to improve their practice, as well as their pupils' learning achievements. The teachers gain the informal knowledge from their personal experiences with the internet searches on the educational site and adopting some new ideas and

lesson plans for their classroom practice. Five of the nine participating teachers had some experience with the internet search, as shown below:

"I like to surf in the educational websites; it provides me with lots of ideas and plans" (EnT2).

"There are several websites that can serve the teaching of math and for pupils to use" (ScT2).

Also, EnT1 shares her experience with the internet search:

"As for the ideas, there are some ideas I can use, but not everything I can apply in the class. For example, I find something I liked and the kids could work with it by music like they are in music class at the same time it is language class. There are a lot of strange ideas, but sometimes I apply what I could and leave the ones that I cannot" (EnT1).

ScT1 found new method of teaching while she was searching for ideas as she uses the IWB in her classroom.

"I found that there is a kind of interaction for pupils, the learning methods changed; I noticed that there is another way for learning which is playing methods" (ScT1)*.*

b) Technology

The teachers' technology knowledge is the second category under the teacher's existing TP knowledge theme. Technology has two sub-categories: pre-service and in-service knowledge construction. The teachers' pre-service knowledge about using or integrating technology ICT tools in education is very limited as they have to pass one or two courses for 'Introduction to educational knowledge' and "Microsoft office application'. These courses were mostly about storing of information and how to operate the Microsoft office application rather than understanding why and when to apply a certain technology tool for specific task, or how to enhance the subject matter through

the use of technology, or how to change the nature of pupils learning (Mishra & Koehler, 1987).

> *"They do not teach us how to design these learning activities and objects" (ScT1).*

ScT2 said that she learned in her master's degree years how to use technology:

> *"I expect that my studies in the Master also in the methods of teaching mathematics taught me how to use technology in education, whether internet or a computer" (ScT2).*

The in-service knowledge is the second sub-category under Technology category. The data indicates that the teachers' knowledge and opportunities for experience and skills development regarding how to integrate ICT tools in classroom pedagogy were also limited. They had formal and informal in-service knowledge as they try to cope with the new development in the classroom pedagogy. The formal in-service knowledge was provided through the professional development programme that the Ministry of Education supposed to provide it for the in-service teachers. The professional courses that the nine participants had during their teaching experience in the public schools or the Future schools were limited to the Ministry of Education regulations for employees within schools' context:

> *"We had two or three days and they were only talking about the Ministry's rules and departments issues. Then the preparation course for the future schools' teachers was very useful, they gave us idea about future school, we were involve in future school and did not know what is the differences between these schools and other public schools, and what is the requirement of the teachers, to preamble the individual as an individual in the society" (ScT1).*

EnT1 was one of the four unqualified teachers in the future schools; she had an induction course prior to starting teaching:

> *"They gave me induction course as a new teacher, it was useful, they taught me how I work with children, I mean how to prepare my work and I were trained before I enter the class" (EnT1).*

Teachers' technology informal knowledge to develop their technology skills and cope with the new information age was due to their own efforts and personal experiences. All of the nine teachers had completed the International Computer Driving License (ICDL) course which is approved by the University of Cambridge, which is mandatory by the Ministry of Education for all teachers to obtain. In addition, teachers attended some other courses that they felt they needed:

> *"I took ICDL and Photoshop courses" (ScT1).*

> *"I took ICDL and some other courses" (EnT1).*

> *"I took the ICDL and children science course and other course by myself"(LiT1).*

and

> *"As for using computer, I took ICDL course" (LiT3).*

ScT2 explained that she had prepared herself for using ICT after her graduation:

> *"I have a large background in computer software, as I had courses in flash Software and web page design, after my graduation" (ScT2).*

The following Table 18 shows the codes from the semi-structures interviews.

Table 18: Findings from teachers' semi-structured interviews.

Coding from the First semi-structured interview		
Topic	**Categories**	**Sub-Categories**
Teacher existing perception of teaching and learning	Existing Beliefs	Teaching Pedagogy Role
Teachers' existing Technological & Pedagogical Knowledge	Pedagogy Technology	Formal-informal Formal-informal
Coding from the pre-observation sessions (presenting in images)		
Teachers' existing pedagogic practice	- Classroom setting	- Arrangement - Management
	- Roles	- Authority (teachers) - Passive learners
	- Pedagogy	- Traditional action - Active Action - Lack of ICT
Coding from the first Pupils semi-structured interview		
Pupils view on teachers practice.	Authority	- Whole class activities. - Controlling pupils' behaviour.
	Nature	- Preparing for exam. - Group setting. - Teacher helps pupils with activities. - Writing from board. - Prizes for pupils answers.

5.2.3 Teachers' existing pedagogic practice

This theme emerged from the analysis of the videotaped classroom practice, the teacher practice observation record TPOR structured observation check list and the teachers' reflective activities prior to implementing the intervention models were used, to support the triangulation technique, to compare between teachers' self-image and the actual pedagogic practice, and to understand their problems and need. Three categories emerged under this theme: the classroom setting, roles and pedagogic practice. In order to present the three categorise; three teachers' practice from the nine participated teachers from the future schools were used to show an example of the existing pedagogic practice.

a) Classroom settings

The findings from the structured checklist TPOR and videotaped observations showed that LiT2, ScT1 and EnT1 have employed different classroom settings comparing with the way they self-imaged themselves as practitioners, Table 19 below shows the three teachers classroom setting.

Table 19: Example of classroom setting before RP-BCPD.

Classroom setting	Picture from videotaped observation	Description
LiT2's t		Teacher is the centre most of the class time. Pupils are sitting in pairs of three roles. They talk only when teacher asks them questions. Classroom library and two desks for the literacy and Science teachers. Pupils' textbooks shelves. Lack of ICT tools in classroom, or any teacher initiation of using computer.
EnT1's		IWB + W/B, teacher's computer is connected to IWB. Pupils are sitting in groups of four in two rows. Classroom library and two desks for the Literacy and Science teachers. Pupils' textbook shelves.
ScT1		IWB + W/B, teacher computer connected to IWB. Pupils sitting in groups of four in two rows. Classroom library and two disks for the literacy and Science teachers. Pupils' textbook shelves.

b) Roles

The roles of teachers and pupils inside the classrooms were the second category under this theme. Though the teachers were most of the class time active and asking pupils to participate by repeating and answering questions, however, they were the centre of the classroom standing in the front of the

class. Teachers were the provider and asking questions, and pupils were receivers and retriever of the knowledge, Table 20 below shows the three teachers' roles as an example from the nine participant teachers' classroom pedagogic practice.

Table 20: Example of Teachers' Roles.

Roles	Picture from videotaped classrooms	Description
LiT2's t		Teachers talk most of the lesson time. Teacher uses loud voice to manage pupils. Passively listening, watching and answering. Pupils have to give full attention all of the time. The pictures show as she is asking the pupil in the front chair to pay attention and stop working in the textbook.
EnT1's		Teacher-centred, involving pupils in whole class activities most of the time. Pupils are writing, watching, listening and participating in whole-class activities.
ScT1		Teacher-centred, involving pupils in whole class activities most of the time. Pupils sitting writing, watching, listening and participating in whole-class activities.

c) Pedagogy

The third category is teachers' pedagogy in the future schools classrooms. The three teachers had almost the same pedagogy approach, which is teacher-centered classroom. The three teachers were most of the time in the front of the classroom, talking, transferring information, demonstrating

lessons, asking questions, and pupils answering questions by retrieving information.

- **LiT2 pedagogic practice**

LiT2 has a Master degree in Arabic Literature and her teaching experience is less than 15 years. LiT2 is a class teacher in the future school teaching the literacy subject matters for the classroom that the school department assigned her for. The five subject matters that LiT2 teaches are: Islamic religion and Qur'an, Arabic language, national studies, social studies, geography and life skills which she is not qualified to teach expect for Arabic language. LiT2 said that she was forced to teach in the primary future schools by the teacher's inspector who appointed her in Alfadel's primary future school and she had to adapt herself to the new teaching and learning environment.

LiT2 explained that she is dissatisfied with the routine and prefers to learn new things and to be more innovative in her work.

> *"I as a teacher I like to learn more everyday otherwise my teaching will be very boring process, [I prefer] working in very entertaining environment so my kids will feel my teaching attracts their attention"* (LiT2, first SS interview).

In the reflective activity sheet 1 (Appendix F) LiT2 responds to the ideas about better methods and suggesting different ways of teaching integrating ICT, and feels very confident about her practice:

> *"Most of the times, I find myself in a situation that requires creative thinking and new methods to deliver the new information for pupils, and I am confident my method is right when I see my pupils eyes happy because they understand the lesson"* (LiT2, first reflective sheet: q2).

LiT2 pupils described her pedagogic practice; one of the pupil said: *"She put us into three groups at the end of the class time and we have to answer the one of the three questions in the worksheet that is assigned to our group"* (St8, pupils' first SS-interview). When I asked them whether their teacher lets them talk or express their opinions in the class, they answered: *"She does not let us sometimes because we are learning all the class time, she wants us to understand"* (St6, pupils' first SS-interview). Another pupil said: *"she does take our opinions, but the pupils make noise which makes her upset and asks us to stop talking and if they do not stop, she will punish all the class"* (St5, pupils' first SS-interview) (see Table 21).

- **EnT1 pedagogic practice**

EnT1 is a primary English teacher with less than five years of experience. She has a degree in English literature from college in literature at Kuwait University. EnT1 is not a certified teacher with teaching license from college of Teacher Education, and she teaches English language and life skills which means using English in pupils' daily life. EnT1 teaches three classes from different grades in the Alfarsi's future primary schools; however, she was trained to teach in secondary and high schools. EnT1 had completed the ICDL course certified by Cambridge University, which is a computer license in managing the Microsoft office applications and uses internet regularly searching for activities to use with the IWB. As an uncertified teacher, EnT1 did not have a practicum course in the college to prepare for teaching. In the first semi-structured interview EnT1 mentioned that the Ministry of Education gave her an induction course for three weeks to prepare her for teaching:

> *"My degree is not from Education College but from Literature College in English, but they [means Ministry of Education] gave me an induction course as a new teacher. It was useful for me, they have taught me how to prepare the lesson and showed me an example"* (EnT1, first SS. Interview).

Then, EnT1 reflected on her practice and training before participating in the RP-BCPD; she said:

> *"I think I've learned through experience much more than the training course"* (EnT1, first reflective activity sheet: q. 5).

EnT1 involved her pupils in the IWB activities as whole-class activities, but it did not change the reality of her traditional pedagogy of using the question and answer method to complete the textbooks activities using the IWB. EnT1's pupils are happy with the way their teacher teaches them using the IWB, helping them with their class activities, and providing them with answers on the IWB (see Table 21). However, still the IWB is being used in a traditional way and for whole class activity.

EnT1 has mentioned in the first semi-structured interview that she takes into consideration individual differences when designing the lesson activities for her third grade pupils, as most of them are weak, she teach the same class with LiT1 and ScT1:

> *"As they [her colleagues] said, the individual differences [are important]"* (EnT1, first SS. interview).

EnT1 thinks that she is well aware of her pupils' level and needs though she has to follow the first-teacher and inspector's instructions:

> *"As for relying on others I think I am obligated to follow the teachers' inspector and first-teacher's instructions, though that I am more knowledgeable about my pupils needs and level" (EnT1, reflective activity sheet 1: q.1).*

EnT1 responded to Q.2 from the first reflective sheet about suggesting innovative methods of teaching with the following thoughts:

> *"CDs very helpful media, but not basic tools; it adds vitality, energy and encourages pupils" (EnT1, first reflective activity sheet: q. 2).*

- **ScT1 pedagogic practice**

ScT1 is a primary teacher in an Alfarsi's future school with less than ten years' experience in teaching science and maths. ScT1 is a certified teacher, who has a BS in science from PAAET, and in the future school she teaches maths and life skills in addition to the science subjects. In the future school ScT1 is considered as a class-teacher for one classroom as she is the science and maths teacher. ScT1 has completed some courses in ICDL and Photoshop, and she mostly uses PowerPoint and the internet to prepare and deliver the lessons using the IWB. Similarly, ScT1 was following the teacher-centered approach, though that she does involve her pupils with IWB whole class activities, Table 21 present ScT1 existing pedagogic practice.

ScT1's pupils like hat she helps them when they need it, and lets them talk if there is time to talk: *"she helps us if we need help, otherwise she lets us work on our activities alone"* (St & St4, first SS. Interview), and, *"if she saw us and there is time she will let us talk"* (St2, first SS. Interview).

Reflecting on her pedagogic practice, ScT1 believes she is obligated to follow

first teacher and inspector's methods of teaching:

> *"Yes, the current teaching method I am following is required by inspectors and I am obligated to follow it"(*ScT1, reflective activity sheet 1: q.1).

Then ScT1 was very confident responding to the reflective sheet; reflecting on

her pedagogic experience:

> *"Yes, I can suggest different methods based on pupils' levels and individual differences between them, and based on the available learning tools in the school"* (ibid).

Table 21: Example of existing pedagogy.

Pedagogy	Picture from videotaped classrooms	Description
LiT2's t		Textbooks and notebooks, whiteboard, cards, posters. Pupils answer questions writing on the board as whole class activity. Whole-class activities. Q & A. No time for thinking. The most used pedagogy in LiT2 practice is making pupils repeating everything to memorize it for the test. Textbook is the main source of knowledge. Pupils have to answer all the textbook questions and teacher provides the answer on the w/b. LiT2 rewards the pupils for the correct answer with small gifts

EnT1's		Textbooks (pupils and work books) and notebooks.
		Whole-class activities on the boards.
		Individual worksheets as homework assignments.
ScT1		Textbooks.
		Whole-class activities on the IWB.
		Individual Worksheets
		Group work.

5.3 Conclusion

This chapter presented the findings from the pre quantitative and qualitative data analysis to understand the current status, problems and needs of future schools' teacher, focusing on the nine participating teachers in the interventions model. The finding from the triangulation method suggest that the Kuwaiti teachers need a continuing professional development programme that suits their needs to prepare them for the 21st century demands. These findings fed into the design of the intervention CPD model. The findings from the first reflection activity show that teachers do not understand the meaning of reflecting on each other practice, and very sensitive to criticizing their pedagogic practice publicly. Teachers are used to think that they are the expert in the subject matter knowledge and methods of teaching, but the

situation is different in 'future schools' because most of the teachers are not certified teachers. Furthermore, they are not qualified to teach the subjects that were assigned for them. Thus, the intervention model had to be based on reflective practice.

Further investigations are needed to understand the factors that might influence teachers' beliefs, or have a different impact on their classroom practice. These are the factors that make teachers hold inconsistent beliefs and practice what others ask them to do, and if the existing constructivist beliefs had any impact in changing the teachers' practice. Also, there is a further need to establish how teachers' beliefs, knowledge and practice, change in response to an intervention programme which is designed to offer them freedom of reflecting and building capacity for new knowledge and skills. The intervention model case study included three teachers cases studies representing examples from the nine participated teachers pedagogic practice, which will be follow in the next chapter. For an in-depth understanding of the potential changes in the teachers' beliefs, knowledge, and classroom practice, and the effectiveness of the proposed model, the following chapters will present the findings and the interpretation of the data from the teachers' intervention model.

Chapter Six

Case Study: Phase 2-4: Designing, developing and implementing RP-BCPD to Understand the Process of Change

6   Introduction

This chapter aims to understand the process of changes in teachers' pedagogic practice as they were engaged in the intervention model of reflective practice-based continuing professional. Furthermore, this investigation aims to understand the factors that affect teachers' integration of ICT to their pedagogic practice within the cultural context of primary 'future schools'. The chapter addresses the themes emerged from the quantitative and qualitative thematic analysis in order to follow the changes and understand when, where, why and how it occurred. The chapter seeks to answer the research question as follows:

1   What impact does the reflective practice-based continuing professional development RP-BCPD has on teacher's pedagogic practice?

2   What factors lead to the integration of ICT into classroom practice?

6.1   The process of designing and developing intervention model

 The primary findings from the first data analysis showed that teachers need to develop knowledge and skills of the reflective practitioners as the base for improving their pedagogic practice. Observing and listening to the nine participant teachers in the first phase of the case study helped to map out the

intervention CPD model plan, focusing on educating teachers through workshops. The workshops were divided through the first and second semester of the school year according to teachers need (see Chapter 4). After each workshop teachers were asked to attend, and each lesson plan they have designed using ICT, teachers had to complete a reflective sheet activity, to reflect on the new knowledge, skills and practice they had performed. Furthermore, teachers were encouraged to develop a community, and the researcher had to facilitate the place and time with the three schools' managers to let teachers meet and share their practice, and learn from each other experiments such as: developing alternative pedagogic practice, integrating ICT, as well as, promoting 21st century skills into pupils learning skills. During the workshops and community of practice teachers were observing reflecting, learning and examining videos of best pedagogic practice from cross-cultural learning environment such as: a primary school in the UK, and other schools in the UK and the USA. The finding from the qualitative and quantitative data analysis formed the following themes in order to understand the process of change in teacher pedagogic practice.

6.2 Themes emerged from the follow-up semi-structured interviews

In order to track the potential changes in teachers' beliefs and knowledge, follow-up semi-structured interviews were undertaken during and after the implementations of the reflective practice-based continuing professional development programme. The aim was to understand the impact of such a programme, and why such changes might develop in the teachers' beliefs and knowledge. Three topics emerged from the qualitative analyses that are presented below: teachers' beliefs after participating in the RP-BCPD

model, teachers' technological pedagogical knowledge TPK after RP-BCPD, and teachers' pedagogic practice after RP-BCPD.

6.2.1 Teachers' beliefs after participating in RP-BCPD model

Teachers' beliefs about their roles, pedagogy, subject matter, pupils' role, and relationships with pupils and colleagues in the cultural context of the school influence their implementations of changes in classroom practice, and how they observe themselves as teachers (Nisbet & Warren, 2000). Also, teachers' beliefs influence their perceptions and judgments which also affect their classroom practice (Pajares, 1992). Three categories emerged under this theme: role, reflection and pedagogy.

a) Role

Although teachers retained most of their traditional roles in the classroom (lecturer, class and discussion leader), they have tolerated new role in classroom utilizing innovative technology-based practice. From the interview data and questions raised by the researcher, two teachers' roles emerged under this category: the roles of a guider and researcher. The new roles that six of the nine teachers adopted and adapted to their classroom pedagogic practice were the guide, facilitator and mentor: "I have the main role, no, no, but not all the time" (LiT1). The science teacher (ScT1) believes that she becomes a guide, when she said: that "I am guiding them now". The math and science teachers think that because of the new maths and science curriculum and the utilization of the ICT the roles inside the classroom have changed. They believe that their role is to spend a few minutes to demonstrate an example for the class then let the pupils' work. They think that pupils became

more engaged and immersed in the learning as a result of their engagement in the collaborative learning groups and ICT activities, rather than being passively receiving knowledge:

> "...the new curriculum made pupils occupy the main role, and the use of computers changed my role to be facilitator or guider more than providing information, I just say few words, and then the girls work and solve problems alone. The technology helped to reduce the time and efforts I stay with them, instead I work with the weak pupils. When they worked alone I was walking around and they were helping each other" (ScT3).

Also, EnT2 thinks that pupils have to learn with ICT:

> "When using ICT activities in the classroom, they should be student based lessons; meaning not much required from the teacher. The teacher must be the instructor and the students start learning through discovery and self-evaluation" (EnT2).

For ScT2 it was unusual that teacher became a facilitator or guide even though she had studied that on the master's programme:

> "It was imaginary to me; I did not accept the idea at all, that teacher is guider and facilitator for the educational process in the constructivism theory. For me the traditional method is the professional in teaching, teacher has to deliver the information and pupil receives it. That is how we have been taught. When I joined this programme, I felt that such thing can exist if the teacher built the foundation for it to become a guide" (ScT2).

The Researcher's role was the innovative role introduced to teacher practice. Teachers were asked to adopt the researcher role in order to improve their classroom practice and pedagogy. The nine teachers thought that the researcher role was very helpful as it was a good opportunity to learn from their own research to improve their practice and their pupils' learning achievements:

> *"It was useful, I mean it did encourage me to discover other programs and use them in my class" (EnT1).*

It was also inspiring,

> *"It is very inspiring role, made us very creative and eager to change our teaching methods" (LiT2).*

This approach motivated the unqualified teachers to develop skills and sustain the improvements, as two of the unqualified teachers thought that researcher role was useful for them:

> *"Researcher role encourages teacher to develop herself even if she is not a qualified teacher without any fear, and develop her skills continuously" (ClT2).*

> *"I improved my skills, and I started to like my work. I search for new programme to learn, now I am more eager to develop my technology skills than before" (LiT1).*

b) Pedagogy

The videos from cross-cultural pedagogic practice encouraged the teachers to examine a variety of pedagogies from the UK and USA and to adopt them to their own classrooms. Two categories emerged under the pedagogy theme: coaching and ICT. The teachers were expressing their thoughts and beliefs about pedagogy of coaching and ICT and comparing them with their traditional views.

The nine participating teachers accepted and preferred to use the **coaching pedagogy**, which provided them with more time inside the classroom with their pupils to mentor and guide their learning, instead of lecturing most of the class time. Though that they encountered some problems with coaching only, but they still believes that the teacher is the expert:

> *"Before I take three quarter of the class time to teach, now when I use the coaching method, my pupils and I are working together and there is interaction going on between us"* (ScT1).

EnT2 is teaching fifth grade; she thinks that coaching comes after teaching:

> *"This is a little tricky; coaching can only come after teaching the basic skills. When it comes to teaching young learners a foreign language, once they hard use, it's difficult to coach rather than teach"* (EnT2).

ScT3 thinks that she has to explain the first example then let the pupils work alone on groups or computer activities:

> *"Of course I will not give them the work and leave them alone, I give them first an example and they complete it with me, then I give them the second problem which demands more thinking, they have to follow specific steps to solve it which I went over in the first example"* (ScT3).

EnT1 is teaching third grade, and she had a different view. She thinks that coaching is better as she sees her pupils completing their computer activities alone or in group work, but she needs them to do their homework on-line activities too:

> *"Coaching is good when pupils do things alone, like searching, computer activities and group work, but the on-line homework few pupils complete it"* (EnT1).

The **ICT pedagogy** is the second category under the pedagogy. The teachers found ICT very helpful in classroom practice but not to depend on it. According to the participants, ICT integration can inspire them to create new activities, and to encourage pupils to become more active:

> *"I can say ICT is a tool, but I don't rely upon it entirely, I don't use it every day, but my pupils prefer working with computers"* (EnT1).

ScT1 finds ICT beneficial for her practice:

> *"the experiment was beneficial to me, I prefer if it was implemented from the first grade, because I taught first grade pupils, they can easily be adapted to anything you give them, thus when you apply it with them, they will continue to fifth grade and become ICT skilful. Pupils should be solving problems more than listening, discovering and experimenting even in math"* (ScT1).

ScT3 think that when pupils work with computers activities it can reinforce the knowledge:

> *"The pupils will not absorb all of the information, maybe only the first minutes of class time, then his mind will be distracted not with me, but when they work by their hands and in groups or with computer activities, the new knowledge is confirmed"* (ScT3).

LiT1 and LiT2 think that pupils should learn how to do projects using computers:

> *"I think that computer literacy teachers must teach pupils how to do projects in computers even first and second grade, I don't see why not"* (LiT1).

c) Reflection

The nine teachers were exposed to two ways of reflection: reflecting on their own practice as they watch the videotaped classroom practice and reflecting on each other practice which was the essential of the intervention model activities. Two sub-categories emerged under the reflection category: *reflective practice and community of practice.* Teachers were expressing their perceptions of the reflective practice and how they believe it affected their decision making regarding classroom practice.

The nine participant teachers thought that reflecting on their own and each other's practice was beneficial to their classroom pedagogy, as it was

encouraging them to search for the best. ScT1 said: *"you will reflect on your practice when you watch it through the videotape"*, and LiT1 responded: *"you will not like many things about your practice; it is not your demonstration but the method you use, what if I did so it would be better"*. ScT2 thought that thinking about the method she used in the maths lesson without using technology urged her to improve her pupils' learning method: *"It motivated me to develop an activity to use it in pupils' laptops"*. Reflecting on her little computer skills and watching her colleagues' creativity encouraged LiT2 to improve her skills:

> *"In computer I just know how to turn on and off, watching my colleagues in the programme working and creating their innovative lessons made me too want to improve my performance, I have to get in the internet and learn and know how"* (LiT2).

Reflecting on their pupils' learning achievement motivated the nine teachers to reflect on and improve their choices of teaching methods:

> *"When I demonstrate the lesson my pupils are bored and they sleep, thus I started to let them watch films which they like it most, and become more active"* (ScT1).

> *"I give them the basics and let them work most of the class time"* (ScT3).

ClT2 believes that she has to be ready before teaching:

> *"I have to develop myself and learn new methods then teach my pupils"* (ClT2).

Teachers' reflection on their pedagogical and technological skills, and pupils learning motivated them to learn how to change the traditional classroom practice.

The nine participants were also practising the reflective practice during their **community of practice,** as they meet, share and learn from each other pedagogic practice. Some of them presented their ICT based-activities while others talk about their new methods. Also, the nine participant teachers had the chance to observe each other's classrooms before they met in their monthly community sessions. When they were asked about their believes or perception on the reflection during the community of practice, they responded that reflecting on one's own practice is much easier than reflecting on the other colleagues' classroom practice; it will be considered as a critique more than as reflecting or suggesting new ways of teaching. This trend may also be associated with the cultural traditions of avoiding open criticism.

> *"Even if it is a constructivist reflection other people will consider it personal critique". (ScT2).*

ScT3 thinks that when reflecting on other's practice, mentioning positive points would be better to start with:

> *"You have to start with the positive points, and then you may mention the negative [weakest]" (ScT3).*

ClT2 thinks that there is no such thing called reflection between teachers in their world:

> *"I don't see a place for reflection between teachers from different disciplines, but it might be useful in practicing thinking" (ClT2).*

EnT1 has a different view:

> *"It is good and flexible, but people will not accept it. For example, if a new young teacher reflect on eighteen years expert teacher saying 'why you present it in this way why not in this way, the expert teacher will never accept it, she will say who is she to talk to me this way" (EnT1).*

LiT1 thinks that new teachers need to reflect:

"It is not wrong, I might be a new teacher and it is my first year in teaching and I don't know the methods, why not? If someone teaches me the best methods" (LiT1).

The nine participant teachers developed different attitude toward the reflective practice based on the cultural context they belong to. They would consider it as criticism, or inappropriate that new teacher reflects on expert teacher's practice, or teachers from different disciplines reflect on each other practice publicly.

6.2.2 Teacher's TPK after RP-BCPD

Aattempting to understand the changes in the teachers' Knowledge base, as they were engaged in their reflective practice-BCPD intervention model, the data analysis revealed two categorize emerged under this topic: Formal and informal knowledge.

a) Formal knowledge

The role of the first-teacher was the only sub-category under the formal knowledge category. The first-teacher is the main source most of the time for the unqualified teachers as they rely heavily on the first-teacher's expertise to design their lesson plan. EnT1 as unqualified teacher cannot go a day without asking the first teacher for her advice or opinion on the lesson plan, or the activities she is using:

"I did not only search on-line, I also, asked the first-teacher, she is more expert than me, so I asked her and she told me to try specific methods with weak pupils" (EnT1).

She also, gets help from all English teachers in the school:

"They [English teachers in school] encourage me to use ICT activities in the class, and they provide me with educational software good for my lessons" (EnT1).

b) *Informal knowledge*

Teachers' informal knowledge is the second category which consists of four sub-categories: colleagues, community of practice, internet and family.

Teacher's **colleagues** are the first sub-category under the informal knowledge. The nine participant teachers seem to prefer to construct their new technological pedagogical knowledge in a social environment where they observe and share with their colleagues' from the same school practice or in the community of practice, or other teachers on the internet. ScT1 and LiT1 are the teachers of the same class, so they spend most of the school day together, teaching and assisting each other in the classroom. They have developed a habit of reflecting on each other's practice after each lesson:

"Sometimes I observe her teaching, she cannot see herself teaching, so I as observer give her some note and ideas, she accepts. She also, provide me with her notes and ideas when she observe me or assist me during the class time, if the question or worksheet is hard for pupils, she suggest to change it and I do discuss it with her" (ScT1).

Community of practice is the second sub-category under informal knowledge. The nine participant teachers praised highly the construction of knowledge during their monthly meetings in their learning community, as they share their new practices with ICT and the new methods they developed for their lesson plans: *'It is good and useful sharing each other ideas. The fifth grade English teacher EnT2 suggested to me to use videos for my lessons from other sources like the internet' (EnT1).* ScT3 did not have the chance to

observe other participating teachers classroom practices, but she did watch

the video for ScT1 practice in maths class:

> *"I did not have the chance to attend my colleagues' ICT-based lessons during the CPD programme, but when ScT1 talked and presented for us the multiplication tables method -during the COP- she used for her class for the same level I teach, I liked the idea. I don't see why not to learn from her and adopt her ideas, that is why we are her to learn from each other's experiments which were used in their lessons" (ScT3).*

CIT2 thinks that community of practice is a good place to learn from others:

> *"Engaging in the community of practice with other colleagues had of course big influence on the learning process, each one benefits from others experience. Also, there is the competition factor and collaboration between the community members as they were provide with the ICT tools, how to use it and prepare their pupils" (CIT2).*

The **internet** as a source of constructing pedagogical and technological

knowledge is the third sub-category under the informal knowledge. Four of the

nine teachers rely mostly on the internet to learn about ICT-based lessons

and other software used in designing computer activities. ScT1 likes to search

for readymade programs or ideas for her maths or science lessons:

> *"I used the internet to find programs, and if I did not find programs, I find ideas, there are peoples with ideas for math problems like division. Then, I learned to do it by myself… it is also a place to share your ideas with others" (ScT1).*

LiT1 and EnT1 find internet very motivating to learn new ICT programs to use

in their pedagogic practice:

> *"When I have time, I like to search and learn new programs or anything" (LiT1).*

> *"It is very motivating to learn new things and discover programs that I have to pay for it and to use it or download" (EnT1).*

Finally, **Family** is the fourth sub-category under the informal knowledge. Family members were used as a source of learning how to use specific computer software in designing an Arabic grammar lesson for the third grade. LiT1 was the only teacher from the nine participant teachers to benefit from a family member's expertise (her husband is a computer engineer and works as computer studies' teacher in a public school); she asked him to teach her how to use the visual basic software:

> *"When my husband offered to help me, I did not accept that he does the program for me as he is a teacher and very busy. I asked him to teach me how to do the program myself and he did" (LiT1).*

Other teachers mentioned their families' support during the semi-structured interview, but did not specify the kind of support they received from their families. Teachers preferred different sources of learning, but some were sensitive about the potential learning from others reflection on their practice which is related to their age and expertise. Furthermore, first-teacher is still the first source of learning for the unqualified teachers, which is an essential feature of the cultural context of Kuwaiti educational system and schools.

6.2.3 Teachers' pedagogic practice after RP-BCPD

The results from the second TBS survey data analysis did not show significant changes in the nine participant teachers' beliefs toward pedagogic practice, as they appeared to be very constructivist believers, while the results from the observation tools (TPOR and Videotaped practice) show a contradiction between what teachers practice and the way that they selves-images their pedagogic practice. This section presents the pedagogic practice of three participant teachers after participation in the intervention model.

- **LiT2 pedagogic practice**

In the reflective sheet activity 4 about "capture your thoughts" LiT2 completed it after the workshops. LiT2 responses to the four categories of the reflective sheets (Big ideas, Insights, Questions and Future Action) were defining what each means from her point of view instead of what kind of knowledge she constructed to help her in drawing a map of developing and enhancing her practice. Under the category Future Action she stated her goals as:

"Future action: it will depend mostly on the innovative technology's tools" (LiT2, activity sheet 4).

After each applied lesson plan, the LiT2 supposed to write her journals reflecting on her pedagogic practice process during the lesson. LiT2 did not reflect on her lessons in writing or verbally, because she thought that the amount of her talk and reflection in the community of practice about the lessons in general was enough. LiT2 has resistance attitude toward writing reflection sheets because of the workload and teaching four other subjects that she is not qualified in (which is one of the 'future schools' features, that each class has two classroom teachers regardless of their qualification). This suggests that LiT2 has no time to write journals or reflection on practice because of workload (see Chapter Seven for more details on factors affecting teachers' engagement in the process of change).

According to LiT2 she used the internet for research and empowered her pupils by encouraging them to search for information on their own.

"I found that the thing that makes pupils search and persevere to find it is the thing that stays in their mind, thus I used the internet. The

> *utilizing of internet made a difference for me as a literacy teacher"*
> *(LiT2, SS interview 3).*

Reflecting on her practice, LiT2 was very satisfied with her ICT-based lessons. In the third interview she mentioned that she is very happy that she accomplished her goals through the coaching role:

> *"The coaching role was a relief for the teacher, as for me the important thing for me is I have a goal and my goal was accomplished; as long as the knowledge was delivered I am satisfied with my work. I talked for ten minutes then I guided and mentored the pupils. Thus, the important thing is the results, my pupils mastered the skills, understood the lessons and they had the best grades among all fifth grade pupils in the school and better than last year" (LiT2).*

LiT2 emphasizes the importance of pupils head meaning the cognitive part of the learning that they mastered the skills and understood lesson which resulted in having best grades in achievement test of the Ministry as they were able to retrieve all the information in the test, which is one of the traditional views about learning, that pupils are receiver and retriever of knowledge in the Kuwaiti cultural context.

LiT2 thinks that her main problem was lack of computer skills; that she was a novice regarding the use of ICT, and she was in competition with other colleagues in the experiment, which encouraged her to try to enhance her performance. Furthermore, she was asking her colleagues for help when she needed it:

> *"It was useful for me, to change my teaching style and be creative. Maybe because I had a weakness and trying to fix it, especially that I lack computer skills, that is why I was focusing on computer and internet in teaching my pupils and make it useful for them" (LiT2, third SS. Interview).*

LiT2 decided to change teaching style after she observed other colleagues in the programme, and reflected on her own videotaped classroom practice. LiT2 was thinking about the weakness point in her pedagogic practice, and then she decided to focus on improving the computer skills to cope with her colleagues.

Furthermore, LiT2 had the opportunity to observe and reflect on the pedagogic practices of her eight colleagues who participated in the study. In addition, LiT2 attended the community of practice session which was a chance to learn from her colleagues' practice and experiments, and share ideas. In the personal inventory section of the reflective sheet (*Reflective activity 5*), LiT2 pointed out that she thinks small groups are the best medium for the fast development of ideas:

> *"The small groups enabled the use of each other's experience and mistakes to develop the best method. The ideas develop faster as others' experiences and results save our time and going over the same experience again"* (LiT2, Reflective activity 5).

LiT2 mentioned that she searched the internet and she adopted what suited her aims best and what she could use in her class. However, LiT2 did not share her lesson plans with the researcher, or other participant teachers about what she had implemented. LiT2 just shared the main ideas of using the computer (pupils' laptops and internet) in the lessons to search for extra information for the subject they were learning. She explained that computers could be used to search on the internet for more information, for example, about poems in the Arabic language textbook as a way of integrate ICT in the teaching Arabic.

> *"We have a poem in Arabic language, I can improve their learning by asking them to find who created the poem, search for information, I mean to make them think in some way about my subject"* (*LiT2, first SS interview*).

Moreover, LiT2 shared her experience with her colleagues and has mentioned what she discovers from applying the ICT-based lessons. LiT2 thinks that:

> *"The main thing for Arabic teacher is to make the pupils write and read properly and improve their skills which cannot be done with computer activities"*

LiT2 added that:

> *"The last ten minutes is the best to let pupils practise what they learned in the lessons by computer activities"* (LiT2, second community of practice).

LiT2 reflected on the preparing of ICT-based lessons saying:

> *"The technologist has to attend the study and provide us with what we need for our classrooms"* (LiT2, second community of practice).

The technologist is the technical support graduated from the Educational Technology College, and assigned to work in the Kuwaiti public schools to help teachers with creating ICT activities. However, in 'future schools' the technologists are not doing their jobs according to LiT2, instead of developing ICT learning objects and activities, they care only about preparing the data show room for teachers. The cultural context of the 'future schools' missing the ICT objects and activities for the unqualified classroom teachers who teaches more than one subject matter, which makes engaging in the change process difficult for some teachers such as: LiT2.

Significantly, LiT2 dominated the class interaction most of the class time during her lessons. Pupils never did a single activity without LiT2's interference. Interactivity for LiT2 means that pupils will be playing games after finishing the lesson. On the other hand, LiT2 thinks that her pupils need more search activities and homework assignments, she will continue with the same method, because it was very useful and her pupils retained large amount of information for the exams. LiT2 made it clear in her six lessons plan, she believes that as the pupils search and fined new information, this helps them to remember it because it is from their search and findings. LiT2 thinks that:

> "Integrating ICT in Arabic or other literacy subject is difficult and that even computer could be boring if the pupils use it all the time so I used e-worksheets or hard worksheets to mix between both"(LiT2, third community of practice).

LiT2 started to use ICT in her pedagogic practice and pupils learning process. She started to change by using internet as a source of more information, but she did not engage in the process of change specifically about integrating ICT because of her lack of ICT competence, which she mentioned in the reflective sheets and community of practice.

During the experiment, LiT2 organized her pupils to sit in five groups in her first ICT-based lesson. The class size was very small for 26 pupils and their single desks, but they were happy with the group style. In the second lesson the organisation of the groups style was changed to pupils sitting in group of three in the same row facing the w/b. when I asked the class teachers about the changes, they said that the first teachers of maths and literacy visited the

classroom and forced them to make pupils sit back as before facing the w/b because as they said:

> "Sitting in groups' style has side effects on pupils' neck causing pain and affect pupils' vision" (Maths' First-Teacher).

The interfering of the first-teachers in the teachers classroom practice is one of the main barriers in the Kuwaiti schools' cultural context that teachers face. It, which is considered as part of the first-teachers work that is difficult to change because of the nature of the Educational system in Kuwait.

LiT2 used the e-worksheets for pupils, she copied all the questions from the assessments page of each lesson in the textbooks and made the e-worksheets for in-class activities. The reason for making the pupils type on the computer was because it was faster than writing from the board, which is time-consuming as they have a lot of information to cover in a short space of time. St18 comment on the use of computers:

> "When our teacher writes on the w/b and we copy it, it was very slow, but when we used the laptop we click on one button and we have everything complete, I don't know but it is faster than the textbook. We are writing a lot in the textbook and our hands are hearting but with computers it is only clicking buttons" (St18, Pupils' second SS interview).

Another pupil said *"Laptop is much better; it gives us new information, easier question for us" (St17).* Another pupil said:

> "If we have difficulties with homework assignment, and we don't have the information, we search the internet and complete our assignment; also, when teacher asks us question we search the internet to find the answers" (St16, Pupils' second SS interview).

When I asked pupils about the learning style their teacher used in the classroom, they preferred the group work which urges them to collaborate in the learning and finding answers:

> *"In the group we help each other; if I don't know the answer I ask my friend and even if he doesn't know I help him".*

Then, when I asked them about their teachers practice they had different views:

> *"Teacher wants us to work together, she told us to open the textbook and co-operate, she wants us to agree on one answer and present it to the class" (St5* Pupils second SS interview*).*

The thematic analysis of the videotaped lessons matched with the TPOR checklist and videotaped observation findings for LiT2 practice (see Appendix H). The action point of LiT2 in the ICT-based lesson were only integrating internet search with her interference and also participating in pupils' activities.

Seven out eight participant teachers attended LiT2 first ICT-based lesson and completed the reflective activity sheet 6. The colleagues' reflective activity on LiT2 practice during the communities of practice; acted as part of the feedback for LiT2 to consider for her next ICT-based lesson. The seven teachers described LiT2 practice and suggested some ideas for her. Below is the reflection of two participant teachers.

EnT1 attended one lesson and commented as following on LiT2 practice:

> *"LiT2 used data show, laptops. She was the centre of the class and everything relied on her only. She started asking pupils to use word and insert picture but did not let pupils to continue, did not continue the lesson. Then she gave pupils cards to write their greetings instead of applying in the computer. She let pupils interact with parents in the group work. Pupils were active in a traditional way, not very active,*

mostly passive relying on their teacher. LiT2 could have let pupils themselves design the card with the word properly" (EnT1, Reflective activity 6).

Pupils were passive most of the class time sitting facing the w/b listening, watching, receiving and retrieving the transferred knowledge. All pupils were working on the same activities regardless of individual differences or interest, which contradicted with what LiT2 had said in the third semi-structured interview, that the pupils had:

> *"…a freedom of choice, he expresses his opinion, I can do that, I will work on computer today, no I will work with cards, or work with my classmate, so the relationships changed in the classroom"* (LiT2, third SS. Interview).

It is difficult for a teacher like LiT2 with such circumstances and the cultural context problems that she was put in to engage in the change process. It might be possible that if LiT2 offered more time in learning and putting new knowledge into practice, she would developed the attitude toward engaging and sustaining in the change process. LiT2 has mentioned in the third semi-structured interview and the reflective sheets that if she had the technology tools inside the classroom ready for use, if there is a immutable curriculum, and if the school's administration and first-teacher were cooperating with her, she might be more creative in integrating ICT and changing her pedagogic practice.

> *"I should have the freedom to choose the method of teaching and integrating the technology when I think it is appropriate, searching the internet or writing methods. They should not tell me what to say or how to set, they took off the freedom that you provided me to be creative, they destroyed the creativity that I tried to develop"* (Third semi-structured interview).

LiT2 added,

> *"If we are going to implement this CPD in the future, we have to cooperate with each others; I mean school's administration and the ministry should help us, they should provide us with ICT-based classrooms so I can work, teach and use ICT tools. Though that I was happy to involve in this project I could not develop myself "* (Third semi-structured interview).

The following Table 22 shows examples of LiT2's pedagogic practice during

the intervention RP-BCPD mode.

Table 22: LiT2 TP practice after RP-BCPD.

Category	Picture from videotaped observation	Description
Teacher's role		Teacher at the front most of the class time, demonstrating, delivering the lesson, asking questions and writing answers on the w/b for pupils to copy.
Pupils' role		Pupils have their textbooks open to write the answers as they have their laptops open for internet search. E-worksheets or paper-worksheets basically either answering textbook questions, or finding extra information from the internet search.
Pedagogy		Teacher writing answers on the w/b for pupils to copy which pupils found from the internet search. Teacher praised the winning group who won the competition.
ICT use		Pupils' Laptops & textbooks. Teacher use pupils' laptops for internet search & completing computer activities.

The observations from videotaped classroom and teachers practice observation record TPOR data analysis did not show any pupils' autonomy in LiT2 classroom. LiT2 was the centre of the learning and teaching always at the front, even when she asks pupils to come to the board she is beside the pupil guiding his answers. Though that LiT2 pedagogic practice was mostly traditional, but she did initiate a kind of constructivist pedagogic such as: the use of the internet in planning her lessons, and asking pupils to use the internet as another source of knowledge beside the teacher and the textbooks. Furthermore, pupils were using laptops to complete e-worksheets.

- **EnT1 pedagogic practice**

In the reflective sheet 4 after attending the first workshop, EnT1 was very straightforward with her ideas and goals focusing on her pupils' achievements:

> *"Developing pupils' skills, in general pupils' achievements are very weak in reading English, and at the same time [not clear who is committed - check] committed to the curriculum".*

EnT1's main problem is with the heavy curriculum and how to reduce or summarize it for her pupils. Thus, she stated her goals as addressing the main question on her mind as follows:

> *"How to reduce the curriculum and present it easily and smoothly for the pupils?" (EnT1).*

EnT1's goal was:

> *"Developing pupils' skills and to be creative using innovative software that will be useful for the curriculum and improve pupils' achievements" (EnT1, reflective activity sheet 4).*

The reflective activities enabled EnT1 to talk about the problems she was facing, and trying to find solutions to improve the teaching and learning process in her classroom. In the second semi-structured interview, EnT1 explained her thoughts that the problem is not with technology but with the kids themselves:

EnT1 asserted that the problem is with the pupils:

> *"if they were smart pupils yes it might work, but most of them are weak which confuses me; if someone helps me if the pupils help me or make anything I would be a creative [teacher], but the problem is not with the technology it is with the pupils themselves" (EnT1, second SS. Interview).*

She added,

> *"I feel ICT is helpful especially in English, but not for the third grade"* (EnT1, second SS. Interview).

EnT1 hold a very confident attitude toward her pedagogic practice, and that the problem is in pupils skill, and curriculum, which she would like to improve.

Reflecting on her pupils' role and learning process, EnT1 came to a conclusion that she has two problems: 1) very weak pupils and she needs help with them, and, 2) she needs to improve her teaching skills:

> *"They [pupils] still need more time in training to learn alone, I feel some pupils have improved in reading, they were able to read and do the activity if they did not hear me reading, but in general most of the pupils are still weak."*

EnT1 attended the workshops and was exposed to the innovative videotaped best practice from cross-cultural such as: UK and USA classrooms. During

the community of practice and the second semi-structured interview, EnT1 reflected on her colleagues' practice. She mentioned that it was useful to observe her colleagues' classroom practice before designing her ICT-based lesson. EnT1 said that:

> *"It was very useful for us to see your practice before designing our own ICT lessons, we have learned from your design and mistakes also"* *(EnT1, 2nd community of practice).*

Then EnT1 expressed her feelings toward EnT2, the fifth grade English teacher:

> *"I noticed EnT2 had so many ideas, I never thought of them, I never saw the things that she knew and observed, EnT2 is applying the things that she observed before"* (EnT1, third SS. Interview).

As a result of observing and reflecting on others' practices during the RP-BCPD interventions, EnT1 was motivated to learn and improve her pedagogic practice. EnT1 decided to use the internet to search for alternative ideas and methods of teaching with ICT. She preferred to use activities that suited the lessons, focusing on ready-made vocabulary activities on the internet. EnT1 found games, videos and short activities that could be done in five minutes or less, as she has a lot to cover in one lesson. Also, EnT1 mentioned that she used the help and ideas of her first-teacher and colleagues in the English language section in her school.

> *"I searched the internet and found useful ideas and activities. Sometimes I feel it takes most of my time and I don't find anything"* (EnT1, third SS. Interview).

Also, EnT1 used the useful suggestions of EnT2, the fifth grade teacher from Alfade's school:

> *"EnT2 reflected on my ICT lesson and she suggested that I should use external learning activities, rather than using a curriculum that makes pupils board"* (EnT1, third SS. Interview).

EnT1 did not write a journal reflecting on her practice with ICT as she is teaching three classes and as a result of overloaded work in future schools. However, she used the five minutes after each lesson to talk to the researcher or her colleague in the programme about her practice and for feedback and suggestions. EnT1 explained that she did not have problems with learning from others even if they were not experts, because she is a novice and unqualified teacher, and she is very enthusiastic about learning to improve her pedagogic practice. In the community of practice EnT1 shared some reflections with her colleagues as follows:

> *"As for thinking, no I did not use thinking activities, I was very limited because the curriculum is very heavy, I did not see any improvement or response from the pupils even when I send them an e-mail; also, their homework their parents do it for them or help them"* (3rd community of practice).

Reflecting on her pedagogic practice and pupils learning, EnT1 decided to design ICT-based lessons using variety of classroom sittings such as: individual, group and whole-class activities. Furthermore, EnT1 decided to use Microsoft office Word to design small vocabulary activities for her pupils, as well as videos and worksheets to use in addition to the textbook and workbook. Pupils had to practise reading and memorize vocabulary using the ICT-based activities to prepare them for the test. EnT1 decided to use videos from the internet (YouTube) in the lesson plans as a way to connect pupils with their real life and society. EnT1 decided to use the same lesson plan, ICT tools and activities, as she is focusing on the vocabulary skills. EnT1 designed

in class learning-activities applying variety of teaching and learning methods such as:

Whole-class activity:

- IWB for watching PowerPoint pictures

- Reviewing new vocabulary

- Display and talk about the pictures

- Watch and discuss videos

- Microsoft Word activity matching pictures and words

- Listening to audio-stories

- YouTube videos

Individual work: Microsoft Word activities on desktops and pupils' laptops
Group working (in three groups):

- Pupils draw what they understand from the story

- Track the code' to find a given word

- Identify words in the past and in the present tenses??

All pupils in groups or individually engaged in the same activities regardless of individual differences. The theory of action in use of EnT1 is to use ICT tools for her pupils to practice words memorising and recalling, she preferred using skills-based ICT activities to improve pupils learning skills.

EnT1 reflected on her new lessons' plan, she thought that using the ICT activities took most of the class time, but she did not see any changes, while her colleagues noticed the changes in her practice as well as in her pupils,

compared to their initial interaction with ICT activities. In the second semi-structured interview EnT1 was confused answering the question about the ICT integration:

> *"It is a tool but I cannot rely on it, it could be used for evaluation. I feel the activities were more than five minutes at the end of the class and took time. As for pupils' level and achievements, I don't know if it had positive effect on pupils".*

EnT1 did not notice the changes in her pupils learning and achievement process because of her reality as uncertified teacher, which is related to understanding the process of assessing pupils' achievements that EnT1 was not prepared for in college, or before starting to teach in future schools.

EnT1 with her two class colleagues LiT1 and ScT1, have changed the pupils' sitting arrangement from semi-circle tables to five groups of single tables that could be re-arranged based on teachers and pupils' need. The class was accommodated with four desktop computer stations with the internet access, placed at the back, behind the pupils' five groups. Though EnT1 thinks that *"the use of ICT was useful, if only using a different method for activity"*, reflecting on classroom environment and her innovative teaching methods, she thinks that she had more flexibility:

> *"There was more flexibility; I could teach them [pupils] the curriculum using a variety of methods and it was much better"* (3rd community of practice).

EnT1 attitudes toward using ICT and alternative teaching methods was approved as she continued to reflect on her pedagogic practice and pupils learning style.

EnT1 usually starts the lessons in a same pattern, using activities designed to review the words learned previously. She thinks that her pupils must practise and remember the new English words and put them into sentences. The whole classroom activities follow the textbook tasks that pupils have to complete as part of the national curriculum which EnT1 cannot ignore. Then, she follows with the workbook activities which first-teacher, supervisor and parents check regularly to make sure pupils have done them. EnT1 reflected on her actions utilizing ICT in the lesson plan, as follows:

> "I used the video and computer activities, but my pupils are very weak, most of them. Even my first-teacher suggested that I try to sit with the weaker pupils and try some activities with them, but it was not useful" (EnT1, third SS. Interview).

EnT1 felt that it was difficult for her to be creative and interactive in her lessons' plan, she still felt that there was something missing, and she blamed the pupils as being very weak and not helping her to be creative. EnT1 noticed that some of the pupils are getting better and improving their English language skills, but she does not know the reason for it:

> "Some pupils are very, very weak, I feel strange when I see they have suddenly improved their level, but I do not know where it happened, I mean is it from the parents teaching the kid, he started to respond in the classroom" (EnT1, third SS. Interview).

Then, EnT1 developed an idea that ICT is not suitable for the third grade:

> "I think ICT is helpful but not for the third grade" (Third SS. Interview).

EnT1 lacks the skills and knowledge of using the formative assessment to follow up with her pupils learning and achievement process, which is the problems with the Educational System in the Kuwait context.

EnT1 has designed ICT-based lessons integrating educational video and computer activities. EnT1 tried to integrate a variety of individual and group ICT activities into the lesson plan. There are important points to draw from EnT1's progress through the CPD programme which are:

Firstly, EnT1 changed the way she usually starts the lesson by using flash cards, and instead started using the IWB for a whole class activity to display pictures with the corresponding word and asking pupils to match them. She also used it for practising writing words, and then displaying pictures and asking pupils to come up with sentences. However, if they cannot develop a sentence EnT1 presents the answer on the IWB for the pupils to read, which means she is still using the traditional method of providing knowledge (see Table 23 for more details).

Secondly, EnT1 presented a video for the class during one of the lessons to connect between what they learn in the textbook and their environment, which connecting theory to practice in pupils' life.

Thirdly, EnT1 used pictures and words and asked pupils to think and practise developing sentences in their groups, which is an act of promoting pupils' thinking skills.

Fourthly, during the whole-class activity EnT1 would praise pupils with encouraging words for the right answers. For the second whole-class activity, 'listen and repeat ', EnT1 asked the pupils to listen to the conversation from

the lesson in the IWB, answer questions, and then listen and repeat what they were listening to. In the third whole-class activity, EnT1 presented a page from the workbook on the IWB so that pupils would read the sentence and complete it together, and EnT1 then wrote the answer for the class to copy it into their workbooks, which is still traditional practice.

Finally, EnT1 assigned pupils to their individual and group work, and requested from two groups to work on individual computer activities using desktop and laptops, while the other three groups were working with worksheets and word games.

EnT1 was supported by her colleague LiT1 and ScT1 who were walking around and helping pupils with computer and group activities. In the first lesson the computer activities were made using Microsoft Word. In the second and third lessons EnT1 used software applications called "Mash Potatoes" and "Word Games". EnT1 focused on word memorization, as well as practicing reading, writing and grammar (see Table 23 for more details).

Seven out of the eight participant teachers were able to attend EnT1 first ICT-based lesson and they wrote their reflections on EnT1 practice using the reflective sheet 6. EnT2 attended one lesson for one ICT-based lesson by EnT1, and then she reflected on EnT1's practice; she wrote:

> "EnT1 is instructing pupils to read and answer questions using PowerPoint and real player to show video. Pupils are answering questions, listening, watching, reading and writing. They then were divided into groups and asked to complete their own assignments. EnT1 used a variety of activities which attracted pupils' attention and

engaged in the lesson. No thinking- mostly memorized responses. The lesson shows how much they already knew" (EnT2 reflective activity 6).

ScT2 reflected on EnT1:

"EnT1 used video, PowerPoint and data show and IWB discussing the video with pupils. Pupils were interacting with their teacher answering the questions, working in groups. EnT1 did not pre-prepared the audio track that she was going to use it in the lesson. Using pictures and video for the lesson was very enjoyable for the pupils. The lesson was very beautiful and easy" (ScT2, reflective activity 6).

EnT1 pupils were very happy with the new learning style that their English teacher introduced for them in the class, such as computer activities and watching videos during the lessons:

"The teacher let us play and watch video. English teacher puts us in the back to work with computer activities" (St4, second SS. Interview).

St15 said they were very happy using computer:

"We used to write on the laptops using the Microsoft Word it was very enjoyable" (St4, second SS. Interview).

EnT1 designed the ICT-based lessons to encourage pupils to be active during all of the class time; however, pupils had to be quiet during the four ICT-based lessons. Comparing between lecture style teaching and coaching pupils, EnT1 accepted the idea of adopting and adapting the approach of coaching pupils instead of talking most of the class time:

"Coaching is much better; I just give them the main information then let them work alone on their activities" (EnT1, third SS. Interview).

The reflective practice and the cultural context of future schools motivated EnT1 to engage in the change and try to find some solutions for her pedagogic practice. Though that she had some difficulties with TPCK and pupils learning problems, but she initiate some changes trying to improve her

pedagogical skills, and using ICT to manage classroom activities. Furthermore, EnT1 urged her pupils to learn with ICT-activities, using the e-mails for homework, and trying to promote collaborative learning through group work which is part of 21st century learning skills.

EnT1 experienced a problem with finding useful methods and felt that some of the times, searching was just wasting of her time:

> *"Not every time I do a search in the internet I find useful things, I feel it takes my time."*

She complained:

> *"Why they [textbook's authors] don't provide the website addresses as resources that we could use in designing our activities in the teacher's guide"* (EnT1, third SS. Interview).

This emphasises the importance of activating the technologist role in the schools to help teachers with overload work.

The following Table 23 shows examples of EnT1's pedagogic practice during the intervention RP-BCPD mode.

Table 23: EnT1's practice after RP-BCPD.

Topic	Picture from videotaped classrooms	Description
Teacher's role.		EnT1 role was a combination of traditional approach in front and walking around guiding pupils in their individual and group activities.
Pupils' Role		Pupils' role was a combination of traditional roles of listening, watching and answering questions (textbook & workbook for national curriculum), and working in groups and individual activities (hands on & ICT activities),
Pedagogy		EnT1 had mixed pedagogy: whole-class work, group work and individual work. EnT1 used different ways of motivating pupils such as: placing pupils' work on the wall for the class, putting stickers on their hands and asking pupils to clap their hands for the right answers.
ICT use		EnT1 used the computer desktops and pupils' laptops for the Microsoft Word activities 'Mash Potatoes' software, and IWB for the whole-class activities. Pupils were immersed in ICT activities learning, collaborating with each other and being active.

I used the TPOR and videotaped observation data analysis to follow EnT1's progress in order to understand the process of change, if it happened, in EnT1's classroom practice during the RP-BCPD. EnT1 was actively engaging in the change process, trying to practise as reflective practitioner, and to learn from her colleagues in order to improve her pedagogic practice. The TPOR results of EnT1 classroom practice showed an increasing in the scores from 50 to 143, which means that EnT1's initiated some constructivist pedagogic practices (see Appendix I). EnT1 thought that inquiring into and improving professional action was useful:

> *"It was useful and encouraging. Maybe I need more professional development like this programme to prepare me and improve my practice, especially learning about the individual differences between pupils and how to deal with it. Honestly, my pupils are very weak in achievements"* (EnT1, third SS. Interview).

- **ScT1's pedagogic practice**

Following up with ScT1 science teacher from Alfarisi primary school, the thematic analysis revealed that ScT1 did not experience major problems with ICT skills or adapting ICT in her classroom. As a reflective practitioner, she encountered problems with the weakest pupils she was assigned to teach in the third grade. Reflecting on the pupils' learning process, ScT1 thinks that her pupils are still not skilful in ICT, and that they need more training to master working with computers' software and using the keyboard. ScT1 tried to find a solution for her class which is full of weak pupils; she decided to use the smart pupils as co-teachers to help her with the groups in addition to her colleague LiT1. Reflecting on her own skills, ScT1 mentioned it in the first interview that she had a problem and it carried on because there was no time during the school year for professional development courses:

> *"The problem I have is with language; now I need to take a course in the language so when I visit the foreign sites I know what is it, however, it was useful for me and the kids"* (ScT1, first SS. Interview).

ScT1 said that they have a problem with the national curriculum obligations:

> *"We are restricted to number of textbooks, in which pupil has to complete during the lesson and to be corrected and this is accounted from the teacher's performance"* (ScT1, second SS. Interview).

Arguably, the textbook still remains as the main obstacle for the integration of ICT in lesson plan and classroom practice. ScT1's reflections on her pedagogic practice were useful to improve it. She noticed that her pupils like watching video and interactive flash animation lessons, as well as the computer activities, and she decided to use what they like:

> *"I noticed some changes in my pupils' attitude toward learning when ICT was integrated; they like to learn by themselves; also, they like games activities"* (ScT1, 3rd community of practice).

ScT1 was very organized and focused as she considered her ideas, questions and future goals, while planning for participating in the proposed RP-BCPD programme. ScT1 was engaged in the change and trying to improve her pedagogic practice according to her own and others reflections, but sometimes the cultural context of future schools affected her innovative plans. ScT1 has written her ideas, questions and goals as points in the reflective sheet 4 after the workshops and the first community of practice. ScT1 ideas, questions and goals as following:

- *To make great use of technology in the lesson activities.*

- *Using technology to present more than one lesson and link all lessons together.*

- *Activate the ICT in the classroom to enable all pupils to acquire the computer skills and learning with computer.*

- *To overcome the problem of completing the curriculum on time.*

- *How can ICT be implemented to overcome the cumulative curriculum?*

- *How to use ICT with special needs cases that have no desire to learn?*

- *How to use ICT in some educational situations I face regularly?*

- *To be able to use ICT in teaching and designing programmes help me instead of using the internet.*

- *To enable pupils to use ICT most of the class time and in learning'* (ScT1, reflective sheet 4).

In order to improve her pedagogic practice according to her reflections, ScT1 used the internet for her search, by visiting the social networks such as: forums of teachers and experts on the internet, and adapted some of their ideas and the activities to her classroom.

> *"I have visited many websites and found many ideas; there are people over the internet with ideas that I did not know about it and want to learn how to do it"* (ScT1, second SS. Interview).

ScT1 has found many ideas and activities on the internet which helped her to think and create her own activities that suite her pupils' age, grade and individual differences:

> *"I can do these activities and actions and the paints, just adding pictures, I can download the program and learn how to design my own activities, but I need time"* (ScT1, second SS. Interview).

Reflecting on her effort to improve her practice, ScT1 said that she found new methods, ideas and activities from her search to adopt and design her own activities better than asking others to make it for her:

> "I learn from my own [experience] and design my activities, but I would not ask the technologist in the school to design any of my activities as she could not make what I want; I have to sit with her when she designs it and I don't have the time, but if the ministry provide us with professional development courses in ICT we could depend on ourselves" (ScT1, second SS. Interview).

ScT1 responded to her reflection about classroom practice and developed new action points to improve the demonstration of the lesson inside the classroom. ScT1 decided to divide the class time allocating 15-20 minutes for the whole-class activities, and the rest of the class time pupils were working on individual and group tasks as following:

- Pupils starting the lesson by solving maths problems on the IWB and w/b presenting the five methods of multiplication for the same number, such as the multiplication by number 7, as a whole-class activity.

- Pupils assigned to groups: different worksheet activities and computer activities, practising multiplication by number 7.

- The groups that finished their activities will complete the textbook activities.

- Teacher will be guiding pupils in the whole-class activities, facilitating the activities, mentoring, walking around, helping weaker pupils and providing feedback.

- ScT1 was taking the position of a guide helping pupils when they asked her and could not help each other (see Table 24).

ScT1 decided to be more creative as the UK and USA teachers which she observed from the cross-cultural videotaped classroom practice:

> *"I wish to use the ICT not in the class or for five minutes only, I wish to use ICT like those teachers in the video we watched, using ICT all the class time. Utilizing the worksheets was a good experiment"* (ScT1, second SS. Interview).

The reflective sheet helped ScT1 to point out personal problems and try to find solutions. ScT1 could not solve the language problem when surfing in the English website. Thus, she used the alternative ideas from the Arabic expert teachers on the internet, and designed more worksheets and computer activities for her pupils' learning activities. Furthermore, ScT1 decided to let her pupils complete the textbook activities once they are done with their class activities as it is important for parents and first teacher, which is related to the cultural context of Kuwaiti educational system.

ScT1 developed new knowledge in relation to her pedagogic practice. Importantly, she was learning to reflect on her pedagogic practice, but she also improved her abilities in using ICT, such as computer and internet applications. ScT1 noticed that her practice has improved when she decided to adopt the coaching role:

> *"I mean before I used to teach three quarters of the class time, now when I coach and the pupils are working with each other there is a kind of interactivity between us"* (ScT1, third SS. Interview).

Furthermore, ScT1 was very engaged in the change process reflecting and improving her pedagogic practice. She started to understand her pupils learning process, what they preferred and how they were learning, ScT1 felt that her belief about the concept of pupils' learning has changed:

> *"Yes, that the kid has to solve problems and work more than he watches and listens, I mean that the kid himself has to discover and experiment even with maths"* (ScT1, third SS. Interview).

Reflecting on pupils learning skills, ScT1 thinks that her pupils still need to practise the use of computer to improve their ICT skills, as most of them were not capable of using the keyboard:

> *"All the pupils want to work with the computer activities, and the problem is not all of them skilled in computer and that requires more time from me"* (ScT1, second SS. Interview).

ScT1 develop the habit of observing and reflecting on her pupils learning, and then trying to activate their learning. She developed new interactive learning activities to motivate her pupils to engage in the learning process. ScT1 noticed that her pupils became more active when she used the video and flash-card activities instead of talking and explaining:

> *"When I presented the video for them, they were active and interacting with the video more than with me; no sleeping and I had all their attention"* (ScT1, second SS. Interview).

> *"Also, I noticed they like to watch things then they become active working; when I explain the lesson they were yawning and a pupil would put his head on the table, whatever I do to catch his attention I couldn't do that before"* (ScT1, second SS. Interview).

Furthermore, ScT1 mentioned in the second semi-structured interview, that her pupils have problems with test and exam papers and she tried to fix and overcome this problem, which is related to the Educational system in Kuwait:

> *"We have a problem, the pupils were afraid of the exams, once you hand them the paper they would ask, is it an exam? But now the kid is used to the worksheets and when he asks if it exams we say no it is an activity, even if I gave him the exam paper he would not be afraid as it became normal working with papers. I tried it and it worked"* (ScT1, second SS. Interview).

ScT1 noticed that there were several weaker pupils in one of the groups, and therefore they needed her full attention:

> *"I noticed once that one of the groups had all weak pupils, it was a problem, so I had to put one stronger pupil with them, at least who could think and help them"* (ScT1, second SS. Interview).

Furthermore, ScT1 gave more time for pupils to work independently, rather than talking and instructing:

> *"I let pupils apply what they learnt using the activities most of the class time; I let them watch interactive flash animation activity or video then work on their activities"* (ScT1, second SS. Interview).

ScT1 noticed that utilizing ICT in classroom saves time even with the substitute teacher, thus, she decided to use ICT for classroom management:

> *"Using ICT tools such as computer inside the classroom saved us some time, even the substitute teacher could let pupils work on their activities 0n the computers if the class teacher was absent"* (ScT1, second SS. Interview).

Reflecting on her practice, ScT1 used the reconstructed knowledge and skills to improve her pedagogic practice with technology. ScT1 think that searching and using alternative pedagogic methods with ICT was a good experience for her:

> *"The researcher's role urged me to stay long time searching the internet as I find ideas, people with ideas for maths, and groups, programs I never knew about and wishes to learn, things that I can do. I discover the skill of connecting with other people over the internet and ask them for help, and share my experience with them, which saved me time and work"* (ScT1, third SS. Interview).

ScT1 believes that reflective practice was a type of shared experience:

> *"...it was like sharing experience. Even with my colleague LiT1 we sit with each other all the time [who teaches the same class with her], we reflect on and use each other's ideas"* (ScT1, third SS. Interview).

Regarding the freedom of choice related to methods of teaching during the RP-BCPD programme ScT1 thinks that:

> *"We were limited to use the national curriculum; otherwise we had our own methods of teaching as the Ministry had one routine method"* (ScT1, third SS. Interview).

ScT1 thinks it was a challenge for her:

> *"The only challenge that I was alone with myself no one there to ask for help, when there is a first-teacher, colleagues and other teachers outside the school I could use their ideas, but when I am alone, it means I have to struggle to search, to discover and to think, when there are experts I can ask questions and have more than fifty ideas and choose what I think is better, that is the challenge"* (ScT1, third SS. Interview).

ScT1 thinks that she made a progress in finding solutions for her pupils' learning problems, and discovering ways to motivate her pupils:

> *"...now every group has different activity to work with, the same question or idea but different form of activity"* (ScT1, second SS. Interview).

ScT1 did not have problems with school's administration such as: first-teacher inside the school or teacher-inspector from the district. She was offered the freedom to practice and attend the RP-BCPD intervention, and develop alternative pedagogic practice using ICT. The school provided ScT1 classroom with computers and internet access requested from the ministry, moreover, they invited the parents to educate them about the project and ask them to cooperate with the classroom teachers.

On the other hand, ScT1 had a positive attitude toward others' reflection on her practice; she did not have problems with receiving reflection from her colleagues participating in the study. Seven of the participant teachers

attended the first ICT-based lesson that ScT1 designed and reflected on her practice, as demonstrated below. EnT2 commented on ScT2 practice:

> *"ScT1 used IWB, divided classroom activities into groups- each writing a different assignment. Pupils were answering questions from the IWB's thinking activities. ScT1 encourages 'thinking aloud' activities were well balanced and carefully chosen, well prepared and very interesting"* (EnT2, reflective activity 6).

Also, LiT2 has reflected further on ScT1 practice:

> *"ScT1 used IWB, computer and worksheet activities; pupils were interactive with solving problems on IWB. Pupils were in groups, working with laptops and computer or worksheet activities. ScT1 did not use internet in the lesson at all"* (LiT2, reflective activity 6).

ScT1's pupils were very excited talking about their teachers, especially for the maths and science:

> "*Miss ScT1 displayed an interactive flash animation activity for multiplication tables on the IWB, she downloaded games for us, it was amazing. She used to explain the lesson for ten minutes then she let us play with computer and groups' activities"* (St16 & St15, second SS. Interview).

ScT1's Pupils preferred the group work:

> *"When I play the maths games on the computer, I like my friends to work with me, they help me"* (St17, second SS. Interview).

When I asked the pupils if their teacher helps them with their activities they responded that *"she explains for us the rules of the activities and lets us work alone, and if we ask her for help she will assist us"* (St1, St3, St4, St15 and St17, second SS. Interview) (see Table 24).

Table 24: ScT1's practice after RP-BCPD.

Category	Picture from videotaped observation	Description
Whole-Class activities		Pupils solving the IWB activities and teacher as the guide on the side guiding and helping when needed.
Group work		Pupils working with different worksheets in their groups and the guide of each group help the weaker pupils to solve the problems.
Individual work		Individual pupils using either their own laptops or the four station desktops provided by the Ministry of Education with internet access.
Textbooks		Pupils completing the textbooks activities as it mandatory and parents ask about it.
Teacher's role		Teacher walking around either to help or to check pupils' work in groups or individually.

Example of project-based lesson done by ScT1

First: ScT1 designed a project-based lesson (PBL). ScT1 had to work with ScT3 (from Asmma's girls school) and they had to design together a lesson for their third grade class about recycling. The PBL was done on-line through video-conferencing for both boys' and girls' classes as they were in different schools. ScT1 and ScT3 were preparing for the project-based lesson

separately, which helped to understand each teacher's skills and knowledge gained from the RP-BCPD to develop alternative methods of teaching.

Starting from the mid of April 2010 ScT1 and ScT3 were preparing the collaborative project-based lesson on recycling. They searched the internet and consulted the expert science teachers in their schools about the recycle lesson and collected some useful ideas for their lesson plan. The national curriculum authors of the science textbook assigned one week for pupils in the third grade to learn the recycle lesson, thus, ScT1 and ScT3 had to design the project to fit into the last two weeks of April, 2010.

The recycle lesson plan in the pupil's science textbook and workbook is designed to educate pupils about protecting the earth from rubbish, pollution and to recycle what we can rather than throw it away. As an activity the pupils would recycle the leftover food provided by the teacher to produce manure from natural fertilizer. Pupils have to complete two activities in their workbook identifying ways of recycling three things. In the teacher's guide, teachers are instructed to make pupils brainstorm, thinking about how to protect the earth, explain the recycling concept, apply language skills asking pupils to make logos from the new words, make pupils identify recycled items around them, and let pupils experiment by recycling food and watching the progress.

ScT1 and ScT3 decided to explain the meaning of recycling then let pupils work alone following the project-based lesson they designed together:

- **First:** Teachers introduce and explain lessons 7 and 8 about protecting earth by using recycling method. ScT1 presented recycle video for pupils to watch in boys' schools and on-line through the video conferencing for the girls' school to follow with them and discuss the video by answering brainstorm questions.

- **Second:** Pupils' first on-line meeting to discuss the work plan. Teachers divide pupils into groups: recycling papers and recycling rubbish collected items.

- **Third:** Pupils design their posters and adds to display around their school and classroom about their project, collect rubbish items such as (cans, papers, cartoons and plastic products), and cut and soak papers in water.

- **Fourth:** Pupils second on-line meeting to share ideas from their research which they have put on posters to distribute in their schools, and talk about the progress of their recycling.

- **Fifth:** Pupils work on their own projects recycling the items they have collected: boys' school invited parents to be with their children and support their recycle project; in the girls' school the girls were left alone in the science lab to do the paper recycle, and in the classroom to work on the recycling the rubbish items with a substitute teacher to videotape the girls.

- **Sixth:** Pupils' last meeting to present their finished recycled items, talk about their work process and the challenges they faced during their project.

- The boys' school manager attended most of the project-based lesson activities to support pupils, while the girls' school manager attended the parents meeting only.

- Recycled products that the boys were placed in the school exhibition and some pupils used in their classroom, while girls took some of their recycled items home to show parents their work, and some were kept on their tables at the classroom.

- Children from both schools were very happy and excited that they could work independently (see Table 25).

Table 25: The project-based lesson for both boys' and girls' schools.

Boys (ScT1)	Description	Girls (ScT3)	Description
	Teacher explaining the project for boys.		Teacher explaining the project to the girls.
	First meeting: Pupils watiching video about recycling producst on-line from the boys' school. Boys in groups. Second meetings - boys sharing the ideas and posters on-line.		First meeting: Pupils watiching video about recycling producst on-line from the boys' school. Girls in groups. Second meetings- girls sharing the ideas and posters on-line.
	Boys working on recycling papers and rubbish items and parents invited to support their children.		Girls working alone on recycling rubbish and papers and the substitute teacher was videotaping the free session.
	Boys presenting their work and girls following them on-line through skype conference.		Girls presenting their work and boys are following them on-line.
Pupils were presenting and talking with each other, and posing questions about each other's works. Teachers facilitated the whole event: ScT1 had the help from her colleagues and school department, while ScT3 working alone had the researcher's help only.			

The cultural context of both girls' and boys' schools had the most impact on the process of preparing and implementing the project-based lesson. ScT3 did not have the amount of support that ScT1 was provided from school's administration and parents. However, ScT3 was not fully engaged in the lesson process guiding and facilitating pupils learning, while ScT1 with her colleagues LiT1 and EnT1 was providing pupils with advice and working with them. ScT1 asked the parents to get involve in and visit their children during the re-cycle lesson, while the girls' administration refused to let parents visit the girls' project-based lesson and even parents did not care. Teachers were differing in their attitudes toward the engagement in the lesson process.
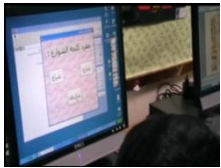
ScT1 pedagogic practice showed that she was able to stimulate her pupils to initiate 21st century learning skills such as: learning collaboratively in groups, completing projects- based learning, and using ICT in the learning process. The school environment were very flexible toward ScT1' needs, offering her the freedom, time, space and the authority to prepare for the project with her colleagues, pupils and involving parents to attend the process of the project. The parents were unique in this project, they attended three working days dividing themselves in shifts to encourage their kids to work, and support the classroom teacher ScT1who encouraged them to join. Furthermore, the school's manager encouraged ScT1 and her pupils by attending the process of the project, and presenting pupils recycling product in the school show room. The process of the recycling project motivated ScT1 to integrate more ICT tools without first-teacher interfering. ScT1 had one whole week for the project involving kids and parents inside the classroom, as well as stimulating

parents to accept that their kids discuss and present their work through three video-conference events with girls from the other school and same grade. ScT1 was motivated and supported to develop the sense of autonomy during the study, which encouraged her to develop her pupils' autonomy to work free in their project and build communication skills using video-conference.

Unlike ScT3 had less support from school's administration, colleagues and parents. The parents did not have the permission from the school's manager to attend the project, which influenced the parents to became less supportive toward their daughters' project. The girls were working alone with no supervision or inspiration from their teacher, because ScT3 had to finish administration work. The only support that the ScT3 had from parents and school's manager is to let the girls present and discuss their project on-line with the boys from the other school through the video-conferencing. ScT3 did not have the support and the motivation to develop the sense of autonomy during the study, however, ScT3 tried to offer her girls more freedom to work and talk during the recycle project.

The following Table 26 presetting examples from other teachers participated in the RP-BCPD intervention model and develop alternative learning methods and activities using ICT for their pupils.

Table 26: Examples from other participant teachers in the intervention model.

Teacher	Example of the innovative ICT based-activities	
LiT1 (3rd grade) Used the visual basic software To develop a word activity for Arabic language.		
ScT2 (5th grade) Used the PowerPoint to develop math activities, simulation videos for scientific natural phenomenon.		
EnT2 (5th grade) Used video for reading story time and PowerPoint to design English activities. And MS office for writing short essays in peers.		

6.3 Conclusion

This chapter addressed three phases of the intervention model case study, designing, developing and implementing the RP-BCPD in Kuwait context. I have presented the process of change during the intervention RP-BCPD model, to explore ways in which the nine participant teachers integrated ICT into their pedagogic practice. The chapter presented themes that emerged from the quantitative and qualitative data analysis to show the types of teachers' pedagogic practice as they engaged in the intervention model. The case study presented three different examples of the pedagogic practice integrating ICT from the nine participated teachers, which helped to understand the process of change. The three case studies showed the differences between teachers' pedagogic practice, and the differences between qualified and unqualified teachers in integrating ICT, teachers'

perceptions of the effects of the ICT in their learning, in practice and pupils' learning style, and the degree of consistency between teachers' beliefs, knowledge, skills and pedagogic practice. The next chapters will focus on the evaluation phase of the intervention model according to teachers' reflections on the model in order to help refine the CPD model to be suitable for the Kuwait context

Chapter Seven

Case Study: Phase 5.1 Evaluation: Factors Affecting Designing and Implementation of the RP-BCPD

7 Introduction

This chapter focused on the evaluation of the intervention model related to the factors that affect future schools' teachers' practice based on the semi-structured interviews with the nine participant teachers and classroom observation. The thematic analysis of the interviews and observations helped to shed some light on understanding the factors that affected teachers' engagement in the process of changes, to understand what made or motivated teachers to change or resist participating in the change process during the RP-BCPDP, and to answer the research questions as follows:

1 What factors lead teachers to engage or disengage in the process of change?

The analysis of the semi-structured interviews revealed two types of factors that act as constraints affecting teachers in the future schools' system: internal and external. Table 27 presents the summary of the factors and barriers that affect the teachers' practice before and after the (RP-BCPDP). The findings are organized according to three areas of analysis: 1) the impact of future schools' cultural context on teachers' practice, 2) factors affecting teachers' pedagogic practice before RP-BCPD model, and 3) factors affecting teachers' engagement in the process of change during the PR-BCPD model.

7.1 The impact of Future Schools' cultural context on teachers' pedagogic practice

A new system called 'new schools' was proposed by a group of experts in the Ministry of Education in Kuwait state sector. However, the new approach was not greeted with enthusiasm by all educationalists. Some teachers view the new system as a very well designed environment for learning and teaching, while others do not feel it is different from the normal public schools in Kuwait, with all and same or even extra demands on the teachers. Four sub-categories emerged under this future schools category: context, ICT use, relationships and learner-centeredness, in which teachers stated that it is central to the future schools' philosophy.

7.1.1 Context

Teachers view the context of future schools as more interactive environment for both teachers and pupils, compared with the other 'normal' public schools. ScT1 thinks that there is a more interactive climate and more activities in the future schools which help make the schools a more motivating learning environment for the pupils:

> *"For example, our section is responsible for preparing worksheets for love to learn, other section responsible about cooperation, here the family love. Every topic takes two weeks, so when we talk with them about the topic they apply and draw things, and this is better which is different, I mean the other schools the teacher inter the classroom to teach and leave does not care, she complete the curriculum and leave. Here we focus on everything" (ScT1).*

The main feature of the future schools context is that literacy, and science and maths teachers' offices are inside the classroom, with two desks at the back of the class: one for the maths and science teacher who teaches four subjects

and the other for the Literacy teacher who teaches five subjects, as they are the class teachers:

> *"Here [in future school] I am in the classroom even in the Arabic or English periods, I am setting even if I do not have any role in the classroom, I am setting to learn from the Arabic and English teachers, I grasp some ideas I can apply it choosing what suits my subjects, this is the difference as I saw" (ScT1).*

As for the English teacher, her desk is in the English section where all English teachers' offices are, and she thinks that this is what makes the pupils loyal only to the class teachers, because they only see the English teacher once a day:

> *"Children are loyal to their classroom teachers the most, anything teachers would ask they would do. You could see them taking permission to do anything from their classroom teacher" (EnT1).*

The English teacher (*En*T2) thinks that the weaker pupils need more attention in the future schools:

> *"Pupils lack learning, they need more attention, teacher to teach them more, monitoring from the first teacher more, from the achievements of the weak pupils, they need to take care of them" (EnT2).*

The 'future schools' context is interactive for some teachers and a barrier for other, it offers more space and time for some teachers to help weaker pupils, and limits others such as English teachers.

7.1.2 ICT use

When teachers were asked in the preliminary-semi-structured interview about the use of ICT tools in future schools they expressed their feelings of being overwhelmed by the demands of computer use in the future schools. From classroom observation of all future schools classrooms, the use of ICT is

limited to using computer labs for the computer-literacy classes. Hence, from the teachers' interviews I understood that they meant that teachers have to use computer to prepare the lessons and sometimes to deliver them using the computer lab or showrooms (a room in the schools that do not have IWB in the classrooms equipped with interactive white board, computer and data show for teachers to use when they need). Alfarsi primary school was the only school that all its classrooms were equipped with the interactive whiteboards (IWB) and each teacher had to use her own laptop to prepare lessons and deliver it using the IWB:

> *"The use of the computer and interactive whiteboard are more than other schools" (ScT1).*

And EnT1 added,

> *"I noticed that, and even the use of computer is a lot here, I feel even me as a teacher I am using the computer more than before" (EnT1).*

As for ScT3 a science and maths teacher from Asmaa's School, she believes that since she started teaching in future school she is using the computer on regular basis:

> *"This is my third year, since I started working I am using computer, all my work in the computer" (ScT3).*

7.1.3 Relationships

One of the interesting findings is that the teachers believe that the future schools enhance the relationship between the teachers and pupils, by providing more opportunities for interaction and enhance the teachers to spend time to get to know their pupils compared with the other public schools. However, this finding needs to be treated with caution, as it appears that

these views are limited to the class teachers only like the literacy, maths and science.

> *"In future schools I noticed that it enhance the relationships between the teacher and the pupil, and that because the teacher is with the pupil all the day inside the classroom, all the classroom periods setting with the pupils as a class teacher"(ScT1).*

Similarly, ScT3 believes that future school let her follow up with the progress of her pupils and to get to know them better:

> *"In the practicum course, I did not teach pupils everyday but every other day, I did not give them their rights and time, I did not know them. As for future schools, they are different, these are your pupils, you are with them, you know the girl if she has any problems and you follow up with her case, you know you if your pupils level is decreasing in math and science" (ScT3).*

As for the English teacher EnT1 nothing has changed, as she teaches more than one class and does not have time to get to know her pupils well:

> *"I just see them once a day for 40 minutes and I have more than one class" (EnT1).*

This comment can be supported on the basis of my observations as the English teachers' status seems to apply to all other teachers in the school who are not considered as class teachers such as: music, Art, so on.

7.1.4 Learner-Centre approach

The future schools' philosophy focuses on the learners as the centre of learning and teaching process. I have mentioned future schools' philosophy and regulations in Chapter Two. The participants think that the future schools care about the pupils and make them the centre of the learning process:

"For me, here in future schools we care to make pupils not only learn, but also other things like organizing his/her stuff how to love each other through the non-literacy aims" (ScT1).

LiT1 expands this theme by the following examples:

"We have ten minutes before we start the first period of the day, we give the pupils the freedom to talk, so you could see our children talk, I see them talk better than kids in other schools, but not all schools it depends on the teacher" (LiT1).

EnT2 thinks that the future schools encourage pupils to like schools and learning:

"More than anything else, they want the pupil to understand and learn, here is different, they want the pupils to like learning, to like school, to love themselves, develop his personality and ideas, which is good. But they should have balance" (EnT2).

7.2 Factors affecting teachers' pedagogic practice before (RP-BCPD) model

The analysis of the qualitative data revealed two main themes related to the types of constraints as the nine teachers identified them: external and internal constraints. The external constraints are factors that are beyond teaches' control, while the internal constrains are factors that are related to teachers' knowledge, skills, experiences and beliefs.

7.2.1 External constraints

The participant teachers identified ten sub-categories under this theme as constraints to integrating ICT in the teaching and learning in their classrooms.

7.2.1.1   Curriculum content

The nine participants highlighted the curriculum content as the main barrier to the integration of the ICT in the teaching and learning. The new curriculum content is very interactive from the teachers' point of view, but, according to all nine of the participants, it has a heavy workload and teachers have limited time to complete delivering the curriculum to pupils while preparing them for exams:

> *"It is new maths curriculum, pupils were not exposed to it before, for pupils were a leaping from old to a new and pressed curriculum, you cannot give them anything outside the curriculum. I used the PowerPoint once, but it is very heavy curriculum"* (ScT3).

LiT3 added:

> *"If the subject matter help and very soft, I can be creative, but it is very pressed subject, I cannot do many things, I will try sometimes"* (LiT3).

EnT2 think that the Ministry of Education designs the curriculum content that encourages pupils to memorize it, rather than to learn to think:

> *"They make the curriculums in a way that they tell the pupil you do not have to understand it, just memorize it, what is that?"* (EnT2).

As for ScT1 she thinks that even the ICT integral programmes that the ministry made for pupils to use in the computers' labs are made exactly from the curriculum textbooks:

> *"They designed the integrated programs based on the curriculum exactly not like the programs we see in the internet"* (ScT1).

7.2.1.2   Teaching method (pedagogy)

All of the nine participant teachers think that the teaching methods and the curriculum in future schools still practicing the transmission style of delivering

large amounts of knowledge within a short time, without considering the cognitive aspect of learning:

> "You know, our problem is we explain and demonstrate the lesson and repeat it again and again and the kids not learning or maybe he is bored from the repetition, maybe this is his ability of achieving, maybe less than other boys, so when you repeat again and again the one who did understand from the first time started to get bored. I would say that learning here is just transmission of knowledge and demonstrating and explaining the lesson" (ScT1).

Similarly, LiT1 thinks that she is the provider of knowledge and talks most of the class time:

> "I mean I am the information provider most of the class time, explain, explain and explain, then what. No, I do not want to be transmitting knowledge all the time" (LiT1).

As for the English teacher EnT2, she has critical views about learning in Kuwait:

> "I believe that in Kuwait, Learning is missing something short they want them to study in two weeks and there is a test, three weeks and there is another test, they want them just to study for an exam and they don't ever want the students to learn something a 'concept', they just want number 1 and then no. 2 no.3 no. 4, they do not give the child a chance to think"(EnT2).

She then goes on to explain that the teaching methods do not consider cognitive aspects of knowledge acquisition:

> "I do not talk about thinking, even if the pupil thinks, he is thinking just now in the tiny little place, they do not give him time to think about the big picture" (EnT2).

From my classroom observations and videotaped class, I have noticed that all of the nine participant teachers are using one style of teaching which is knowledge transmission and pupils are passive recipients; the teacher talks most of the class time delivering a large amount of information for pupils to

memorize and recall, when they are asked at the end of the class time or during the revision of the lesson or in the test.

7.2.1.3   First-teacher and inspectors' authority

The future schools were designed to give teachers more space for thinking about how to be creative and teach without the continuous supervision and interferences of first-teachers or inspectors, that they are there for them to support only and train them as class teachers, but in reality they are there to enforce teachers to follow specific methods. On the contrary, the teachers do not feel or think that they practice with freedom from the first-teachers or the teachers' inspectors' instructions. The nine participants expressed their sense of first-teacher authority even if they accept teachers' methods of teaching; still, they prefer their own methods of teaching:

> *"The difference of teaching methods between me and the first-teacher did not take of the issue of cordiality between us when I was discussing my method, she said; 'your method is right and my method too, but I prefer you use this method.' She did not force me to use specific method" (ScT2).*

ScT2 think that it is not forcing her to use the first-teachers' method, however, the first-teacher puts a subtle pressure on ScT2 to accept the suggest approach. It is the polite policy way to deny teacher's creative thinking and to impose upon her the dominance and authorities of the first-teachers' methods in teaching maths and science, conveying to the teachers that their thinking and creativity are alright but the methods used by the first-teacher are preferable for the ministry and district inspectors.

For example, ScT1 said that she was asked by the maths inspector to use the enrichment questions in order to identify the brighter pupils:

"As a maths teacher our teacher's inspections asked us to present an enrichment question which depends on thinking skill by this question you will be able to know the favored pupils" (ScT1).

Similarly, ScT3 reported that she has to follow the instruction of the inspectors even if they are not experts in the primary maths and science curriculums:

"We had high and intermediate schools inspectors coming to instruct us and train us how to teach the primary pupils, the ministry did not have special inspectors for primary curriculums and we have to follow their methods. What they have been training us for is different from the reality; we are the experts in the primary curriculum from our experiences" (ScT3).

According to LiT3 they have to follow the curriculum that the teacher's inspector had designed:

"Teacher's inspectors are designing and developing the Arabic curriculum and that is what pupils have to study and learn" (LiT3).

7.2.1.4   Examination system

Two teachers expressed their worries about the examination system and how it will affect their new methods of teaching with ICT. EnT2 and LiT2 worry that they will be introducing new things that are not in the curriculum and then they will be facing problems with the exams as they come directly from the Ministry:

"I am just worried about testing. How testing would be? Am worried if you are going to give them too much that that would be ministry doesn't wont. Are we going to be teaching them see theories, understand theories, you know all that, but when it comes to the silly questions that come in exam like: identify the water?.You have to write exactly what

they want. This is something you won't get from the computer you have to get from writing explaining" (EnT2).

LiT2 thinks that they do not have any solutions and cannot change the exams:

"We do not have any solutions, we will not solve this problem because we cannot change the method of the examinations, it comes from the ministry, maybe in the future it will change when this experiment succeeds" (LiT2).

That implies that teachers are there to deliver the national curriculum only which leads to teaching pupils to master certain skills and memorize information to enable them pass the ministry exams.

7.2.1.5   Classroom size

The nine participants teachers think that the size of the classrooms in the future schools is smaller compared to the pupils' number, as they have 26 pupil in one classroom with their single or group tables, teachers desks and textbook drawers for all the 26 pupils. Figure 16   below shows classroom size from two future schools.

"Especially the new schools new buildings these classrooms are small not like the old schools. I mean now we have 26 boys no space to move in the classroom" (ScT1).

LiT1 expressed her wishes to have a computer for each child in the classroom though that could not happen because of the class size.

"We prefer to have a computer for each student, we do not have that, it is difficult in our school" (LiT1).

ScT2 thinks it is difficult to have a computer for each pupil while she needs help to control the class from her colleague, the literacy teacher:

"I have 26 pupils; it is difficult to introduce the ICT tools in the classroom for the 26 pupil and I have the literacy teacher with me to monitor them" (ScT2).

From my classroom observations and videotaped lessons, I have noticed that the classrooms were designed to accommodate only fifteen pupils with their tables. The classrooms in the future schools are designed to include class teachers' desks, the class library corner, as well as the pupils' drawers for the textbooks, as pupils leave their textbooks at schools. The classroom size compared to pupils number and classroom's furniture (see Figure 16).

Figure 16: Pictures taken from the videotaped Classrooms shows the class size in future schools.

The nine participant teachers believe that pupils need to be prepared to use computers and other new technologies. Though that pupils are usually better than their teachers in using interactive technology tools and they have computer literacy class twice a week, unfortunately, the majority of the pupils in future schools cannot use the keyboard and computer software. Five of the nine teachers think that they have to prepare their pupils before introducing the new method of teaching:

> *"If I understand you right, you mean the right method from the beginning then kids have to learn how to use the computer to be the right method" (LiT1).*

Similarly, EnT1 thinks that she needs to prepare her pupils:

> *"Prepare my pupils" (EnT1).*

ScT1 thinks that the new method is possible to be implemented if pupils mastered operating computers in order to learn the subject matter:

> *"It is possible if the pupil mastered the use of the computer in learning about these subjects and concepts that related to them"(ScT1).*

ScT3 thinks that the implementation of the new method has to be done gradually in order to train the pupils about learning with computers, which is new style for them:

> *"Pupils like us they need to learn gradually how to use the computer, if I want to use the computer and the internet in the classroom, first thing, I need to take one of my class periods to preparing them how to work with computer and what they will be doing in the next time" (ScT3).*

7.2.1.6   Lack of time

Time is one of the main issues in teachers' life, especially in Kuwaiti public schools. This situation has not changed for the better in the future schools, as teachers still lack time to plan for creative lessons, and they have even complained that the workload has increased for the class teacher. The reason for this appears to be due to the pressure to finish the curriculum during the semester time. For example, the English teacher explained that she teaches more than one class and she barely has time to use ICT language lab:

> *"As English teachers we have language lab, last year me and another English teacher used the lab. I used to be the teacher of smart pupils (higher achievement pupils) in the school, we used the language lab and connected it to the internet and we downloaded a lot of digital sounds and visual stories. We took only three pupils because it was at the end of the second semester we did not have enough time" (EnT1).*

The other eight teachers related their lack of sufficient time to the overload of work and other teaching obligations:

"I do not plan many creative lessons, I have to mention the negative points in the future schools, I teach five subject matters, too much for me to plan, teach and follow up with textbooks and notebooks, it is difficult no time" (LiT3).

ScT2 asserts that the class time is insufficient to use ICT:

"The problem is when? The class time is not enough to use ICT" (ScT2).

In order to put the above remarks into a proper context, it is worth mentioning that one of the teachers is a Literacy teacher who teaches five subjects, and the other is maths and science teacher who teaches four subjects each, in addition to the other administration work that will be mentioned later in this chapter.

7.2.1.7   Lack of ICT tools

When reading about the Kuwaiti future schools it is easy to get the impression that all classrooms there are accommodated with technology tools for teachers and pupils, but unfortunately this is not so. The Alfarsi' boys' school is the only one that has interactive whiteboards in each class which was a gift from a local businessman, and all of the six schools have computer labs for computer-literacy subject, similarly to the other public schools. ScT1 from the Alfarsi' school said that her first year in a future school they did not have any technology tools:

"When I first came to future school we did not have interactive whiteboard, now it is my fourth year, the classrooms where accommodate with interactive whiteboard in the second year of my experience in Alfarsi' school, then we had to learn how to use the IWB" (ScT1).

LiT2 and ScT2 explain that they did not have the ICT tools to be creative:

> *"The School is not capable to provide internet in the classrooms, maybe if the internet is available in classrooms, I would think of integrating it in the teaching process" (LiT2).*

Similarly, ScR2 adds:

> *"The ICT tools in the school do not permit to be creative; I keep my knowledge to myself" (ScT2).*

ScT3 said that they used to have integrated class ICT programs from the Ministry of Education but that was for the old curriculums:

> *"We had ICT programs for math and science subjects last two years for the old curriculums, now we have new curriculums, we did not use it any more. The overload work we have is because the ministry of education not providing us with any ICT tools" (ScT3).*

7.2.1.8   Technical failure

Five out of the nine teachers tried to take their pupils to the data showroom or the computer lab in the school when it was available for them, as these labs are allocated for the computer studies only. EnT1, ScT1, LiT1, LiT3 and ScT3 expressed their frustration because of the failure of the computers or the data show in the computer lab or the data showrooms.

> *"Honestly the computers not working, we have problems" (LiT1).*

Also, ScT3 had a maths PowerPoint that she wanted to present for her pupils, but could not use the data show:

> *"I take the girls to the computer's lab sometimes, but the data show not working, so I have to demonstrate the lesson for them traditionally" (ScT3).*

7.2.1.9   Parents

Parents are the factor that no one could control, because whenever teachers or future schools team tried to explain to parents that the philosophy of these

schools is to let pupils learn independently and construct their own knowledge, parents were not convinced that their children can learn alone. Furthermore, they only care about their children's grades; pupils must have the top grades. For example, EnT2 explains her experience with parents doing their children's homework assignments:

> *"When I sometimes assign homework for the pupils I would ask them to use the net to find information I ask for information for them to get out the workbook, what usually happens is they hand in printed paper from Google like four five pages, that what we not after, we are after them obviously they did not do it themselves, they hand it to their parents, so if we were in class we can make sure that they do It themselves"* *(EnT2).*

In a similar vein, CIT2 complains about parents being obsessed about their children grades:

> "Parents do not care if their children learn and understand as much as they care more about getting the answers for the exams and what is the final grades" (CIT2).

7.2.2   Internal constraints

The nine participating teachers identified three sub-categories under the internal constraints theme which are related to teachers' knowledge: specializations (qualification of subject), teaching competences, and teachers uncertainty of using ICT in their classroom practice.

7.2.2.1   Teachers' specializations (qualification)

As I mentioned in Chapter Five Table 17, teachers' qualifications vary based on their academic certificates. In general, teachers in Kuwait public schools are hired based on the Ministry needs to meet the shortage in teacher numbers for different grades. In the future schools the situation differs, as it

was important for the future school team to have two class teachers for each classroom: one for literacy and the second for Science and maths. The literacy teacher must be qualified in the Arabic language and then she will be trained for the other five subjects. The science and maths teacher must be qualified to teach maths and she will be trained to teach science and the life skills subjects. Seven of the nine participant teachers are not qualified as primary teachers but they were trained to meet the needs of the classroom teacher. According to Shulman (1987), Mishra and Koehler (2006), teachers must know and understand the central facts, concepts, and theories in the field to enable them represent the subject matter for their pupils. Furthermore, knowing the subject matter enables teachers to know what is the appropriate approach and pedagogy to use in presenting the subject for their pupils, and to make it easy to understand it. Four out of the nine teachers expressed their feelings of frustration and experiencing difficulties while trying to teach subjects that they are not qualified for:

> *"I taught high school in my country. There was a shortage in teachers for the primary schools [here in Kuwait], so I started teaching in primary" (LiT1).*

Another example is of the English teacher qualified for English literature and who should be teaching in a high school instead of being a primary school teacher:

> *"My certificate is not in education but from English Literature College" (EnT1).*

Two of the literacy teachers LiT2 and LiT3 explained the problems of teaching Islamic studies and social studies subject matters:

"They have to have experts in teaching Islamic studies even if I have some information about the subject still am not expert to teach it or answer specific questions the pupils ask me during the lesson" (LiT2).

"I am expert in teaching Arabic language and I do not mind teaching social studies, but who teaches in primary school needs to learn how to treat primary pupils, the high school teacher is not expert in primary context and unable to deal with young pupils, only the expert is able to deal with this level" (LiT3).

7.2.2.2   Teaching competences

The Science teacher ScT1 was one of the qualified teachers from the teachers' college to teach in primary school though she feels that the college did not prepare her very well for practical teaching. She expressed her feelings about missing some skills as a result of her inadequate academic preparation for pre-service teachers and the practicum course she had. She felt that she was not good in the English language:

"The problem I have is with language, now I need to take a course in the language so when I visit a foreign sites I know what it is, which might be useful for me and the kids" (ScT1).

Furthermore, she was trained to teach in girls' schools, and she thinks she was not educated in her college about classroom management:

"I was shocked when I was assigned to work in boys' school. I was trained in girls' school and they assigned me for boys. I remember first thing I could not manage the classroom, it took me one whole year to learn how to manage the class" (ScT1).

The English teacher EnT1 explained her problem with not being able to track or understand the changes in her pupils' achievements, either from her in-class activities or from the children's families:

"Some pupils very, very weak I feel strange when I see them suddenly improved their level, but I do not know where it happened, I mean is it from the parents teaching them, and how they started to respond in the classroom" (EnT1).

7.2.2.3   Teacher's uncertainty of using ICT

Teachers were very cautious pupils hand's skills; such as Arabic language writing skills, it is a primary level and most of the learning skills are done by hands. The computer 'phobia' was the first thing spread among teachers and they were talking to each other about it, worrying that if their pupils will be doing all of the class activities on computers, then how they would integrate the computer in their lessons? However, as can be seen from the following extract, there is a justified worry on the part of the teacher about the pedagogic implications of the wide use of computers in literacy teaching.

"There are things in the Arabic language that are not useful to learn it by computer methods, such as writing cursive like "reqaa and naskh" no use, like a kid in the first grade, you cannot teach him writing by the computer methods, the reading you might do although I prefer reading from the book, but not writing different methods of cursive in Arabic not useful in computer. He [pupil] supposed to see some letters over the line some under the line" (LiT1).

LiT2 is worried that her pupils will prefer the computer skills and disregard her methods:

"Some things might change, of course I will be looking at new ideas, but as English and Arabic teacher, I teach reading and writing, I am worried that my pupil will love computer skills more than my methods which is the basics, that he should leave the primary school and loves pencil and paper and loves reading and writing" (LiT2).

EnT1 think that ICT use should not be fit into each lesson, and that we should not disregard the hands skills that pupils should be mastering at the primary level.

> *"There are things that you feel that if the pupil play he will enjoy it and gain from the lesson, this way okay, but there are lessons no you cannot, he needs to write, he himself has to move around and do the job*" (*EnT1).*

The science teacher ScT1 asserted that pupils have to watch their teacher writing numbers and write after her:

> *"Yes it is the writing of numbers, the kid has to watch you how you write the numbers" (ScT1).*

7.3 Factors affecting teachers engagement in the process of change during the (RP-BCPD) model

In order to follow the process of changes in teachers' classroom practice while developing alternative pedagogic practice, and to identify the potential factors that might influence teachers engaging in the process of change from the teachers' point of view, as well as using the researcher's observations and notes, rich qualitative data were collected during and after the teachers' reflective practice-based continuing professional development programme. The data analysis revealed two types of constraints: external and internal. Some of these constraints are part of teachers' daily life in school and cannot change, such as teacher authority, curriculum content, lack of time and other constraints that some teachers encountered.

7.3.1 External constraints

Although the proposed programme was intended to provide teachers with some autonomy to be innovative and design new ICT-based lessons for their pupils, teachers identified seven external constraints which would take years to be able to change: curriculum content, lack of time, first teacher authority, teacher's obligations, lack of ICT tools, pupils' ICT competences and parents' influence.

7.3.1.1 Curriculum content

As teachers started to plan their innovative ICT-based lessons, they have encountered some barriers with the national curriculum, meaning that they have to cover it all within a limited time and prepare their pupils for the Ministry exams. Seven out of the nine teachers described the new national curriculum content as the main barrier for any possible changes or integration of ICT. ScT1 expressed her anxiety about the new maths curriculum for the primary level:

> "The math curriculum, the authors of this textbook, they took the foreign textbook and translated it as it is, they did not take in consideration our environment, they put it for us with all its texts and pictures very busy textbook, I do not like it, the old textbook was better and easy to review pupils work in short time" (ScT1).

The EnT1 third grade English teacher complains about the English textbooks (taking in consideration that she is not a qualified teacher for primary level as I mentioned above in Chapter Five Table 17):

> "It is a very heavy English textbook unusual content, and full of vocabulary. I was lost between completing the curriculum on time and designing ICT-based lessons" (EnT1).

ScT3 also, complains about the heavy maths curriculum:

"I mean why I cannot find better methods of learning maths for my pupils, why we have to be bound to the curriculum. In maths we have multiplication and division which is very hard for the third grade pupils sometime they use their fingers to solve the problems and it takes time" (ScT3).

CIT2 is a computer literacy teacher, who thinks that the professional development programme provided by the computer literacy inspectors is not useful for her practice:

"The professional development courses are not useful for me as am not able to implement any of the programs that I learned. I am restricted to use this curriculum and a specific method of teaching and delivering the lessons" (CIT2).

As for the literacy teacher LiT2 she needs the Ministry to trust them as professional teachers:

"If they want us to integrate the ICT I will do that, but I do not want the teacher's inspector to force me to use a specific method step by step and evaluate me on following this method. If you want me to teach the pupils this curriculum let me work and encourage me" (LiT2).

7.3.1.2 Lack of time

By the end of the academic year from April to June, teachers want to complete the curriculum and prepare pupils for exams. Thus it was hard for most of them to be creative and design ICT-based activities, according to EnT1, she does not have time because she teaches more than one class:

"I am running out of time, I like to search and find creative things, but no time. We need more time for this experiment, I think it was not enough time for us and the pupils with all pressure on me and other obligations".

LiT3 said she would like to change her method but it takes time:

"I could present the lesson in another creative method, but it takes time from me out of school, of course, if I want to design a PowerPoint it will take most of my time".

ScT3 also feels that the pressure of the teaching obligations leaves her with no time to be creative:

"It was difficult for me to work when I have other obligations to do inside and outside the class. In class, am the class teacher, I have to follow with pupils textbooks and correct them and upload their grades in their e-portfolios for all 25 girls in all discipline, and out of the class I have to participate in school's educational' exhibits, and design programs to present it in behalf of the maths and science section" (ScT3).

ScT2 accepts the idea of using computers but not the internet:

"The pupil is using the computer, but the internet, I feel it takes from the class time, when pupils searching for information during the lesson will waste the class time, I am against the internet in the class" (ScT2).

ScT1 thinks that pre-preparation for ICT-based activities might solve the problems with the time constraints:

"We needed to take our time to search for programs and work on it before teaching, maybe in the next year; we already have the experience now. We can in the summer vacation search and prepare before school opening day" (ScT1).

7.3.1.3   First-teacher authority

First-teacher authority is one of the barriers that will not change for a long time in Kuwaiti public schools. Though the school districts asked the inspectors and first-teachers formally not to interfere in this experiment as part of the Ministry of Education research, the first teachers in the Alfadel's schools think that the class teachers are not ready to teach without their close supervision, to review their lessons plan or plan it together, even if the teacher holds a master's degree in the subject and is more expert than the first-teacher in the

subject matter. ScT2 and LiT2 both have master's degrees and are experts in their fields, however, they face problems with choosing the right method to teach and managing classroom, as both are class teachers for the same class:

> *"The first-teachers interfered in the classroom management and setting, they made a problem about the group settings for pupils to work together, that it is not healthy and pupils will have pain in the neck when looking at the whiteboard and we should leave them to sit in pairs as they were before" (ScT2).*

Furthermore, LiT2 said:

> *"They should put standards for examples, for the fifth grade what language skills pupils should achieve and point them out for us, then leave us teach our pupils and choose the methods without interfering with our way of classrooms management. They should not be telling me how to sit my pupils or say the sentence, they already took the freedom I had in this experiment".*

The first-teachers were ordinary teachers and they became first-teachers based on their experience.

7.3.1.4   Lack of ICT resources

The ICT tools such as computers and internet were provided for the three participating schools during the experiment by the schools' districts. However, two of the schools were not co-operating with the districts, even though they provided them with PCs. Asmaa's girls' school took time to place the computers in the classroom, and the school's principal did not permit the technical staff to provide the access to the internet for the computers because she thought that the girls' parents would complain:

> *"The principal promises she will provide the data show and the internet, and she told me to keep the data show I used in the lesson, but I cannot it has to be hanged in the middle of the classroom and no one came to do that. I took the girls to the computer lab because not all the*

> *PCs work in the classroom; also, the lab is not available for me whenever I need" (LiT3).*

Also, she felt that taking her pupils to the computer lab would have a negative impact on their skills:

> *"Taking the girls to computer lab for the ICT activities had negatively affected the girls hand writings as they were trying to use the small space of the computer tables to write the activities answers in their notebooks" (LiT3).*

ScT3 tried to find solutions for the problem of the shortage of ICT tools:

> *"I will not consider it as a barrier, the school tried to help us and provide these tools maybe this is their abilities. I tried to find solutions and use the computer lab which was not a problem for me" (ScT3).*

The situation in the Alfadel's boys' School was better than that at the Asmaa's school, as the principal asked the pupils to bring their own laptops and the teachers to use their laptops too. The problem was that the data show was also shared with other classes and the teacher had a hard time to find it:

> *"It's only the classroom was not accommodated with the data show which was a problem to find it in the morning when I am ready with my ICT activities and no data show. All my pupils have their laptops and I have mine, but no data show that the principal promised us to keep. Sometime the problem with the internet provider it is not working. Other time some pupils forgot their laptops because the principal did not provide us with a place for pupils to keep their laptops instead of taking home" (LiT2).*

EnT2 felt that the school failed to meet teachers' needs:

> *"I was disappointed when I found that it was going to take longer for the school to make such drastic changes to the class due to financial reasons" (EnT2).*

However, ScT2 thought that with all these problems they have made progress:

> *"Teachers did their best with less ICT tools even that Asmaa and Alfarsi's schools had more ICT tools than us, but we did present unique ICT-based activities and lessons" (ScT2).*

The Alfarsi's boys' School did not have problems with ICT tools, as they had the interactive whiteboard and four computers beside some pupils' laptops provided by the parents, and the school provided storage for them to keep in the school. The problem was the English teacher EnT1 did not have the time to prepare activities or search for them because of the heavy curriculum:

> *"Why they [textbooks authors] do not provide us in the teacher's guide the best website in each unites, so that we could refer to and make our activities. A reference that we could use, especially when I spend my time to search for some program that I cannot make, I prefer I have variety and things to use as reference" (EnT1).*

7.3.1.5   Pupils' ICT competences

The use of computer is wide spread in contemporary Kuwait primary schools and all other public schools, and there are even computer competitions between schools. Though pupils in all primary levels are exposed to computer two days in the week, they are not acquiring the skills of using the keyboard and are not familiar with the places of letters and numbers. They are exposed to Microsoft office application during the computer studies class that should enable them to acquire ICT skills, at least using the keyboard. In addition, the skills that children develop outside the schools from computer games at home should be transferable to the school environment whenever it needed, but few pupils do use their existing skills. It is obvious that the majority of pupils do not practice what they have been taught in the computer literacy studies class.

Some of the pupils are motivated to put in extra, such as searching the internet at home, or some families help to educate their children enrolling them on after-school computer courses. The teachers complained that most of their pupils take a long time to complete the ICT activities and they had to help the weakest pupils to find letters and numbers on the keyboard which draws on the class time. EnT1, LiT1 and ScT1 have problem with their weaker pupils:

> *"Weak pupils in the class are, also, weak in using the computer; the kid does not understand when you guide him in the ICT activities in the computer or asking to do certain steps 'go to this or do that" (ScT1).*

LiT1 added,

> *"The problem is not in the technology it is in the kids themselves, they cannot use computers. Pupils must know everything about the computer and how to use it from the first grade" (LiT1).*

EnT1 said that her pupils prevent her from becoming innovative:

> *"If they are smart or at least half of them, that what cause the confusion, if someone help me if the class helps or do anything, you could see me very innovative more than this" (EnT1).*

ScT2, the fifth grade science teacher, reflecting on her colleague's EnT2 ICT-based lesson, said that the problem was in the pupils themselves:

> *"In EnT2 ICT-based lesson, the children took long time to search, first because of their hand typing, then the internet access, maybe they need more training and practicing for higher level of better computer uses" (ScT2).*

7.3.1.6 Parents

Two of the participant teachers blame pupils' parents for not co-operating with the school to educate their children about the right way to use the internet or

help them with their internet search for home work, or at least to provide the internet access to them in some way:

> *"We cannot let pupils use the internet at schools because parents stressing not to let their children use the internet in the schools" (ScT1).*

LiT3 felt strongly that the parents were not helping them:

> *"I cannot blame my girls, I feel that the girl is trying but that is her abilities, and parents not helping them and not supporting their daughters after school even when I ask them to do a search at home with parents supervision if they not accept it at school, but they are not trying to help their child at all" (LiT3).*

Parents are the factor that needs to be given a close attention, especially when it comes to girls' schools. The parents were informed about the experiment involving the use of computers and the internet, but most of the parents did not trust to let their daughters use the internet, even under the supervision of their teachers.

7.3.2 Internal constraints

Teachers identified three sub-categories under the internal constraints: Beliefs, Teachers' ICT competences and teaching (pedagogy) skills, which they think are the main factors that affect their classroom practice.

7.3.2.1 Teachers' beliefs

Teachers' believe that being reflective practitioners might enlighten and affect their beliefs about teaching and learning, and may improve their practice. However, they think they might face problems with expert teachers. Two of the nine participant teachers think that older expert teachers will not accept that new in-service teachers give their opinions on the experts' practices in any way:

> *"I mean, for example, an expert teacher for 18 years, will not accept that a younger teacher saying, such as, why did you used this method to deliver the lesson, use this method instead. The expert teacher would say: who is she to talk to me this way. I agree with the expert"* (EnT1).

LiT1 added that the experts might disagree about exposing others to her practice:

> *"Maybe the expert will not accept to show her classroom practice in the data show for other teachers [in the community of practice] to reflect on"* (LiT1).

Teachers think that it is not easy to convince older teachers to believe or develop positive attitudes toward the reflective practice, to reflect on their own practice or that of others, which counts as a barrier to engage in the process of changing and adopting new methods of teaching.

LiT1 rejects the idea that other teachers may tell her how to present the content of the subject:

> *"I mean no one critique my subject matter, but they can critique how I implement the use to technology"* (LiT1).

The nine teachers think that reflecting on other teachers practice should be only in relation to the use of the technology, rather than on the subject matter itself. ScT3 thinks that her colleagues in the community of practice reflected on teaching the subject matter during the experiment, rather than on using ICT:

> *"The critique was on how I taught the maths subject not on the ICT tools or the new method I used to deliver the lesson"* (ScT3).

Importantly, some teaches perceive the reflective practice as a criticism rather than inquiring into their practice for the purpose of improving it by researching or benefiting from others observing their practice from outside, and giving them suggestions to consider for nest time when preparing their future ICT–based lessons.

7.3.2.2   Teachers' ICT competences

Teachers ICT's skills remained the barrier for the eight out of the nine participating teachers. Significantly, the teachers think on the basis of their reflective practice experiment and by being exposed to other classrooms in UK and USA, which they are falling behind their pupils and their counterparts around the world:

> "As computer literacy teacher for fifth grade, I feel my pupils are more advanced than me and they demand new programs and skills, thus I have to cope with them which also inspire me to develop my skills and knowledge about technology" (CIT2).

LiT2 feels that, she and other participant teachers were learning how to use computer software while they were trying to design new ICT-based lessons:

> "You noticed that we were learning from each other and families, we were trying of course. Our awareness on the issue of designing innovative learning programs for our pupils is very simple. It is good to continue but teachers have to be prepared for using ICT" (LiT2).

LiT1 thinks that teachers should be prepared:

> "Even teachers have to have awareness about computer's skills. You have to educate teachers about the importance of improving their skills" (LiT1).

ScT1, ScT2, ScT3, LiT3 and EnT1 emphasis the need to prepare teachers:

> "I wish this experience to be implemented in all public schools, but teachers and pupils must be prepared" (ScT1).

The Ministry of Education provides ICT and e-learning courses for the first teachers only in order to enable them train their teachers in schools, but considering the teachers daily teaching obligations, the question must be asked when they will have time for training?

7.3.2.3 Teaching methods (pedagogy)

Teaching methods (Pedagogy) is the skill that most of the teachers seem to lack, because either they were not well prepared on the pre-service courses or they were not qualified teachers from the teachers' Education College (MoE, 2007 and Al-Menaifi, 2012). EnT1 has a problem of understanding the changes in her pupils' learning and level of achievements. She thinks she is trying to help her pupils but they are very weak:

> *"I used the methods you proposed for us, but as pupils' levels I feel I do not know if it has positive effects on them or not, I do not know. Maybe I need more courses in teaching and pedagogy and someone to help me, to know how to deal with individual differences between my pupils. I tried with them but they are very week and this is my limits" (EnT1).*

ScT2 thinks that not all teachers are well prepared and have the ability to teach:

> *"I understand the new approaches in education that the teacher should be the one to decide about the curriculum based on what suites the pupils and the environment around them, but for maths subject matter, I feel it is different, the outputs shows differences in teachers abilities to teach maths which do not qualified them to decide about the method or the curriculum. Maybe teachers in UK and USA are more knowledgeable and used to this kind of system and prepared for it more than us here" (ScT2).*

Teachers' pedagogical knowledge depends on the content knowledge to be able to develop their pedagogic practice or integrate ICT.

7.4 Conclusion

This chapter presented the intervention model case study phase 5-1, the evaluation of the model. I have presented a comparison between the factors that affected teachers' classroom practice before, during and after the innovative practice as teachers had identified in the semi-structured interviews before, during and after the engagement in their RP-BCPD Model. The purpose was to shed light on the most influential factors and barriers that affected teachers' efforts to be innovative practitioner in their field, and prevented them from developing alternative pedagogy integrating ICT. Table 27 presents the summary of the external and internal constraints based on the nine participant teachers' experiences.

Table 27: The external and internal constraints identified by the teachers.

Before the RP-BCPD model		During the RP-BCPD model	
Factors that affect future school teachers' practice		Factors that hinder teachers from integrating ICT	
Categories	**Sub-Categories**	**Categories**	**Sub-Categories**
Future school	Context (5) ICT use (3) Relationships (5) Learner-Centre (4)	**Constraints to integrating ICT**	
Constraints to integrating ICT			
External	Curriculum content (9) Authority: First teacher & inspectors (4) Teaching method (4) Examination system (2) Classroom size (9) Pupils ICT competences (5) Lack of time (9) Lack of ICT tools (6) Technical Failure (5) Parents (2)	External	Curriculum content (7) Authority: First teacher (2) Lack of time (6) Lack of ICT tools (5) Pupils Skills (5) Parents (2)
Internal	Teaching competences (4) Teachers' uncertainty of using ICT (5) Teachers' Specializations (Qualification) (6)	Internal	Teachers' Beliefs (9) Teachers' ICT competences (9) Teaching methods (pedagogy) (2)

For the period of six months that the nine teachers participated in the intervention RP-BCPD's model, they were trained, and then they had the

freedom to work on inquiring and developing alternative teaching methods, using ICT and adopting best practice to their classrooms. As a result of the new approach in classroom pedagogy applied for six months, teachers were able to invent new teaching methods, manage to overcome the classroom size barriers using group work, computer activities and smart pupils as co-teachers. Furthermore, they tried to develop basic skills for solving computer technical problems. Four out of the nine teachers managed to turn their classrooms into a learner-centered environment most of the time, but others thought that the nature of the subject matter required the teachers to interfere and teach. Teaching methods were identified as one of the important external barriers in the first analysis, when teaching methods were imposed on the teachers and they were forced to use the teacher's guide textbook. However, in the second analysis, the teaching methods changed to become an internal barrier for some teachers, when they were given the freedom to work alone and design their own lesson plan integrating ICT. Unfortunately, they often did not have the practical skills to implement these ideas. Teachers' ICT competences are still a barrier for the novice teachers who never used ICT tools and fear to use it most of the time, or the unqualified teachers, or teachers who teach as they were taught, which means they might need more time to develop their knowledge, skills and believes to try alternative pedagogic practice. The next chapter presents the last phase of the intervention case study related to the evaluation of the model.

Chapter Eight

Case Study Phase 5-2: Evaluation of RP-BCPD Model's Interventions

8   Introduction

This chapter presents the finding from the nine teachers' evaluation of the intervention model of the reflective practice-based continuing professional development. The finding from the thematic analysis of the qualitative, and the analysis of quantitative data helped to shed light on the advantages and the disadvantages of the RP-BCPD learning environment and the integration of ICT, as well as teachers' awareness of the benefit of ICT to their pedagogic practice and pupils learning style. In order to articulate more and refine the intervention model, teachers were asked to evaluate the innovative RP-BCPD model interventions (workshop and CoP).

Teachers responded to the semi-structured interview about the effectiveness of the model to their classroom practice and pupils learning. Three themes were constructed from the qualitative and quantitative data analysis process including teachers' interviews during and after engagement in the innovative CPD model, observation sessions (of classroom practice and community of practice), also, teachers' evaluation of the interventions model: 1) the advantages of RP-BCPD model, 2) Teacher's awareness about the benefits of utilizing ICT, and 3) Teachers reflection on the RP-BCPD interventions.

8.1 The advantages of RP-BCPD model

Each learning environment has to provide useful aspects for the participants, and arguably the implemented RP-BCPD model provided that through the enhancement of classroom pedagogy through utilizing the wealth of learning tools and approaches offered by ICT. Importantly, the demands of learning new tools and approaches, while engaging in the reflective practice, enabled the participant teachers to discover their own creativity and build up their confidence while trying to reach the learning objectives, thus, fostering a more reflective approach to teaching and learning (Gibson, 1994). The nine participant teachers acknowledged the interactive reflective practice-based professional development programme as an effective experience. The teachers identified five sub-categories under this theme: autonomy, motivation, confidence, management and enhancement, which acted as the characteristics of the effective CPD model (see Table 28).

8.1.1 Autonomy

Seven out of the nine participant teachers feel that they had freedom to apply the new teaching method of integrating ICT without any interference from their first teacher or inspectors. Furthermore, the teachers felt that their pupils also had freedom, meaning that they could work and learn in different ways, especially the weaker pupils:

> "It is better because all the pupils are with me, even the weakest ones can participate actively. There are playing and enjoyment and lots of attractions, the weak pupil used to sleep or copy the answers from his classmate if he did not understand the subject, not anymore, now he shares with me and find the answer by playing; he understands the concept and able to solve the problems in the notebook. Many of my pupils stopped relying on the whiteboard, now they rely on their activities that I give them" (ScT2).

EnT1, LiT1, LiT3, ScT1 and ScT3 feel they had flexibility with teaching methods:

"I had more flexibility than before to deliver the lesson in a variety of methods" (EnT1).

LiT1 added,

"I did not face any difficulties, it was normal and convenient to me, even my first teacher did not interfere in anyway, they left me alone without any restrictions to teach in a certain way or to follow specific methods" (LiT1).

ClT2 and EnT2 think that this kind of freedom contributed greatly to finding new and useful ways of teaching for their pupils:

"Seeing how I can introduce new and different topics to my class other than the boring, good for nothing syllabus that the ministry of EDUhas so cleverly bestowed upon us was incredible. My students were completely mesmerized by the change, thrilled with the challenges the project presented to them as young learners, and as a result have made greater progress in acquiring the new language than the other classes in their year" (EnT2).

8.1.2 Motivation

According to Bishay (1996) and Sylvia and Hutchinson (1985), teachers are motivated when they are given the freedom to try new ideas and methods, when they achieve appropriate responsibility levels and develop intrinsic motivation to implement. Furthermore, this improvement in teacher motivation also influences positively their pupils. During their RP-BCPD the nine participant teachers were motivated by the variety of stimuli to be creative in designing their ICT-based lessons. Six out of the nine teachers expressed their feelings of being motivated either by the ICT activities on the internet

which helped to design their own, or by their pupils' demands for interactive activities and the resulting improved levels of achievement:

> *"I like the books but I had to use the internet. I found things [interactive maths e-activities] on the internet made me wonder how they make it, we can do it by trial and error, it made me want to design my own ICT e-activities" (ScT2).*

LiT1 explained that she liked the search on the internet which motivated her to be more creative:

> *"I liked it when I was searching the internet;, I use my free time to search and that inspired me to learn new software, to like my work and the technology, now if I go to another school I will continue using the technology even if I use the playing methods [computer games]" (LiT1).*

ScT3 likes the idea of her pupils asking her to work in computers and using group activities:

> "When you see your girls are improving in the levels, you think you are making an effort, also, when they like what I am doing and ask for more work in computer and group activities, that helps me to design and provide more ICT-based activities" (ScT3).

LiT2 thinks that observing her colleagues in the community of practice encouraged her to improve her skills and practice:

> *"It makes me see where my colleagues are now regarding their classroom practice., Also, it provided me with time to evaluate my practice comparing with my colleagues' creativities, and decide if I need to cope with them or wait" (LiT2).*

8.1.3 Confidence

Three out of the nine participants think that this experiment provided them with opportunities for improving their self-confidence, that they could rely on themselves and be creative, as well as accepting ideas and learning from others:

> *"As for me it gave me the sense of self-reliance, and self-confidence, if I will be transferred to any other school which does not have first teacher I will not have obstacle, I don't need her" (ScT1).*

LiT1 agrees with her colleague and partner class teacher: *"It provided me with self-confidence" (LiT1).* Similarly, ScT2 explained that she has dealt with the reflective practice in a practical way and gained confidence:

> *'I need an opinion and the other person could listen to me: if she wants to benefit from my opinion. I don't talk from emptiness; I talk from my simple experience. This is the only argument point in the community of practice" (ScT2).*

The problem with some of the nine teachers was the difficulties to accept each other's reflection on their pedagogic practice sometimes during the community of practice sessions as practitioners; they were used to first-teachers or teachers' inspectors only. This initial resistance was gradually replaced by some positive attitudes.

8.1.4 Management

Classroom management is one of the factors that teachers find particularly difficult during the school' year, they were not well prepared for the classroom management in their pre-service teacher education programme. Six out of the nine participants noticed that the experiment provided them with time to be creative, as well as to think more deeply of lesson plans to help them manage their hyper active pupils to make them more focused and active participants in the lesson activities:

> *"I learned how to manage my lesson plan to fit with the class time and not to repeat things that are not appropriate, also, to let my pupils share the lesson activities with me to make them focused all the time with me" (LiT2).*

ScT2 added that the experiment helped them to manage their hyperactive pupils:

> "We have a very hyperactive classroom, all the school's teachers noticed that and they asked us how you manage them. Of course, I have to work hard preparing but I broke the chaos in the class and made pupils talk more useful; they talk, are active and understand; furthermore, they quieting each other to follow the ICT-activities" (ScT2).

ScT1 and LiT1 think that the experiment provided them with ideas to manage the pupils even during the other teachers' class time when they are on leave:

> "The innovative method provided us with more ideas to manage pupils *during our colleagues' class time when they* are on *leave; we let pupils work in the computer activities to manage their behavior and movements*" (ScT1).

8.1.5 Enhancement

The nine participant teachers think that this experience was a good opportunity to enhance their pupils' learning as well as their own practice. Furthermore, in terms of improving pedagogic practice, there was a positive improvement on teachers' skills as they were learning from inquiring into their own and their colleagues' pedagogic practice, as they were designing and planning their innovative ICT-based activities.

For example, LiT2 noticed that when she gives her pupils searching activities the information is better confirmed in their mind because it is from their own search:

> "I noticed that things that make pupils search and find information are better than transferring the information in an easy and simple method. Thus, I used the internet to help confirm the information in their mind as

it is from their own search. My pupils are the best in the fifth grade in their achievements and grades" (LiT2).

ScT3 thinks that when she changed her lesson plans and introduced the ICT pedagogy to her class it enhanced her pupils' learning:

"Of course, the technology has a lot of influence on pupils' learning, even us adults if I gave you a paper and ask you to solve the problems the information will not always be confirmed in the mind, but it differs when you see and listen. It differs with pupils too; when the pupils work on the computer and try to solve problems and get feedback from the computer to help them correct their answers, they have more interaction as they are building their own knowledge and skills" (ScT3).

EnT1 noticed her pupils' reading skills have improved:

"It encouraged them to read, I feel they are more capable in reading than before and know how to answer the question even if he was not following with me. Though they need more time, I feel their reading skills have been enhanced compared with before" (EnT1).

EnT2 has also mentioned the enhancement of her pupils' achievement as a result of the engagement in this project:

"As a result [my pupils] have made greater progress in acquiring the new language than the other classes in their year" (EnT2).

8.2 Teachers' awareness about the use of ICT

One of the main aims of this model is to raise awareness among the nine participant teachers from the future schools and their colleagues about the some ways in which ICT can be integrated. Furthermore, the new approach brings into focus the importance of sustaining teachers' professional development throughout the academic year by approaching it as researchers of their pedagogic practice, instead of relaying one day or a week course, without any follow up about the effectiveness of the taken course for their

pedagogic practice. The teachers identified three categories under this theme: leverage, improvement and relationship (see Table 28) describing how this experiment raised their awareness of new approaches they have not experiences before.

8.2.1 Leverage

Five of the nine teachers feel that it affected their teaching, the climate of the class and their pupils' achievements. EnT2 the fifth grade teacher, thinks that the experience was very effective both for her and her pupils:

> *"This experience has been both challenging and fruitful, definitely inspired me to be even more creative than I already am. It has influenced my style to be more effective. My students became more attentive, and retain more information" (EnT2).*

Similarly, ScT1 thinks that it has been an inspiring experience:

> *"When you work alone you will discover things and things, and I don't want to go to anyone and ask them to do something for me" (ScT1).*

CIT2, LiT2 and LiT1 think that the experiment changed their daily routines and they feel they were developing themselves:

> *"I feel I have developed myself, I mean I like to work and do things"*
>
> *(LiT1).*

Also, LiT2 added:

> *"I liked it, because the change has actually broken the typical boredom, monotony and the routine that I do every day, following very boring and depressed steps… Now I like to be creative and make things my pupils like and maybe tomorrow they make new things" (LiT2).*

Seven out of the nine teachers explained how their role as reflective practitioner helped to raise their awareness about the leverage of using ICT tool in classroom pedagogic practice:

> "Every time I try to apply new ICT tool, I feel it was useful and attracts pupils' attention; some ICTs were very simple in the same level of the traditional methods still it was useful, but with different level of attraction, games are different than videos in attracting pupils to work" (ScT2).

LiT2 thinks research process helped to raise her attention about the problem of using ICT:

> "As for me, I had a weak point, I tried to handle it, I was not able to use and work with computer, so I decided to use computer and internet to solve this problem" (LiT2).

Interestingly, ScT3 thinks that this project helped her to find easy methods to deliver the lesson:

> "First, I noticed that computer is not effective to use for each lesson, however, especially with maths some lessons I need to let them use computer, because I can deliver the information easier for them, girls liked it. I was afraid and thought it will take the class time and I won't be able to deliver the information; on the contrary, it was perfect" (ScT3).

ScT1 thinks that multiplication tables take time with pupils to cover in class time and practice it to, but ICT was effective to solving this problem:

> "I was running out of time to cover the multiplication tables, but when I started using maths e-learning activities for pupils, I noticed that they finish their e-activities and notebook activities, which encouraged me to let them cover two tables a day" (ScT1).

EnT2 noticed that using ICT-based lessons make her pupils to become more focused and active:

"Did you notice my pupils were very quiet, focused and busy working in their laptops' activities? [Asking the researcher as observer] I have noticed that since I started to let them work on their laptops and complete the e-activities" (EnT2).

8.2.2 Improvement

Seven of the nine participants became aware of the personal and professional changes and the skills that they need to improve while designing the new ICT-based lessons. For example, ScT2 the science and maths teacher thinks that she became aware that she is not coping well with the new pedagogies and changes in teaching maths and science:

"I used to feel very trustful that I will demonstrate the lesson and there was no need to search more and prepare in advance. Now I feel am very out of date and that I need to improve my lesson plans and understand what my pupils need" (ScT2).

EnT1 have similar feelings that she became aware of her needs to improve her teaching skills *"I need more professional development like this one to prepare me to become a better teacher" (EnT1).*

LiT1 thinks that the teacher herself needs to improve her computer skills:

"I think that the teacher must know how to use the computer, there are teachers who are limited to using Microsoft word only. You need to make teachers understand this issue if this project will be generalized in public schools; teachers have to develop an awareness about their needs to master computer skills and their pupils' too from the first grade" (LiT1).

Based on her experience of the study, ScT3 thinks that each child must have his/her computer or laptop:

"I prefer that each pupil has his\her own PC or Laptop, such as, if the group is made of four or five children each one has to have her own computer, so when I say, do your e-activities they will all start working, no one needs to wait or miss the e-activities for the lesson" (ScT3).

LiT2 thinks that first-teacher still does not trust on LiT2's skills:

> "We need raise the first teacher's awareness about trusting her teachers, let them think and be creative. It is not useful to constrain a teacher and ask her to be creative" (LiT2).

ScT1 believes that after her experiment she should follow the example of the UK teachers that she observed in the videos:

> "I wished I could use the technology not just in class or for five minutes; I wish like what we saw in the movies from UK teachers' classroom the whole class time. I think using worksheets is better; my experiment was wonderful and better than using the textbook and notebooks" (ScT1).

8.2.3 Relationships

The third sub-category is relationship between teacher-learner inside the classroom was one of the areas that teachers were aware of the changes as the result of implementing ICT-based lessons. Seven of the nine participants talked about the development that appeared in their relationships with their pupils. ScT1 started to use her pupils as co-teachers:

> "I encouraged the smart pupil to be my teacher's assistant to help me with the weakest pupils instead of sending my weakest pupils to the tutoring class and isolate them from their classmates" (ScT1).

LiT1 lets her pupils solve the textbook exercises together:

> "In the Islamic class I was busy when one of my pupils asked to help him with the textbook exercises, so I redirected him to his class mate to help him; later I found out that they solved the exercises together and he understood it without my help" (LiT1).

Similarly EnT1 agreed with her colleagues about using her smart pupils:

> "I have one student that could help me; if I ask him to help his class mates he will help them" (EnT1).

LiT2 thinks that the shape of the relationship between teacher- learners changed:

> *"The relationship shape between teacher and pupils broken, I mean the old shape, and pupils where passive and listening to teachers' orders. No, new roles started to appear and pupils started to share their opinions and talk more than in the traditional relationship. Pupil doesn't fear his teacher and could choose between the activities he wants to do" (LiT2).*

ScT2 *was* happy that her pupils want to be creative in designing their own activities:

> *"My pupils ask me what I prepared for the lesson daily and if they liked the new game, they want me to teach them how I designed it, they want to their own" (ScT2).*

LiT3 thinks that the number of the girls who are doing their own search and share it is rising:

> *"The girls encouraged each other and I see more girls trying to search and bring their finding and share it with their class mate". (LiT3).*

Table 28 below shows the summary of the above two themes categories and sub-categories.

Table 28: summarizes the two themes' categories.

Categories	Sub-Categories
Advantages of RP-BCPD to integrate ICT	Autonomy(8) Motivation (6) Confidence (3) Management (6) Enhancement (7)
Awareness of the RP-BCPD impact on using ICT	Leverage (7) Improvement (7) Relationship (9)

- *Recycling project-based lesson*

The recycling project-based lesson that was prepared and implemented by the classroom teachers ScT1 and ScT3 is an authentic example of the two

themes above. The findings from the recycling project (see Chapter Six) show that teachers were free to use the ICT tools, however, ScT1 had more support than ScT3 from school's manager regarding the use of ICT equipment such as: computers and laptops for pupils learning inside the classroom. The freedom of using different ICT tools and equipment motivated ScT1 to develop the sense of confidence and creativity in integrating ICT, as well as encouraging her pupils to work independently and develop on-line communication skills with other school's pupils. Hence, this experiment shows that ScT1 was very confident of her skills to implement such lesson, and trust her pupils to be creative as they were free working with their parents. Also, ScT3 was very confident on her pupils that they can work independently though that they were not supported by school's manager visits, or parents involvement.

Furthermore, ScT1 and ScT3 were able to manage the classroom using ICT tools for individual and group work, as well as using smart pupils as co-teachers. The pupils in both classrooms appeared to be very excited to work, to talk and to move around inside the classroom. ScT1 and Sct3 were able to enhance their own and their pupils skills such as: communication skills, searching in the internet to build new knowledge, and developing a sense of ownership for their own learning. The relationship between teachers and pupils was inspired by the process of the project: ScT1 and her colleagues were working with her pupils and their parents as they were all part of one community, while ScT3 was monitoring and guiding her pupils in groups. The implementation of the recycling project-based lesson changed the nature of

the classroom toward pupils-centered learning, as well as improving the use of ICT tools (see Chapter Six).

8.3 Teachers' reflection on the RP-BCPD interventions

The nine participant teachers evaluated the community of practice and workshops after finishing the sessions. Teachers responded to seven checklists consisting of seven statements to evaluate each intervention using the one of five rating scale (1 strongly disagree - 2 disagree - 3 sometimes – 4 agree – 5 strongly agree).The following two sections present the results from the teachers' evaluation.

8.3.1 Teachers' evaluation of community of practice

Teachers' evaluation of the community of practice conveys to all of the stakeholders in the professional development the effectiveness of community of practice, for improving knowledge and skills. The nine participants believe that community of practice was very useful in constructing new knowledge through interaction with their colleagues, learning new methods they have never thought of using in their classrooms, and trying to adapt reflective practice to their classroom research. This section will present the teachers' responses to each of the self-reported open-ended questions supported by quotations from the qualitative data analysis themes.

- Community of practice (learners) in general promote dialogue among teachers about teaching and learning process in the classroom.

The nine participant teachers responded 'agree' and 'strongly agree' to this question, implying that it did promote a sense of dialogue among them. Though they had some conflicts, they still communicated with each other and

were prepared to listen to other person's experience and to learn from. I have mentioned in Chapter Five teacher believes about the reflection in the community of practice. Teachers view community of practice itself could be used as a useful guide for teachers to improve their classroom practice: *"Whatever I think I reached from knowledge, I believe I still need someone with me to guide me" (*ScT3; Teachers' beliefs and perceptions of innovative practice: Reflection: community of practice*).* ScT1 thinks that working with others is better: *"When there is first teacher and other teachers I can use their ideas which are a challenge for me, but when am alone I had to think, discover and work alone" (*ScT1; Teachers' believes and perceptions of innovative practice: Reflection: community of practice*).* On the contrary, EnT1 believes that some teachers may not accept community of practice and reflection: *"Old teachers might not accept the new teachers discussing with them their practice" (EnT1; Teachers' beliefs and perception of innovative practice: Reflection: community of practice).*

- Community of practice (learners) helped to improve my performance in integrating ICT in classroom practice.

Three teachers responded with 'sometimes' to this question, while six teachers responded 'agree' and 'strongly agree' to the influence of community of practice on their performance. EnT1 believes that her dialogue with EnT2 inside and outside the community of practice was very helpful: *"She [EnT2] has many ideas that never crossed my mind; it is obvious that she was exposed to this kind of method and she is applying it now" (*EnT1; teacher construction of technological pedagogical knowledge: Reflection: community

of practice*). As I mentioned before EnT1 is an unqualified English teacher, while EnT2 is a certified teacher from the Education College.

- Community of practice (learners) encouraged me to discuss methods of utilizing ICT in classroom pedagogy.

Eight teachers responded with 'agree' and 'strongly agree' to this question, while one teacher responded with 'sometimes'. The purpose of the community of practice is to encourage teachers to talk about their practice and experience or share anything they think might be useful to their colleagues, and engage in the process of reflective practice. For example, ScT3 thinks that they are meeting to learn from each other:

> *"When ScT1 teacher talked about the multiplication table learning method and showed us, I liked the idea, why not? We are here to help each other and benefit from each other's experiences and methods they used in their lessons" (*ScT3; teacher construction of technological pedagogical knowledge: Reflection: community of practice*).*

- Community of practice (learners) broadened my perceptions in the scientific research to enhance my teaching methods with ICT.

Seven teachers responded with 'agree' and 'strongly agree' to this item while only two teachers felt that 'sometimes' community of practice encouraged them to search and enhance their teaching methods. LiT2 believes that it encouraged her and broadened her perceptions to cope with others:

> *"When I saw that my colleagues become more creative and applied the new method that made me to think, search the internet, learn and discover how to enhance my performance"* (LiT2; Teachers' beliefs and perception of innovative practice: reflection: reflective practice).

- Community of practice (learners) is an opportunity to practise the reflective practice.

Eight teachers responded with 'agree' and 'strongly agree' to this item and one teacher responded with 'sometimes'. In general, teachers preferred to have more community of practice sessions as it was a new and innovative forum for discussing their thoughts, feeling, and their practice which they consider a private issue. However, this approach has to be introduced with patience and sensitivity, as CIT2, the computer literacy teacher, demonstrates, because she does not see teachers accepting reflective approach:

> *"I don't see place for reflective practice between teachers from different disciplines, but maybe it is useful between teachers from the same discipline to practise reflecting on each other" (CIT2;* Teachers' beliefs and perception of innovative practice: Reflection: community of practice).

- Community of practice (learners) encouraged me to use and apply others' experiments.

The nine participating teachers responded with 'agree' and 'strongly agree' to this item, as all of them were trying to adopt methods from the videos of good practice from cross-cultural such as: UK and US classrooms introduced during the workshops. Furthermore, teachers were also learning from each other as they had time to view each other's classroom practice. ScT3 explains that she used the internet and her colleagues in the community of practice:

> *"I used to learn from the internet and from my colleagues in the community of practice. They were useful, I searched and applied activities like the multiplication table games that ScT1 showed us in the community" (*ScT3; Teacher construction of technological pedagogical knowledge: Reflection: community of practice*).*

- Community of practice (learners) was a good chance for dialogue with other teacher about using ICT in teaching methods.

The nine participants' teachers responded with 'agree' and 'strongly agree' to this item. From my observation and videotaped sessions I noticed that teachers started to develop better communication skills with each other over time. During the first community of practice session they were silent and I had to encourage invite them to contribute, as few teachers were dominating the talk in the session. Gradually, the teachers have developed dialogue skills, commenting on different points and accepting each other's opinions. For example, ScT2 asserted at different time and locations during the experiment that she accepts her colleagues' reflections on her practice:

> "I accept the critique either constructive or destructive; even if the destructive one is not useful it breaks the negative sides and builds new positive ones. But others even if it was constructive they consider it a personal critique" (ScT2; Teachers' beliefs and perception of innovative practice: Reflection: community of practice).

The analysis of teachers' self-reported questions evaluating the community of practice are shown in Table 29 below. The table shows the distribution of teachers' evaluation responds which are between 'sometimes' and 'strongly agree'.

Table 29: Summary of teacher evaluation survey of the community of practice.

Teacher evaluation of community of practice.	1	2	3	4	5
-Community of practice (learners) in general promotes dialogue among teachers about teaching and learning process in the classroom.				3	6
-Community of practice (learners) helped to improve my performance in integrating ICT in classroom practice.			3	3	3
-Community of practice (learners) encouraged me to discuss methods of utilizing ICT in classroom pedagogy.			1	5	3
-Community of practice (learners) broadened my perceptions in the scientific research to enhance my teaching methods with ICT.			2	4	3
-Community of practice (learners) is an opportunity to practice the reflective practice.			1	6	2
-Community of practice (learners) encouraged me to use and apply others' experiments.				4	5
-Community of practice (learners) was good chance for dialogue with other teacher about using ICT in teaching methods.				3	6

The results show that the nine teachers have developed a positive attitude toward the sharing of and reflecting on their own and others practice, also, in the present of other colleagues. Hence, teachers were able to understand the benefits of sharing and reflecting to enhance their classroom practice. However, the findings from other qualitative data analysis presented in previous Chapters shows teachers resistance, reluctance and unwillingness to accept others reflection on their own practice, though that they understand the benefits of reflection.

8.3.2 Teachers' evaluation of the workshops

The workshops were very important for presenting the new information and knowledge of good practice, as well as new developing teaching skills for the participating teachers. The duration and the structure of the workshops were designed to be more than a single event to enable the teachers to interact, and then implement and evaluate the new practice. Teachers responded to the checklist of seven statements which helped to provide information about the potential changes in the participants' knowledge, awareness and behavior in the classroom. Importantly, the results from this evaluation could be used in the future refinement of the workshops.

- Workshops led to my increased my self-confidence in using ICT pedagogy.

Seven teachers responded to this item with 'agree' and 'strongly agree' while two of the teachers felt that 'sometimes' they felt confident to use the ICT and decide on the specific tools while most of the time the first teachers may interfere as explained above in Chapter Seven.

- Workshops led to increasing my knowledge and becoming more aware about concepts in relation to ICT.

Eight teachers think that the workshops were beneficial for them in increasing their knowledge and raising awareness of concepts about the integration of ICT in teaching and learning in the classroom. Only one teacher thinks that 'sometimes' she feels her knowledge and concepts about ICT are increasing; it might be that she has the knowledge and concepts about ICT, but lacks the skills, or not prepared to integrate ICT in her classroom practice.

- Workshops increased the potentials of utilizing ICT in my classroom pedagogy.

Eight teachers feel that the workshops raised their awareness about the potentials of utilizing ICT in their classroom pedagogy as mentioned above in the awareness theme section. One teacher feels that she does not want to use ICTs in her lesson plans all the time, and that might be related to the subject matter itself, such as literacy lessons.

- Workshops broadened my perceptions about reflective practice to improve my teaching methods using ICT.

One teacher thinks that the workshops were of limited use in widening her knowledge about reflective practice as a method to improve her teaching skills. However, eight teachers responded with 'agree' and 'strongly agree' about the workshops being valuable in educating them about action research as a method to improve their classroom practices.

- Workshops influenced my knowledge of the reflective practice.

Reflective practice was the main issue of discussions during the experiment as some of the teachers did not understand it, while others did not accept it in the beginning. This could be due to the novelty of the reflective practice for the teachers, asking them to reflect and accept others' reflections on their own practice, as well as trying to reflect objectively on their colleagues' practices. This approach required a new spirit of openness and cooperation, for the benefit of all involved. One of the nine teachers did not understand the purpose of the reflective practice and thought the workshops were of limited value, so I had to rearrange the timetable to provide her with a special session to explain and show her examples of the reflective practice as the meaning of the term was the main barrier for her. Two teachers responded with that they were 'sometimes' satisfied with the workshops sessions to gain more knowledge about the reflective practice, but they still had problems during the reflective sessions and I had to clear the misunderstandings for them. Six out of the nine teachers felt that the workshops were sufficient for them to understand and use the reflective practice with confidences.

- Workshops clarified the importance of the concept of writing daily journals during the action research.

Although none of the participant teachers had time to participate in writing the daily journals due to the heavy work load, the nine participants' teacher responded with 'agree' and 'strongly agree' that they have understood the concept of daily journals and why it's important to the reflective practice. Teachers have found another way to follow up with the daily journals by

reporting verbally to the researcher if any changes appeared during the lesson about their practice or pupils learning style either after each lesson, during the community of practice, or during the semi-structured interviews.

- Workshops increased my knowledge about writing feedback to the pupils.

Eight teachers responded with 'agree' and 'strongly agree' acknowledging the benefits of using feedback with their pupils and the potential good results in pupils learning style and achievement. This was achieved by using the verbal feedback inside the classroom, and writing feedback in pupils' daily reports which they take home for their parents. Only one teacher feels that 'sometimes' she has benefited from workshops about writing feedback for pupils.

Table 30 presents the analysis summary of teachers' workshops evaluation survey. The results of teachers' evaluation of the workshops were distributed between 'sometimes' and 'strongly agree', only one teacher responded disagree to one of the seven self-reported questions.

Table 30: Summary of teacher evaluation survey of the workshops.

Teachers' evaluation of workshops.	1	2	3	4	5
-Workshops led to my increased my self-confidence in using ICT pedagogy.			2	4	3
-Workshops led to increasing my knowledge and becoming more aware about concepts in relation to ICT.			1	6	2
-Workshops increased the potentials of utilizing ICT in my classroom pedagogy.			1	3	5
-Workshops broadened my perceptions about action research to improve my teaching methods using ICT.			1	4	4
-Workshops influenced my knowledge of the reflective practice.		1	2	5	1
-Workshops clarified the importance of the concept of writing daily journals during the action research.				6	3
-Workshops increased my knowledge about writing feedback to the pupils.			1	5	3

Teachers responded to the second section of workshops' evaluation survey which related to their future practice "What do you need to improve in your practice and skills?" LiT2 and LiT3 responded to the question that they need to watch or attend ICT-based lessons for other teachers around the world:

> *"More of real life videos: showing teaching and learning with ICT especially for the Arabic language"* (LiT2, Workshop evaluation Survey).

Other participants focused on the classroom size in terms of number of pupils, as well as having more freedom in decision making. ScT2 wrote that in addition to watching videos from the UK and USA classrooms she wants to be exposed to more *"e-learning website and foreign articles about science education and ICT to learn and improve the English language in her field"* (LiT2, Workshop evaluation Survey) which is science and maths.

8.4 Conclusion

This chapter showed the teachers' perception about RP-BCPD interventions which combined training teachers to become reflective practitioners enquiring into their pedagogic practice and integrating ICT. The chapter deals with two main themes which emerged from the qualitative data analysis: the benefits of the proposed programme on several levels: raising the teachers' awareness about the positive impact of the programme on pedagogic practice, developing a more active and creative learning style for their pupils, and its potential contribution to the Kuwaiti primary education context. Furthermore, the chapter presented the teachers' quantitative evaluations of the community of practice and workshops teachers that they attended during the programme, and their future needs. The findings from evaluating the intervention models

shows that reflective practitioner role is accepted in Kuwait context, but needs

more time for teachers to practice the role.

Chapter Nine

Discussion

9. Introduction

This chapter presents a discussion of the study's findings aiming to explore the impact of the social-constructivist approach to 'future schools' teachers' reflective practice-based continuing professional development (RP-BCPD)that integrates information communication technology (ICT) into classroom practice. The study situated teachers in the social context of a community of practice, and empowered them with inquiring into their pedagogic practice, stimulating them to reflect and construct new professional knowledge and alternative professional action. The intervention RP-BCPD model focused on teachers' construction of knowledge and skills within a learning community in order to change their pedagogic practice, as well as to promote 21st century skills in their own and pupils' learning styles.

9.1 9.2 Answering the research questions

The following sections discusses the answers to the research questions.

1 What impact does the RP-BCPD have on teachers' pedagogic practice?

The findings from the implementation of the RP-BCPD model indicated that, in general, teachers showed visible learning and knowledge constructed from the RP-BCPD and implement it into their pedagogic practice. This does not

suggest that all teachers have built the same knowledge capacity, but even teachers who have difficulties with engaging in the change process because of cultural context reasons have shown some visible development of their knowledge, skills and pedagogic practice. Teachers have developed an understanding about when to use alternative strategies if the existing strategies were failing to fulfil pupils' needs or enhance their learning, which makes teaching more visible for pupils (Fullan, 2001; Loveless and Dore, 2002; Somekh, 2007; Hattie, 2012). Hence, the change in teachers' technological and pedagogic knowledge was based on their willingness to achieve change (Fullan 1993, 2001; Hammond, 2011; Windschitl & Sahl, 2002). This suggests that teachers find difficulties with attempting to effect changes associated with the cultural reasons relating to the 'future schools' cultural context such as teachers' qualifications and teaching licenses, first-teacher influences, curriculum overload and lack of time, and tools which force teachers to develop different attitudes toward adopting an alternative pedagogic practice. At the same time, teachers have made better progress in changing, adopting and sharing new pedagogic approaches using different methods and tools regardless of the obstacles. In this sense, Fullan (1993) and Rogers (1995) mentioned that there is core capacity for building change and factors for effective change, which includes fulfilling teachers' needs to be creative, which affects the implementation of change. Furthermore, this suggests that the teachers' curriculum and pedagogical content knowledge is important as much as pedagogical and technological knowledge in order to perform change in pedagogical practice (Shulman, 1987; Loveless and Dore, 2002; Mishra and Koehler, 2006)

The nine participant teachers preferred to learn collaboratively from each other's practice and construct new bodies professional knowledge and skills, and adopt from each other pedagogic practices. This suggests that teachers learn best in the social context and accept sharing their practice with colleagues to construct knowledge and skills from different experiences (Dewey, 1938; Putman and Borko, 1997, Mansour et al., 2014). Furthermore, that empowering of teachers with inquiry and reflection can promote the desire to communicate their practice publicly, making it visible to others to help generate knowledge and skills to initiate change in pedagogic practice (Cochran-Smith and Lytle, 1999; Little, 2002; Garrison and Anderson, 2003).

Though the nine teachers practiced reflection on their pedagogic practice, professional actions, and pointed out the encountered problems, they developed different attitudes toward reflective practice because of their different ages and experiences, and the limited time that was available to learn how to practice reflective practice. The cultural nature of the 'future schools' context did not offer teachers the time to attend more community of learning sessions to develop their reflective skills, to practice the reflection on own practice, and accept others reflection in a collaborative and democratic construction of knowledge and skills (Pine, 2009). This suggests that Kuwaiti teachers in the 'future schools' learn best if offered the time to learn collaboratively with colleagues in the community of practice, to practice critical thinking, inquiring and acting upon their own and other's reflection to guide

their professional actions (Somekh, 2007; Mansour et al., 2014; Dewey, 1933; Schön, 1987).

The nine participant teachers preferred the coaching pedagogy in the classroom over the traditional didactic pedagogy. They developed the guiding role, as activators of pupils learning, but there were differences between them in the way of understanding how to coach rather than teach. This suggest that teachers are willing to abandon the transmission of knowledge and develop the coaching and activator pedagogy, and make their classroom learner-centered when they are offered the freedom of developing technological and pedagogical knowledge and skills to change pedagogic practice. In this sense, the finding from this study concurs with Selwyn and Facer (2007) and Volman (2005) in that ICT can increase constructivist learning among pupils if teachers adopting coaching and guiding pupils learning; furthermore, it can be seen as a form of classroom management.

2   What factors lead to the integration of ICT into classroom practice?

The study findings showed how a learning community can support teachers' development of ICT knowledge and skills by providing teachers with opportunity for CPD, which supports critical thinking and inquiry skills through reflective practice with other colleagues. In this sense, Fullan and Hargreaves (1992) pointed out that teachers' knowledge, skills and attitude are the main elements of any change. The nine participant teachers were interested to learn from each other and how cross-cultural teachers' best practice can integrate ICT into classroom pedagogy. This suggests that even for teachers

who are not ICT skilful and are not readily prepared to try new ideas, can still reflect and learn collaboratively from their colleagues in the same community and from cross-cultural communities if they are provided with more time (Lave and Wenger, 1991; Ertmer, 2005).

Teachers' beliefs about pedagogic practice were constructivist before engaging in the RP-BCPD programme, and continued to be constructivist while they were developing new knowledge. However, the visible improvements to teachers' technological and pedagogical knowledge as they were experiencing alternative methods with ICT varied between the nine teachers. While few teachers experienced a contradiction between what they believed and what they were actually practicing inside their classrooms, there were some who benefited from constructing new TP knowledge to develop alternative learning strategies for their pupils. This suggests that teachers might think or believe that they need to learn new skills or construct knowledge through social context in order to implement change, but not necessarily change their beliefs or practice (Pajares 1992; Mansour et al., 2014).

The nine participant teachers used ICT tools to create a variety of learning activities for their pupils' learning, but they were using the ICT according to their competences or their attitude and willingness to learn and enhance their integration of ICT in learning activities. Teachers used the games and space games in learning activities for maths and literacy subjects, to make learning more attractive in an interactive way for pupils such that they would engage in

the learning process. This suggests that the participant teachers were moving through stages to develop TP knowledge and skills about utilizing ICT (Somekh, 2007). Pupils were able to try different learning activities, search the internet for more information through guided participation of their teachers (Rogoff, 1990); they were exchanging and presenting information through e-mails and video-conferencing. This suggests that the teachers were able to use the available ICT to create different learning experiments for their pupils to make the learning process more authentic and create active engagement. In this sense, Loveless and Dore (2002) suggested five models of access to ICT which leads to different teaching strategies: interactivity, provisionality, capacity, range and speed of gathering and presenting new information.

Teachers appeared to hold beliefs associated with the contextual factors of the 'future schools' that a particular situation could be motivating them to use ICT; in other situations they resist change or do not use ICT, which also can be highly related to personal attitude, views, willingness and commitment (Ertmer, 1999-2005; Fullan, 1993-2012; Hammond, 2011; Windschitl & Sahl, 2002). The participant teachers appreciate the potential of ICT for enhancing pupils learning, but they believe and fear that ICT and technology will be replacing teacher inside the classroom, and that pupils will want to use digitally typed text instead of hand writing, which issues have made some teachers want to avoid the change. In this sense Drent and Meelissen (2008), mentioned that they found three factors which influence integration of ICT: communities of learning, reflective practice and freeing-up of time, which is also supported by Fullan (1993) and Rogers (1995). Implementing change in

pedagogic practice with ICT requires competences in using and integrating ICT, which need time and sustainable endeavour to build capacity for generating new knowledge and skills (Guskey, 2002; Huberman & Miles, 1984; McLaughlin & Marsh, 1978).

3   What factors lead teachers to engage or disengage in the process of change?

The nine participant teachers appreciated the nature of the study, in that they had their CPD within the schools' borders and inside their classrooms. This suggests that teachers engage in a change process when they have their CPD in the authentic context of the classroom, and to experience and see the evidences of change (Mansour et al., 2014; Guskey, 2002; Crandall et al., 2000; Bolster, 1983). The findings showed that the 'future schools' cultural context influenced teachers' pedagogic practice as teachers had to follow the new proposed system for public schools. Teachers identified factors that were acting as barriers to any attempt at self-improvement or creative teaching that could be categorized as internal and external barriers (Ertmer, 1999). In the RP-BCPD, teachers were able to overcome some of the barriers as they were practicing with more autonomy; however, some factors carried on which can be characterized as the nature of the Kuwaiti public schools system such as the national curriculum, first-teacher authority, lack of time, teachers' and pupils' skills and competences; the impact of these might be reduced if schools continued the CPD programme with consideration of teachers and pupils needs. This suggests that teachers' engagement and disengagement in the change process depends on meeting teachers' needs. Furthermore,

professional development should be a continuous process during a teacher's career not a single event during the school year (Guskey, 2002; Loucks-Horsley et al., 1987, 1998).

The findings showed that teachers' beliefs were not the first barrier that affected teachers practice or the lack of access to ICT tools. Teachers were influenced by their attitudes: the extent to which they themselves were committed to and engaged in the process of change and willing to put changes into effect (Ertmer, 1999-2005; Fullan, 1993-2012; Hammond, 2011; Windschitl & Sahl, 2002). The science teachers showed more commitment than literacy teachers; this suggests that the nature of the subject matter and teachers' professional knowledge of Kuwaiti 'future schools' influenced teachers' engagement in the process of change (Shulman, 1987; Loveless and Dore, 2002; Mishra and Koehler, 2006).

Furthermore, the RP-BCPD model helped the unqualified (uncertified) teachers to overcome some of their barriers through the community of practice constructing technological and pedagogical knowledge and skills, through the exposure to alternative practice with ICT from cross-cultural teachers and, also, their colleagues in the study. Observing other teachers beyond their schools' borders encouraged them to engage in the change process; it was both challenging and empowering to take responsibility for improving their own TP knowledge and skills. This suggests that the RP-BCPD model can effectively motivate uncertified teachers in the Kuwaiti 'future schools' to engage in the change process in order to improve their

knowledge; in addition, it can effectively provide support to bridge the gap between teacher education and in-service reality through a continuing process of professional development (Solomon and Tresman, 2006; Fullan, 1993; Schön, 1983).

The case study presented teachers' different approaches to implementing change in their classroom pedagogic practice. The three teachers were different in the adoption of a reflective practitioner role, commitment to change and integration of ICT (Ertmer, 2006-2007). Communicating their own practice with others was the most influential action for teachers, even if they were not committed to change, as it offered feeling of self-confidence among teachers to talk about and reflect on their practice and get new ideas. The sharing of ideas, spread and diffusion of innovation during the community of practice, and observing each other's practice was inspiring for teachers. This suggests that teachers who were willing and had a good attitude toward engaging in change were motivated to communicate and convey to others the new knowledge and skills they developed as they were trying to be creative with ICT (Rogers, 1995, 2003). In this sense Rogers (1995, 2003) list communication channels as element of diffusion of ideas as well as time to adopt ideas, the social system and innovation.

The role of reflective practitioner is the effective key factor in the process of change, as teachers look back at their actions during teaching and learn through experimentation. The reconstruction of new knowledge, re-enacting, capturing events and accomplishment is the way that teachers learn to

improve professional action from their experiences (Angeli & Valanides, 2009; Argyris, 1993; Fullan 1993-2012; Schön, 1987; Shulman, 1987; Somekh, 2007; Somekh & Davis, 1997; Somekh & Sunders, 2007). This suggests that reflective practice inspired teachers to engage in the change and develop from their own learning, as well as generate new knowledge and meaning making, rather than other making them change (Evans, 2002).

Teachers were improving their self-efficacy through experiencing, inquiring and interpretation of own practice and learning how to improve their professional action with ICT, which affected their self-confidence (Ertmer, 2010; Fullan 199-2012). In addition, teachers' personal commitment and pedagogical beliefs about the potentials of ICT to improve their practice and to enhance their pupils inspired them to design ICT-based activities (Ertmer, 2006-2007). Teachers varied in their ways of adopting new roles of coaching to activate their pupils' learning: two teachers were keeping pupils on ICT-tasks and reducing the amount of their engagement in pupils' learning process, which allowed for more active and interactive relationships between them and pupils (Cossentino, 2004). Furthermore, pupils showed some independent learning, and teachers were using co-teachers to help them with weaker pupils using ICT tools. This suggests that pupils' involvement in the learning process that improved their achievements inspired teachers to engage in the change process.

The finding showed that the nine participant teachers developed a positive attitude toward the RP-BCPD model interventions. The continuing process for

six months of inquiring, searching, learning, building knowledge, designing, developing and applying the reflecting cycle was appreciated by the nine teachers as they never had such an experience. The RP-BCPD model raised the awareness of the nine teachers about the benefits of developing their professional actions. Teachers felt that they had a kind of freedom, though some teachers were still controlled by the first-teacher instructions. This finding suggests that combining between reflective practices as a base for in-service teachers' continuing professional development can be used in other educational institutions or situation in Kuwaiti public schools as it considers teachers needs.

9.2 Responding to research aims:

The research aims focused on understanding the change process and how it affects teachers' construction of innovative pedagogic practice; they aimed to understand the nature of the process of change in teachers' pedagogic practice due to using reflective practice-based continuing professional development intervention focusing on integrating ICT; furthermore, they sought to understand the socio-cultural context of the change process in the Kuwaiti 'future schools'.

The understanding from the process of change in the nine teachers' pedagogic practice suggested that belief a stable core; however, it is not immutable (Ertmer 2005; Hammond, 2011). Kuwaiti primary teachers practice showed that they can adopt and adapt to new ideas as they experienced alternative practices and building capacities from their own learning and meaning making, but not necessarily change their beliefs. On the contrary, it

is the teachers' personal attitude, willingness and confidences that guide their actions and preferences in the digital world and pedagogical adoption of ICT within schools (Loveless, 2003). This suggests that Kuwaiti primary teachers need to learn how to deal with new challenges and act upon them by building capacities for continuous developing of knowledge and skills, as well developing reflective skills to accept and cope with the changing era.

The study shows that limiting teachers to one source of knowledge does not mean that all other kinds of knowledge are not valuable for their practice (Kennedy, 2010). The findings from the data analysis showed that teachers were able to use several sources of knowledge to build their technological and pedagogical knowledge to enhance their classroom practice. There was no unnecessarily invalid knowledge constructed or shared by others; teachers were learning from all sources of knowledge, which they integrated into their practice. Teachers were using the constructed knowledge to create new ICT-based activities and reflect on their pedagogic practice, which helps to bridge the gap between theory and practice.

The process of learning from workshops, researching and acting, sharing and spreading of innovation during the community of practice, and reflecting on practice raised individual differences between teachers' awareness in relation to critical thinking and problem-solving. The inquiring through social context and constructivist approach toward improving their technological and pedagogical knowledge motivated teachers to develop alternative pedagogic practices. Some teachers developed the sense of rethinking their practice (as

professionals they would be inquiring into their own practice), using constructed knowledge, enhancing their actions and managing practice's dilemmas, reflecting on their actions, and thinking about other's reflection in their community of practice as a chance of rethinking their own values and assumptions which are embedded in their practices and have influenced their actions (Somekh, 2008).

The empowerment and ownership of their own learning and professional growth helped teachers to improve their professional action. Teachers were gradually able to creatively transform the curriculum content through the use of the ICT potential and develop alternative pedagogic method such as coaching and guiding to enhance their pupils' learning. In addition, teachers who adopted other roles such as coaching and reflective practice had the opportunity to become more of a facilitator, guiding and activating pupils learning, rather than teachers who were less engaged in the change process. Some teachers had more ICT-based activities and active classrooms; others continued to use the lecturing style and transmission of knowledge because of their schools' cultural context and their attitudes toward accepting change. Also, teachers who were using ICT appear to have developed more active and interactive pupils who became central to the learning process. It is possible that the less engaged teachers could become better users of ICT and more committed to the change process, if they had more time, or if the study were carried over to the next year with the same teacher. This suggests that it is always true that individual teachers differ in their response to the

change, and some teachers might spend more time than others engaging in the change process.

The study findings suggest that there are certain aspects that have to be part of the effective planning of a CPD programme for primary teachers as explained below:

Engaging in the change

When thinking about engaging teachers in the process of change it is important to consider teachers' cognitions needs, beliefs, values, attitudes and cultural context in order to motivate teachers to develop the awareness of engaging and developing the sense of commitment to new innovation and changes in education (Mansour et al., 2014; Loveless and Williamson, 2013; Guskey, 1986). In this sense, Fullan (1993, 2001) explained that commitment is the main key to successful educational reform and process of change to achieve the change process.

Reflective practitioner

In order for teachers to develop new skills or enhance their practice, they need to identify the existing gaps or problems which they have encountered in their pedagogic practice. Furthermore, they must be empowered to improve their own skills and construct appropriate solutions from their own reflection, searching, acting and refining their own actions. Educational researches in teachers' pedagogical practice support the notion of teachers learning to improve their professional action from their own reflection and by inquiring into their practice (Loveless and Williamson, 2013).

Community of practice

As a constructivist learner in a situated social context, teachers become more knowledgeable in technological and pedagogical skills through other practitioners sounding them out (Lave & Wenger, 1991). They communicate their own pedagogic practice, thinking, ideas and what they know for the purpose of constructing and developing new ideas and practice, in order to improve professional action through a collaborative researching and sharing expertise, rather than acting as isolated teachers (Loveless, 2003).

Autonomy to build capacity and practice

This aspect deals with providing teachers with the freedom to build capacity. From experience and interaction, teachers construct knowledge and learn from adopting and adapting other's ideas to their daily pedagogic practice and from developing interactive learning activities. Teachers empowered with reflective practice means gaining ownership of inquiry into their pedagogic practice and removing other authorities and workloads such as first-teacher authority and others in the educational system. They are also freed of certain administrative work, and are provided with access to ICT tools, which offer teachers freedom and time to develop new skills and knowledge; furthermore, they have sufficient time to enhance pupils learning. Hence, offering teachers more freedom is an act of respecting teachers beliefs, values, attitudes and knowledge which evolve together to make them more effective, and, in addition, enables them to develop skills of classroom management using ICT. In this sense, autonomy means expending a teacher's willingness to engage in self-directed professional action (Smith, 2003; Tort-Moloney, 1997; Little, 1995).

9.3 Themes that emerged from the study

The data analysis produced four main themes that can be woven together to design better in-service continuing professional development for teachers.

9.3.1 Teachers' beliefs and knowledge development

The findings from the study suggest that Kuwaiti primary teachers need to be exposed to formal and informal types of knowledge. In 21st century education, Kuwaiti teachers must be more independent practitioners as is the case with their counterparts in the advanced world. Ministry of Education educators and policy makers need to pay more attention to the value of teachers' beliefs and knowledge as they are the main element of educational development and reform. Bell and Gilbert (1994) explained that development has to come from teachers themselves during the learning process in order to develop their beliefs and attempt to effect change, not "others getting teachers to change" (p. 493). Respecting teachers' beliefs and knowledge is a way of believing in their abilities and plays an important role in making change. Hence, it is an act of motivating and encouraging them to be committed to engage in a change process when it is needed. There is an explicit relationship between Kuwaiti teachers' beliefs, values, attitudes and the construction of ICT knowledge to develop ICT-based lessons (Ertmer, 2005).

9.3.2 Pedagogy for autonomy with ICT integration:

The study findings revealed that Kuwaiti teachers who practiced with more autonomy showed more engagement and were better in developing their abilities to adopt new pedagogies using ICT. Autonomy for Kuwaiti teachers means being free from an overload of administrative work, free from

authorities' instructions and having to follow textbooks and teachers' guide, free from teaching subjects which they are not qualified to teach, and free to choose the methods of teaching and ICT tools that suit their lesson. The pedagogy of autonomy is one aspect of motivating teachers to engage, and to accept and develop a sense of commitment to change. The concept of pedagogical autonomy promoted critical inquiry and reflection, creativity and innovative practice among the nine participant teacher from 'future schools', which varied from one to another and could have been improved if they had had more time. Teachers used a constructivist approach toward developing pedagogic practice to foster pupils-centered classrooms and promote 21st century learning skills, as well as using different methods of teaching and learning such as collaborative, thinking and problem-solving learning activities with ICT (Selwyn and Facer, 2007; Seemts, 2005). In this sense, the study concurs with Rogoff's (1990) suggestion of guided participation of pupils learning in culturally valued activities in thinking and collaborative processes to build new knowledge and skills. The findings from the evaluation phase in chapter Eight show that the teachers' autonomy emerged during the study of the change process and encouraged teachers to practice with freedom from control by others, as well as to integrate ICT in their pedagogic practice. However, the nine teachers were differing in developing their pupils' skills to construct knowledge or to have the ownership of their own learning. This suggest that we might need more time to develop pupils' autonomy through developing teachers awareness about trusting their pupils' abilities to learn independently using ICT in the 21st century.

9.3.3   Constraints affecting the integration of ICT:

The three main constraints that affect teachers ICT integrations based on classroom context, pupils' skills and teachers facing barriers to the use of ICT are presented below:

a. *Constraints related to classroom context.*

The classrooms' infrastructure in the future schools is the first element that influences teachers' creative or traditional practice. The nine teachers were working in small classrooms with more than 20 pupils per class. Crowded classrooms with single tables for each pupil, with other stored furniture beside two classroom teachers' desks, leaves no place for desktop PCs; hence, if pupils use their own laptops the classroom will be not a suitable place for group working and the learning process. The Ministry of Education must take in consideration the balance between pupil numbers to furniture and ICT equipment when designing primary schools classrooms.

b. *Constraints related to pupils ICT competences.*

Kuwaiti pupils are very active users of digital tools such as laptop, iPods, iPads and digital games devices; however, they need to have digital literacy about how to use digital ICT tools for reading, writing and learning. Although there is a national curriculum for computer literacy at the primary level, pupils still complete primary level without any visible learning in using computer software or even the keyboard. The new ICT curriculum has been constructed to develop teachers' and pupils' ICT competences, as well as educating them about the effective use of digital tools and the environment for learning purposes. The ICT competences can support the new teachers' role as

facilitators, guides and activators of pupil's learning, as well as teacher practicing the new pedagogy with ICT.

c. Constraints related to teachers.

Kuwaiti primary teachers need the attention of the policy makers and educational educators in the Ministry of Education and Higher Education when they design national curriculum, teacher education courses, and in-service continuing professional development. The 'future schools' teachers suffer from being isolated and controlled by following instructions, from being assigned to teach subjects they are not qualified for, teaching with no teaching certificate, no skills or even trained to practice teaching. In addition, they have few classroom management competences, a lack of ICT skills and technology competences that they can integrate into classroom pedagogic practice. Simply, 'future schools' teachers are instructed to teach the content without any prior knowledge of it, or any technological and pedagogical knowledge and skills.

9.3.4 The RP-BCPD model for teachers in Kuwait:

The findings suggest that the RP-BCPD model can effectively influences Kuwaiti primary schools' context if it is guided by experts in the field of instructional design, technological design, community of practice, as well as to have a professional coaches in technological and pedagogical knowledge and skills. The reflective practice-continuing professional development model can support Kuwaiti teachers needs in the following areas:

a. Beliefs, values, attitudes and personal commitments.

Developing and supporting teachers' cognition, beliefs, values and attitudes toward the implementation of change when thinking to implement the RP-BCPD model. Empowering teachers with reflective practice helps to build their capacity of self-evaluation and self-efficacy, which encourage them to develop the sense of full engagements in the change process.

b. Knowledge and understanding

Empowering teachers with ownership of improving their technological and pedagogical knowledge as reflective practitioners helps to build teachers; capacity to accept and engage in change. The adoption of a reflective practitioner role can raise teachers' awareness about the importance of improving their TP knowledge and skills in order to develop their professional action and to be able to cope with 21st century education skills and needs supported in the RP-BCPD model.

c. Personal Attributes.

The 21st century's teachers must have an effective and communicative personality: communicating their ideas, practice, skills and knowledge. They should have different sources of formal and informal knowledge, and furthermore, be able to use their knowledge and convey it to others. The RP-BCPD model enables teachers to use a variety of knowledge resources to build their TP knowledge and skills capacities. The increase of knowledge resources can help to motivate teachers to engage and build knowledge for the purpose of developing pedagogic practice.

d. Transforming with ICT

The RP-BCPD model offers Kuwaiti teachers a way to transform their pedagogical practice to be more interactive with ICT tools through the

innovative ICT digital environment. Also, it enables teachers' to initiate change in their traditional learning process, and construct new knowledge in the digital environment. The RP-BCPD model supported pupil-centered learning using the potentials of ICT tools and applications. Teachers are empowered to develop their self-efficacy and self-evaluations through communities of practice, which helps them to learn from colleagues and cross-culturally to enhance their practice and their pupils learning using ICT. The following diagram in Figure 17 illustrates the key principles of the RP-BCPD model that reflect the suggestions from the findings of the study for the Kuwait's primary schools' context.
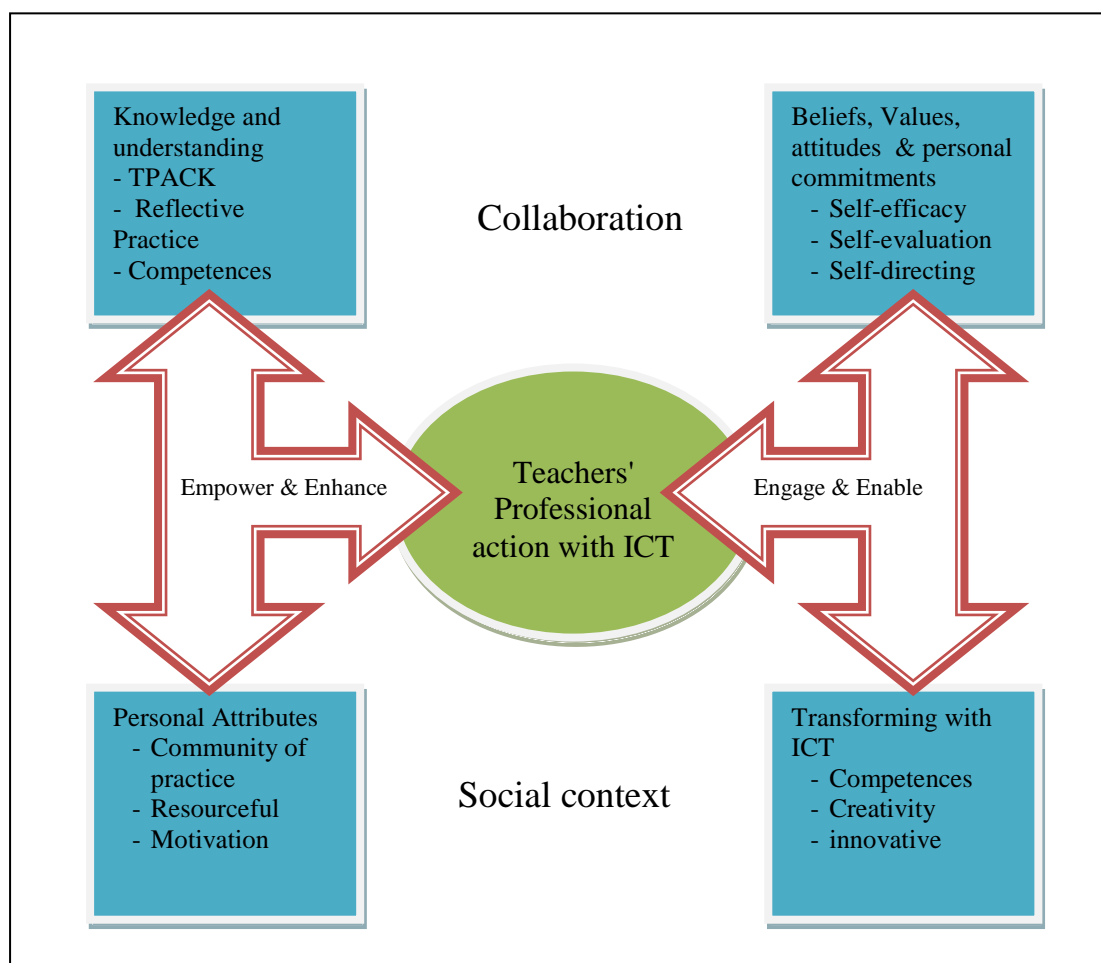
Figure 17: RP-BCPD model for Kuwaiti Teachers.

9.4 Conclusion

In this chapter the findings from the data analysis were discussed to provide answers for the research questions and aims. The chapter started with answering the research's questions, and then responded to the aims of understanding the process of change. Furthermore, the chapter presented a discussion of the four themes which illustrate the effectiveness of the proposed intervention model for teachers' classroom practice, and the key principles of the intervention RP-BCPD for teachers in Kuwait's context.

Chapter Ten

Implications and Conclusion

10. Introduction

This chapter presents the concluding remarks of this dissertation. The findings presented and discussed in the previous chapters are addressed in relation to their contribution to knowledge in the field of in-service professional development, focusing on the importance of such a case study to the reflective practice-based continuing professional development in the Kuwaiti 'future schools' context. Furthermore, the chapter discusses the limitations and future directions and implications from using the intervention RP-BCPD model in the education system. Implications are generated for the wider aspects of teacher education, practicum courses and in-service continuing professional development.

10.1 Contribution to Knowledge

The findings from the study help educationalists to understand and acknowledge the aspects and mechanisms of the RP-BCPD model and framework, which can make a contribution to existing teachers' professional development in the Kuwaiti primary context with special focus on 'future schools'. The RP-BCPD innovative model was implemented to understand how it would make a visible change in the Kuwait's 'future schools' context. Hence, what should be taken into consideration to make it applicable and possible in the future for public schools? The model provides useful conceptual input for pre and in-service teachers' professional development

toward the integration of ICT to support pupil-centered classrooms. In addition, the RP-BCPD model facilitates reflective practice skills to develop technological and pedagogical knowledge and skills, which helps to bridge the gaps between teacher education and in-service professional programmes. This suggests that the RP-BCPD model can lead to a significant process of change with ICT if it supports teachers' autonomy, and is situated within the confines of relevant schools, rather than the Ministry of Education's Training Center.

The study emphasises that it is worthwhile to trust the abilities of Kuwaiti in-service teachers and empower them by providing greater autonomy (sense of ownership) and time to develop their technological and pedagogical skills, beliefs and knowledge through enquiry into their own practices. The contributions to knowledge from the present study are:

- ***The socio-cultural context impacts on teachers pedagogic practice***

The finding from the study shows how teachers' pedagogic practice is affected by their schools cultural context. The argument of the study emphasised that the 'future schools' teachers' perception about pedagogical practice and professional development should be considered. Researchers should consider the cultural context of the study when attempting to understand the process of change during teachers' continuing professional development of pedagogic practice. The study shows the significant engagement of teachers in critical inquiry about their pedagogic practice, and that providing teachers with reflecting mechanisms helps them to understand their needs, and

empowers them to plan for developing their practice, as they were learning from their community of practice, or cross-cultural best pedagogic practice. These issues should be considered when planning for teachers' CPD in the Kuwait context to enable teachers build and implement the skills of lifelong learning according to their needs.

- ***Building technological and pedagogical beliefs***

The researcher and PD providers should consider in-service teachers' needs, and ambitions, and provide opportunities to develop teachers' 21st century educational knowledge and skills. The innovative RP-BCPD offers Kuwaiti 'future schools' teachers the mechanisms to reflect and raise their awareness about educational beliefs, as well as build TPAC knowledge for the new century. Hence, the innovative RP-BCPD mechanisms can be used in the Teacher Education Programme in higher education to prepare prospective teachers to understand the concept of reflective practice. Teachers will be able to make change happen using all kind of knowledge resources; furthermore, as reflective practitioner teachers they can be empowered to evaluate and sustain best practice with ICT and alternative pedagogy as lifelong learners. Researchers and educators should not limit teachers to specific source or context of knowledge; teachers need to understand that they can learn anytime and from any source of knowledge to improve their practice.

- ***Classroom cultural-context impacts on teachers pedagogic practice***

The classroom's cultural context in the 'future schools' was a barrier to teachers' professional development. The study shows that it is difficult for

some unqualified teachers to engage in the new CPD approach which is new to the Kuwaiti context which has an overloaded curriculum and workload. Researchers and PD providers should consider the context of the classroom because it is where teacher practice teaching, and learn from their practice to improve it, if they were given the suitable cultural context for teaching and learning in the 21st century. Furthermore, they should consider teachers' TPAC knowledge, their command of ICT and their classroom management competences when planning to design teachers' CPD to enable them to be creative and develop an effective pedagogic practice. The researchers and PD providers should understand that, in general, teachers need a continuous professional development programme and not just a one event workshop during the year.

- ***Linking theory to practice by using reflective practice***

It is worth considering the implementation of the concept of linking theory to practice through providing reflective practice as a base of CPD and empowering teachers with adequate time to inquire into their practice to enhance their professional action, and giving them the time to implement and reflect on their action to improve their performance within their classrooms and schools context. Researchers and CPD providers should engage in CPD to understand the process of change and when it occurs, and wondering why it happened or not in order to connect between theories of learning and developing effective pedagogic practice.

10.2   Implication for Kuwait's context

This study intends to provide a framework and guidelines for improving Kuwaiti teachers' in-service professional development in order to develop their pedagogic practice. The implication and recommendations below will be valued to develop teachers' continuous professional development programmes in the Kuwaiti context.

10.2.1 Government level

The findings suggest that Government policy and decision makers should make use of Fullan (2008-2013) *'The Six Secrets of Change' and 'Stratosphere'* model. Fullan demonstrated the main elements of any reform in education are related to curriculum, schools, pupils and teachers' professional development. Furthermore, the policy makers should consider the findings from this study, which show evidence of good results from adopting cross-cultural educational experts such as Loveless and Somekh in the area of improving in-service CPD, preparing teachers for ICT integration in primary level to support pupils-centered learning, and teachers pedagogic practice knowledge and skills.

10.2.2 Ministry of Education:

Teacher Professional development

Researchers and providers of CPD should understand that the CPD programme should be based on teachers' needs taking in consideration the cultural context of the schools and classrooms where teachers' practice take place. Researcher and CPD provider should be working closely with the teachers as coaches, understanding their problems and providing them with

feedback and opportunities to learn and develop their pedagogic practice. The head-teacher (school's manager) should support and facilitate teachers' requirements for ICT and technology resources inside the classrooms; furthermore, First-Teacher should support teachers needs in relation to subject matter knowledge only without interfering in teachers' pedagogic practice with ICT. The provider of the CPD should understand that teachers' technological, pedagogical and content knowledge are the essentials for initiating any professional development to improve teachers' pedagogic practice in the 21st century.

Furthermore, the value of this study's findings should be acknowledged to improve the outcomes of the practicum course provided in partnerships with the Higher Education at Education Colleges in the University of Kuwait UoK and the Public Authority of Applied Education and Training PAAET institutes. Though the present study provided the nine teachers a continuing professional development programme for six months to improve their professional action, the CPD did not address all teachers' professional needs due to the curriculum overload, and schools administration workload. This study suggests that in-service teachers need to have two types of professional development during the in-service years: 1) the induction year, and then 2) continuing professional development during the teachers' careers, aiming to connect between theory and practice as follows:

- *In-service teachers' induction year programme*

The induction programme can be offered to early career teachers, either to a certified teacher or to prepare the uncertified teacher who did not have an educational practicum course, or to a teacher on license from a Teacher Education College. The first year of an induction course can be for both certified and uncertified teachers. The novice teachers can start their career by observing other teachers practice and focus on building ideas from others, discussing the issues they come across in a community of practice by sharing ideas and adopting innovative practice, planning for their action of designing interactive learning activities, and then implementing their ideas and reflecting on their action for the purpose of enhancement. Teachers need to be empowered with a sense of ownership of their pedagogic practice, to develop the skills and abilities to accept change and engage in it. In addition, uncertified teachers need to build their capacity toward personal and interpersonal skills and knowledge to bring them up to the level of the certified teachers.

Furthermore, the induction course can be mandatory to obtain a teaching license for the uncertified teachers. The induction course must improve teachers' creativity and critical thinking skills toward improving their pedagogic practice. This can be done through writing daily journals reflecting on their actions, and building reflective and discourse skills by encouraging teachers to be involved in reflective activities, and learning communities of practice. Teachers need to develop a sense of inquiry, questioning alternative views and practice, engaging in change, and having the willingness, the ability and

the commitment to develop alternative pedagogic practices. In addition, they need to communicate and share with others for the purpose of improving their pedagogical and technological knowledge and skills. Researchers and CPD providers should educate novice teachers about the importance of developing a shared vision and beliefs about teaching and learning in the 21st century, and how to work effectively together as colleagues; they also need to engender an understanding of primary pupils' needs and learning preferences.

- *In-service teacher's continuing professional development*

In-service professional action and knowledge development should be a continuing process after the induction year. There is no limited time for teachers' CPD programme. Teachers must have the sense of implementing lifelong learning during the in-service years; they should understand that there is no limited time for education and growth in human life. This study offers an effective framework for a *reflective practice-based Continuing Professional Development programme,* implying a new professional development model that stimulates teachers to reflect and develop knowledge, skills and beliefs throughout the time that they are in-service. Researchers and CPD providers should understand that teachers need coaches and mentors (not inspectors) who are experts in the following areas: instructional design ID, instructional technology IT, technological, pedagogical and content knowledge TPACK, and reflective practice. In-service teachers should have shared vision and beliefs about the meaning of teaching and learning in the 21st century and the utilizing of ICT in classroom pedagogy. Teachers should practise as reflective

practitioners toward improving existing pedagogic practice, developing new skills through their own inquiry, and communicating their practice with colleagues in the community of practice, or the teacher network community between the school districts as a way of spreading innovative pedagogic practice and knowledge. Researchers should enlighten novice teachers about using formative and summative evaluation and assessments to understand pupils' learning abilities and achievements, which might be used for teachers' practice assessment instead of inspectors visiting teachers in the classrooms which has limited value for teachers' development.

Researchers, CPD providers and teacher educators should understand that Ministries of Education and Higher Education should cooperate to support students-teachers' learning at the pre-service stage, and prepare them for school life realities and challenges.

10.2.3 Higher Education: Teacher Education

Another implication of the findings of the study is that educational technology experts in higher education need to educate and support student teachers' learning during the pre-service stage about instructional design and instructional technology in planning, implementing and evaluating their lessons plans. This study provides evidence of the challenges that teachers face when planning and designing their innovative instructional technology lesson, which can be solved if teachers have better educational programmes at college level. The study offers teachers' educators in Higher Education University of Kuwait UoK and Public Authority of Applied Education and Training PAAET suggestions to improve pedagogic problems during the

teachers' practicum course. The teacher education programme provider should consider the socio-cultural perspective factors that affect prospective teachers' professional learning such as: cognition, beliefs, values and attitudes when engaging in different cultural context and use alternative pedagogical and technological knowledge and skills to transform content. In addition, teachers' educators should provide student teachers with reflective learning activities to practice self-direct and self-evaluation skills to improve their self-efficacy which influence their decision making.

The Ministry of Education and Higher Education educators should consider extending the time of practicum course programme to one whole year. The pre-service teachers' practicum year (placement) should includes two courses: the first course can be started with pre-service student teachers observing in-service teachers' practice, developing critical thinking and enquiry into others' practice, writing daily journal of their reflections, communicating and discussing their findings and ideas in the students-teacher community of practice. After engagement in reflective practice, student teachers can start planning their learning activities for the ICT-based lessons related to the subject areas they intend to specialize in. Then the pre-service students-teacher can implement their learning activities in the second course of their practicum year in the schools context to which they have been assigned for placement tests. However, their coaches and colleagues can attend to providing their reflections, while they themselves can practise reflecting on their own practice. The educators and coaches should encourage student teachers and in-service teachers to form a community of

practice, which they both can use to communicate their practice, learn to accept reflection from each other, novice teacher learning from experts and vice versa to improve their future actions. The practicum year will provide an opportunity for student teachers to learn how to be responsible for their own development, how to share their thoughts and ideas, and how to accept that they can benefit from other's reflections to improve their technological and pedagogical knowledge and skills. Furthermore, it is an opportunity for them to develop shared visions, beliefs about teaching and learning with ICT, and to understand their pupils' learning style, which will boost their self-efficacy about ICT integration. Finally, they will have the opportunity to extend their reflective practice process during the in-service induction year and continuing professional development programme.

10.3   Limitations

There are limitations regarding this study that should be acknowledged by readers. The study was conducted in the 'future schools'; the quantitative samples were from four schools, while the qualitative samples were from three schools, two boys schools and one girls schools. Therefore, the study does not represent all 'future schools' teachers' pedagogic practice, but using samples from three future schools is a way of supporting the study argument about problems with in-service teachers' professional development.

First-teachers' authority was the main problem in the 'future schools' as each of the maths/science and literacy teachers have more than one first teacher based on the number of the subjects they are required to teach. The first-teacher authority was a problematic issue for the study in one of the three

'future schools', even though they were instructed by the school district not to interfere in the teachers' experiments, and to provide all necessary assistance to ensure the success of the research. This issue arises because the first-teachers do not trust in the class-teachers' abilities to design their own instructional technology lesson plans alone without their supervision. This limited the in-depth understanding of change process for two teachers' pedagogic practice at this specific school.

The same school did not co-operate with the researcher to send a request for the schools' district to provide them with desk-top computers and internet access for pupils' use within the classroom, and preferred to ask parents to provide them. This had impact on teachers planning, designing and implementing the lesson plan. Alternatively, pupils had their own laptops which encouraged teachers to bring their laptops too and use them in the classroom.

While a lot of care and rigor was applied in the preparation and carrying out the study, there are a number of limitations which are outlined in this section. The use of a video to tape teachers' classroom practice which shows teachers' faces and pupils working in the classroom was new to Kuwaiti public schools; other researchers who conducted studies in the primary context did not use videotaping data collection method in the belief that they were being sensitive to teachers' cultural context. This limited the number of teachers who accepted joining the study and accepted to be videotaped during their classroom practice.

10.4 Further research

The design study focused on primary teachers and pupils only. Several questions were raised by the research findings that deal with teachers' professional action and knowledge, specifically about teachers' understanding of the concept of change. These points can be summarized as follows:

Firstly, the finding from the present study shows that two or three teachers form the 'future schools' had some difficulties in developing reflective skills or engaging in the change process because of the 'future schools' cultural context. It would be interesting to explore the impact of the same CPD model on teachers from other traditional public schools within the Kuwaiti context in order to understand the process of change in different contexts. This could help to understand how to design a CPD suite according to teachers' needs and preferences to motivate them to develop commitment and adapt themselves to changes in education, to engage in the rapid changes of technological and pedagogical knowledge and to develop better practice in the 21st century. In addition, educators should investigate why Kuwaiti primary teachers have no shared vision about teaching in primary schools or working with children of the 21st century in order to develop their classrooms as student-centered learning, and to develop the sense of sustainability in developing their pedagogic practice for the changing world of the 21st century (Darling-Hammond, 1999).

Another study suggested by the findings from this study is urging new researchers in the teacher education field to examine the RP-BCPD

framework in other general public schools' context to gain more insight into the potential changes, and to gain more understanding about the process of change from different contexts. The investigation could help to understand how teachers who teach one subject matter such as: maths or science, and more than one classroom or grades such as: first and second grade would benefit from participating in such RP-BCPD model. The deep understanding of the findings from different contexts can contribute to improve teachers' education and CPD progammes in Kuwait's context. Furthermore, the differences and the potential constraints that might appear from different public schools contexts should be addressed to improve the quality of teachers' CPD.

Further studies could be conducted in primary schools or Teacher Education College to educate and prepare new teachers for the fast pace of change in the 21st century. Researchers and educators should study how to stimulate teachers to implement the concepts of the reflective practitioner and develop communities of practice within their local schools districts in order to understand the benefits for improving their classrooms and schools' context. Research in educational reforms has argued that teachers need professional opportunities through the engagement in professional communities of experts to learn new strategies about transforming practice or constructing new roles in their classrooms (Putnam and Borko, 2000). The communities of practices can be extended for Kuwaiti teachers to meet with other expert teachers from cross-cultural contexts such as: on-line communities of expert teachers from

UK primary schools' context, like the a UK primary school's which was used as an example of good practice with ICT in the present study.

Researchers and educators should conduct an evaluation study of the 'future schools' context, as the project is going to complete the tenth year with no evaluation of its effectiveness. The future school system was extended to include six primary future schools based on a single annual report submitted by one inspector specialized in Science and Maths, who used to be a member of the 'future schools' committee, which lacks the validity and credibility of the project findings. This study suggests that a new 'classroom teacher' programme should be introduced to the Teacher Education College at Higher Education to prepare prospective teachers for practicing as classroom teachers in primary level.

The Ministry of Education should use this study's finding to suggest courses for prospective teachers, using coaches in instructional designer and instructional technology fields to train in-service teachers about integration of ICT in classroom practice. Researchers should investigate teachers' training courses do not approach the critical thinking inquiry into classroom pedagogy.

Further research should be carried out on Teachers' Education Programmes for the purpose of improving teachers' professional action. The Ministry of Education should study the possibilities of providing novice teachers the opportunity to visit other counterpart teachers practice around the world in order to motivate teachers to learn from the cross-cultural context and adapt

the best practice to their classroom context, which can be used as part of obtaining a teaching license.

10.5 Conclusion

Kuwaiti' primary teachers lack the opportunities for in-service continuing professional development that could be used to improve their technological and pedagogical beliefs, and knowledge and skills to cope with 21st century demands. Furthermore, Kuwaiti' primary teachers are prepared to follow instructions rather than build their own lesson plan and make their own decisions regarding the use of specific ICT tools in their lesson plan. A case study was developed to understand the impact of the proposed innovative RP-BCPD model that uses a social-constructivist theory approach to integrating ICT in teachers' classroom practice. Hence, the aims of the study focused on meeting Kuwaiti' primary teachers' needs in the 21st century to understand the nature of the process of change when involving teachers in a

RP-BCPD to improve their pedagogic practice; furthermore, it concentrated on understanding how such a model was affected by the social-cultural context of 'future schools'. A review of literature helped to shed lights on the available studies and solutions to improve teachers' PD in Kuwait's context. The innovative RP-BCPD interventions and activities were designed to overcome the existing constraints and barriers, as well as to effectively influence teachers' pedagogical use of ICT. Furthermore, the nine in-service teachers were empowered with autonomy of inquiry, to reflect and improve their pedagogic practice within the learning environment of their classrooms.

The empirical study of the innovative RP-BCPD model took six months in the Kuwaiti' primary 'future schools' as teachers were implementing their learning activities, reflecting and developing new knowledge and skills to improve their pedagogic practice in order to understand what factors affect the process of change. Furthermore, the study aims to enlighten the Ministry of Education's educators about the alternative CPD models and approaches to bridge the gap between the pre-service teacher education programmes and in-service professional development. The finding from the data analysis indicated significant changes in the nine participant teachers' technological and pedagogical knowledge and practice due to engagement in the programme. However, a few participant teachers were slow to adapt to the change process. The findings highlighted the impact of the 'future schools' cultural context on teachers' pedagogic practice as well as, building capacity of knowledge and skills to design the alternative learning activities for their pupils learning. Furthermore, teachers' commitment and willingness to engage in the change process was affected by the cultural context of 'future schools, which shows the differences in teachers' creativities and development of innovative practice, as well as the developing of reflective practice skills.

In order to track the process of change, three teachers' case studies out of nine were used to understand the potential changes in teachers' learning, as well as pedagogic practice using ICT. Also, to understand the impact of the innovative RP-BCPD model's interventions and mechanisms on teacher classroom practice, teachers were offered the opportunities to evaluate the

impact of the RP-BCPD model's interventions on their practice in order to improve its quality for future uses.

The findings were discussed in order to point out the significant results that can be used to enhance and develop Kuwaiti teachers' in-service CPD. These findings can also be used for enhancing the teachers' education programme at Kuwait's higher educational level for the purpose of improving technological and pedagogical courses, and the integration of ICT in teaching and learning. The discussion of the study's findings opened different avenues for future implications and further research in Kuwait's primary context especially in the area of teachers' CPD related to teachers technological and pedagogical beliefs, knowledge and skills focusing on improving pedagogic practice.

References

Abbott, C. (2001) *ICT: Changing Education.* London: Routledge -Flamer.

Adams, Paul. (2006) 'Exploring Social Constructivism: theories and practicalities. *Education 3-13', International Journal of Primary, Elementary and Early Years Education*, Vol. 34(3), pp. 243-257.

Al-Menaifi, J. M.(2012) 'The reality of technological courses in the College of Basic Education', *Journal of the Egyptian Reading and Literacy Association (EARL)*, Vol. 123(1), pp. 109-148.

Alqudsi-ghabra, T., Al-Bannai, T. and Al-Bahrani, M. (2011) 'The Internet in the Arab Gulf Cooperation Council (AGCC): Vehicle of Change', *International Journal of Internet Science,* Vol. 6(1), pp. 44-67.

AlZubi, Sh. (2008) *Report on the Utilization of IWB in the 'Future Schools'.* Ministry of Education Library. Kuwait.

Anderson, J. (2010) *ICT Transforming Education: A Regional Guide.* UNESCO Bangkok.

Anderson, J. R. (1983) *The Architecture of Cognition.* Cambridge, MA: Harvard University Press.

Anderson, J. R. (1985) *Cognitive psychology and its implications.* San Francisco: Freeman.

Andey, P. (2004) *The Professional Development of Teacher s: Practice and Theory.* Dordrecht: Kluwer Academic Publishers.

Argyris, C. (1993) *Knowledge for action: A Guide to Overcoming Barriers to Organizational Change.* San Francisco: Jossey-Bass Publishers.

Atkinson, D. (1997) 'A critical approach to critical thinking in TESOL'. *TESOL Quarterly*, Vol. 31(1), pp. 71-89.

Bakker, M. (2008)*Design and evaluation of video portfolios: Reliability, generalizability, and validity of an authentic performance assessment for teachers.* PhD dissertation, Leiden University, The Netherlands.

Bandura, A. R. (1977) 'Self-Efficacy: Toward a Unifying Theory of Behavioural Change',*Psychological Review*, Vol. 41, pp. 191-215.

Battista, M. T. and Clements, D. H. (2000*). Mathematics curriculum development as a scientific endeavor.* In Lesh, R. and Kelly, A. E. (Eds.)

Research on design in mathematics and science education. (pp. 737–760). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Bazeley, P. (2007) *Qualitative Data Analysis with Nvivo.* Los Angeles: SAGE.

Beauchamp, G. and Kennewell, S. (2008) 'The Influence of ICT on the Interactivity of Teaching', *Education and Information Technologies,* Vol. 13(4), pp. 305-315.

Beck, C. and Kosnik, C. (2006) *Innovations in Teacher Education: A Social Constructivist Approach.* Albany: State University of New York.

Beere, J. & Broughton, T. (2013) *The Perfect Teacher Coach.* Crown Building: Independent Thinking Press.

Bell, B. and Gilbert, J. (1994) 'Teacher Development as Professional, Personal, and Social Development', *Teaching and Teacher Education,* Vol. 10(5), pp. 483-497.

Benjamin, Jane (2003) '*Revision and validation of the Revised Teacher Beliefs survey'.* Paper Presented at the Annual Meeting of the American Educational Research Association (Chicago, IL). ED 476126.

Bennett, N., Wood, L. & Rofers (1997) *Teaching through Play: Teachers' thinking and classroom practice.* Buckingham: Open University Press.

BERA. (2004) *Revised Ethical Guidelines for Educational Research.* Commercial House, King Street, Southwell, Notts.

Bereiter, C. (2002)'Design Research for Sustained Innovation'*, Cognitive Studies, Bulletin of the Japanese Cognitive Science Society, Vol. 9*(3), pp. 321-327.

Bereiter, C., and Scardamalia, M. (1993). *Surpassing Ourselves: An Inquiry into the Nature and Implications of Expertise.* Chicago, IL: Open Court.

Berry, A. (2009) 'Professional self-understanding as expertise in teaching about teaching', *Teachers and Teaching: theory and practice,* Vol. 15(2), pp. 305–318

Biesta, G.J.J. and Burbules, N.C. (2003). *Pragmatism and educational research.* Boulder: Rowman and Littlefield.

Bishay, A. (1996) 'Teachers Motivation and Job Satisfaction: A Study Employing the Experience Sampling Method', *Journal Undergraduate Sciences,* Vol. 3, pp. 147-154.

Bolster, A. S. (1983) 'Toward a more effective model of research on teaching', *Harvard Educational Review*, Vol. 53, pp. 294 - 308.

Borko, H. (2004) 'Professional development and teacher learning: mapping the terrain', *Educational Researcher*, Vol. 33, No. 8, pp. 3-15.

Bowe, R. and Pierson, M. (2008) *Professional Development in Educational Technology: What have we learned so Far?* In Borthwick, A. & Pierson, M. Transforming Classroom Practice: professional Development Strategies in Educational Technology. Eugene: International Society for Technology in Education.

Boyatzis, B. E. (1998) *Transforming Qualitative Information: Thematic Analysis and Code Development.* Thousand Okas: SAGE Publications, Inc.

Braun, V. and Clarke V. (2006) 'Using Thematic Analysis in Psychology', *Qualitative Research in Psychology,* Vol. 3, pp. 77-101.

Brown, A. L. (1992) 'Design Experiments: Theoretical and Methodological challenges in Creating Complex Interventions in Classroom Settings',*The Journal of the Learning Sciences,* Vol. 2(2), 141-178*.*

Brown, A. L. and Campione, J. C. (1994) *Guided discovery in a community of learners*. In McGilley, K. (Ed.), Classroom lessons: Integrating cognitive theory and classroom practice (pp. 229-270). Cambridge, MA: MIT Press/Bradford Books.

Brown, A. L., and Palincsar, A. S. (1989*) Guided, cooperative learning and individual knowledge acquisition*. In Resnick, L. B. (Ed.), Knowing, learning, and instruction: Essays in honor of Robert Glaser (pp. 393–451). Mahwah, NJ: Erlbaum.

Brown, A., and Campione, J. (1996*) Psychological theory and the design of innovative learning environments: On procedures, principles, and systems*. In Schauble, L. & Glaser, R. (Eds.), Innovations in learning: New environment for education (pp. 289-325). Mahwah, N J: Lawrence Erlbaum Associates, Inc.

Brown, A., Ellery, S. and Campione, J. (1998*) Creating zones of proximal development electronically*. In Greeno, J. G. and Goldman, S. (Eds.), Thinking practices in mathematics and science learning (pp.341-367). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Brown, B. B. (1968) *The experimental Mind in Education*. New York: Harper and Row.

Brown, B. B. (1970) Experimental in teaching practice. *Journal of Research and Development in Education,* Vol. 4(1), pp. 14-22.

Brown, J. S., Collins, A. and Duguid, P. (1989) 'Situated and Culture of Learning', *Educational Researcher,* Vol. 18(1), pp. 32-42.

Bruner, J. (1990) *Acts of Meaning*. Cambridge, MA: Harvard University Press.

Burbank, M.D. and Kauchak, D. (2003) 'An Alternative model for professional development: investigations into effective collaboration, *Teaching and Teacher Education'*, Vol. 19(5), pp. 499–514.

Burnaford, G. Fischer, J. and Hobson, D (Ed.) (2001) *Teachers Doing Research: The Power of Action Through Inquiry.* Mahwah, New Jersey: Lawrence Erlbaum Associates, Publisher.

Buysse, V., Sparkman, K. L., and Wesley, P. (2003) 'Communities of Practice: Connecting What We Know With What We Do', *Exceptional Children,* Vol. 69(3), pp. 263-277.

Caine, R. and Caine, G. (1997) *Education on the Edge of Possibility*. Alexandria, VA: ASCD.

Calderhead, J. (ed.) (1987) Exploring Teachers' Thinking. London: Cassell Education Limited.

Chambers, F. (1979) 'Existential Constraints of Classroom Teaching and Teachers' Attitude to Change', *British Journal of In-service Education.* Vol. 5(2), pp. 39-41.

Clandinin, D. J. and Coonelly, F. M. (2000) *Narrative Inquiry: Experience and Story in Qualitative Research.* San Francisco: Jossey- Bass, A Wiley Company.

Clark, C. M., & Peterson, P. L. (1986) *Teachers' thought processes*. In Wittrock, M. C. (Ed.), Handbook of research on teaching (3rd edi) pp. 255-296. New York: Macmillan.

Clark, R.E. (ed.) (2001) *Learning from media: Arguments, analysis, and evidence*. Greenwich, CT: Information Age Publishing.

Cobb, P. (2001) *Supporting the improvement of learning and teaching in social and institutional context.* In Carver , S. and Klahr, D. (Eds.)

Cognition and instruction: 25 years of progress (pp. 455–478). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Cobb, P., Confrey, J., diSessa, A., Lehrer, R., & Schauble, L. (2003) 'Design experiments in educational research', *Educational Researcher,* Vol. 32(1), pp. 9-13.

Cochran-Smith, M., and Lyle, S. L. (1999) 'Relationships of Knowledge and Practice: Teacher Learning in Communities', *American Educational Research Association,* Vol. 24, pp. 249-305.

Cohen, D., McLaughlin, M. and Talbert, J. (eds) (1993) *Teaching for Understanding: Challenges for Policy and Practice.* San Francisco, CA: Jossey-Bass*.*

Cohen, L., Manion. L., and Morrison, K. (2007) *Research Methods in Education.* 6th edn. Abingdon: Routledge.

Cole, M. (2001, January 19-20). *Sustaining Model Systems of Educational Activity: Designing for the Long haul.* Paper Presented at Symposium Honoring the Work of Ann Brown, Berkeley, California. (Accessed online on 15 November 2001 at http://lchc.ucsd.edu/People/MCole/ann.html).

Collins, A. (1992)*Toward a design science of education*. In Scanlon, E. and O'Shea, T. (eds.), New directions in educational technology (pp. 15–22). New York: Springer-Verlag.

Collins, A. (1999). *The changing infrastructure of education research*. In Lagemann, E. C. and Shulman, L. S. (Eds.) Issues in education research: Problems and possibilities. (pp. 289–298). San Francisco : Jossey-Bass Publishers.

Collins, A., Brown, J. S. and Newman, S. E. (1989*)Cognitive apprenticeship: Teaching the craft of reading, writing and mathematics.* In Resnick, L. B. (ed.), Knowing, learning, and instruction: Essays in honor of Robert Glaser. Hillsdale, NJ: Erlbaum.

Collins, A., Joseph, D., and Bielaczyc, K. (2004). 'Design research: Theoretical and methodological issues', *The Journal of Learning Sciences*, Vol. 13(1), pp.15-42.

Collinson, V. and Cook, T. F. (2007) *Organizational learning: improving learning, teaching, and leading in school systems*. CA: Sage Publications.

Cooper, H. (2012) *Professional Studies in Primary Education (edited).* Los Angeles: SAGE.

Corey, S. (1953) *Action research to improve school practice*. New York: Teachers College, Columbia University.

Cossentino, J. (2004) 'Becoming a Coach: Reform, Identity, and the Pedagogy of Negation' *Teachers and Teaching: Theory and Practice,* Vol. 10(5), pp. 463-487.

Costa, A., and Garmston, R. (1994) *Cognitive Coaching: A Foundation for Renaissance Schools*. Norwood, Mass.: Christopher Gordon Publisher.

Cox, M.J., and Webb, M. (2004)*An investigation of the research evidence relating to ICT pedagogy*. Coventry: Becta/DfES.

Crabtree, B. F. & Miller, W. L (eds) (1999) *Doing Qualitative research (2nd edition).* Thousand Oaks: Sage Publications, Inc.

Crandall, D. P. (1983) 'The teacher's role in school improvement', *Educational Leadership*, Vol. 41(3), pp. 6- 9.

Creswell, J. W. (2007) *Qualitative Inquiry and Research Design: Choosing Among Five Approaches.* 2nd edn. London: Sage Publication.

Creswell, J. W. (2003) *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* 2nd edn. Thousand Oaks, CA: Sage Publicaiton.

Crisfield, C. (1998) *Analysing Your Coaching: The Start of Your Journey Towards Coaching Excellence.* Leeds: The National Coaching Foundation*.*

Crotty, M. (2003) *The Foundations of Social Research: Meaning and Perspective in the research process.* London: SAGE Publication.

Crowther, F., Kaagan, S. S., Ferguson, M. and Hann, L. (2002*). Developing teacher leaders: How teacher leadership enhances school success.* Thousand Oaks, CA: Corwin Press.

Cuban, L. (1988) 'A fundamental puzzle for school reform,*, Phi Delta Kappan*, Vol. 70, 341–344.

Darling-Hammond, L. (1997) *The right to learn: A blueprint for creating schools that work*. San Francisco: Jossey-Bass Publishers.

Darling-Hammond, L. and Baratz-Snowden, J. (eds.) (2005)*A Good Teacher in Every Classroom: Preparing the Qualified Teachers our Children Deserve.* San Francisco: The Jossey-Bass A Wiley Imprint.

Darling-Hammond, L. and Berry, B. (1999) 'Recruiting Teachers for the 21st Century: The Foundation for Educational Equity', *The Journal of Negro Education,* Vol. 68(3), pp. 254-279.

Darling-Hammond, L. and Bransford, J. (eds) (2005) *Preparing Teachers for A changing World: What Teachers Should Learn and Be Able to Do.* San Francisco: The Jossey-Bass A Wiley Imprint.

Davidson, D. (1990) 'The structure and content of truth', *The Journal of Philosophy*, Vol. 87, pp. 279-328.

Day, C. (1999) *Developing Teachers: The Challenges of Lifelong Learning*. London: Falmer.

Denzi. N. K., and Lincoln, Y. S. (eds) (2008) *Collecting and Interpreting Qualitative Materials.* (3rd edn). Los Angeles: SAGE Publications.

Denzin, N. K. (1978). *The research act: A theoretical introduction to sociological Methods.* New York: McGraw-Hill.

Dewey, J. (1897). 'My pedagogic creed', *The School Journal*, 54(3), 77–80

Dewey, J. (1897). The psychological aspect of the school curriculum. Educational Review, 13, 356–369 [reprinted in The early works, 1882–1898 (Vol. 5: 1895–1898). Carbondale, IL: Southern Illinois University Press.]

Dewey, J. (1916) *Democracy and Education*. New York: MacMillan.

Dewey, J. (1933). *How we think*. Boston: D. C. Heath.

Dewey, J. (1938). *Experience and Education. The Kappa Delta Pi Lecture Series.* New York: Collier Books.

Dix, K. L. (2007) 'DBRIEF: A Research paradigm for ICT adoption', *International Education Journal, Vol. 8(2), pp. 113-124.*

Dondero, G. M. (1997) 'Organizational Climate and Teacher Autonomy: Implications for Educational Reform. *International Journal of Educational Management',* Vol. 11(5),pp. 218-221.

Drent, M. and Meelissen, M. (2008) 'Which Obstruct or Stimulate Teacher Educators to use ICT Innovatively?', *Computer& Education*, Vol 51, pp. 187-199.

Driscoll, D. L., Appiah-Yaboah, A., Salib, P. and Rupert, D. J. (2007) 'Merging Qualitative and Quantitative Data in Mixed Methods Research: How To and Why Not', *Ecological Environmental Anthropology,* Vol. (3)1, pp. 19-28.

Duffy, T. M. and Jonassen, D. H. (eds) (1992) *Constructivism and the Technology of Instruction: A Conversation.* New Jersey: Lawrence Erlbaum Associates, Inc Publishers.

Edelson, D. C. (2002). 'Design Research: What we learn when we engage in design'*, Journal of the Learning Sciences,* Vol. 11(1), 105-121.

Eisner, E. (1993) *Objectivity in Educational research.* In Hammersley, M. (ed.) Educational Research: Current Issues. Paul Chapman Publisher: The Open University.

Ely, D. P. (1990) 'Conditions that facilitate the implementation of educational technology innovations', *Journal of Research on Computing in Education*, Vol. 23 (2), pp. 298-305.

Ely, D. P. (1999). *New perspectives on the implementation of educational Technology innovations.* Paper Presented at the Annual National Conference of AECT.

Ernest, P. (1989) 'The knowledge, beliefs and attitudes of the mathematics teacher: A model', *Journal of Education for Teaching*, Vol. 15, 13-34.

Ernest, P. (1994) *Educational research, it is philosophy and purpose: an introduction to research methodology and paradigms.* Exeter: University of Exeter.

Ertmer, P. A. (2005). 'Teacher pedagogical beliefs: The final frontier in our quest for technology integration?', *Educational Technology Research and Development*, Vol. 53(4), pp. 25-39.

Ertmer, P. A., Addison, P., Lane, M., Ross, E., and Woods, D. (1999). 'Examining teachers' beliefs about the role of technology in the elementary classroom'*, Journal of Research on Computing in Education,* Vol. 32(1/2), 54-72.

Ertmer, P. A., and Hruskocy, C. (1999)'Impacts of a university-elementary school partnership designed to support technology integration'*, Educational Technology Research and Development*, Vol. 47(1), pp. 81-96.

Ertmer, P. A., and Ottenbreit-Leftwich, A. T. (2010)'Teacher technology change: How knowledge, beliefs, and culture intersect', *Journal of Research on Technology in Education*, Vol. 42, pp. 255-284.

Ertmer, P. A., and Ottenbreit-Leftwich, A. T. (2012)'Teacher beliefs and technology integration practices: A critical relationship', *Computers & Education*, Vol. 59, pp. 423-435.

Ertmer, P. A., Gopalakrishnan, S., and Ross, E. M. (2001) 'Technology-using teachers: Comparing perceptions of exemplary technology use to best practice',. *Journal of Research on Computing in Education,* Vol. 33(5). Available online.

Ertmer, P. A., Ottenbreit-Leftwich, A., and York, C. S. (2006-2007) 'Exemplary technology-using teachers: Perceptions of factors influencing success', *Journal of Computing in Teacher Education*, Vol. 23(2), pp. 55-61.

Evans, L. (2002) 'What is Teacher Development?', *Oxford Review of Education,* Vol. 28(1), pp. 123-137.

Ezzy, D. (2002) *Qualitative Analysis: Practice and innovation*. London: Routledge.

Facer, K. (2012) 'Taking The 21st Century Seriously: Young People, Education and Socio-Technical Future', *Oxford Review of Education,* Vol. 38(1), pp. 97-113.

Fisher, T., Denning, T., Higgins, C. and Loveless, A. (2012) 'Teachers' Knowing How to use Technology: Exploring a Conceptual Framework for Purposeful Learning Activity', *The Curriculum Journal,* Vol. 23(3), pp. 307-325.

Forde, C., McMahon, M., Mcphee, A. & Patrick, F. (2006) *Professional Development, Reflection and Inquiry.* Paul Chapman Publishing: London.

Fosnot, C. T. (1989) *Enquiring Teachers, Enquiring Learners: A constructivist Approach for Teaching.* New York: Teachers College, Columbia University.

Freire, P. (1970) *Pedagogy of The Oppressed.* London: Penguin Group.

Fullan, M. (2007). *The new meaning of educational change (3rd ed.).* New York: Teachers College Press.

Fullan, M. (2008a) *The Six Secrets of Change.* San Francisco: Jossey-Bass.

Fullan, M. (2013) *Stratosphere: Integrating Technology, Pedagogy, and change knowledge.* Canada: Prentice Hall.

Fullan, M. and Hargreaves, A. (1992) *Teacher Development and Educational Change.* London: The Falmer Press.

Fullan, M. and Hargreaves, A. (1996) *What's Worth Fighting for in Your School?* New York: Teachers College Press.

Fullan, M. and Pomfret, A. (1977) 'Research on Curriculum and Instruction Implementation',*Review of Educational Research,* Vol. 47(1), pp. 335-397.

Fullan, M. T. (2001) *The New Meaning of Educational Change.* (3th ed.). New York: Teacher College Press, Columbia University.

Gardner, H. (1991) *The Unschooled Mind: How Children Learn and How Schools Should teach.* New York: Basic Books.

Gardner, J. and Galanouli, D. (2004) 'Research into Information and Communications Technology in Education: Disciplined inequities for telling stories better',*Technology, Pedagogy and Education,* Vol. 13(2), pp. 147-161.

Garrison, D. R., and Anderson, T. (2003) *E-learning in the 21st century: A framework for research and practice.* London: Routledge/Falmer.

Garrison, D. R., and Archer, W. (2000) *A Transactional Perspective on Teaching-Learning: A Framework for Adult and Higher Education.* Oxford, UK: Pergamon.

Garrison, D. R., Anderson, T, and Archer, W. (2000) 'Critical inquiry in a text-based environment: Computer conferencing in higher education', *The Internet and Higher Education* Vol. 2, pp. 87–105.

Gatt, S. and Vella, Y. (2003) *Constructivist Teaching in Primary School: Social Studies, Mathematics, Science, ICT, Design and Technology.* Malt: Agenda.

Gibson, J. G. (1977) *The Theory of Affordances.* In Shaw, R. and Bransford, J. (Editors) Perceiving, Acting and Knowing. Hillsdale: Lawrence Erlbaum Associates, Publishers.

Gibson, J. G. (1994) 'Gibson's Affordances', *Psychological Review,* Vol. 101(2), pp. 336-342.

Gliem, J.and Gliem, R. (2003) *Calculating, Interpreting and Reporting Cronbach's Alpha Reliability Coefficient for Likert-Type Scales*. In 2003 Midwest Research to Practice Conference in Adult, Continuing and Community Education. Columbus, OH.

Golafshani, N. (2003) 'Understanding Reliability and Validity in Qualitative Research',*The Qualitative Report,* Vol. 8(4), pp. 597-607.

Goodnough, K. (2008) 'Moving science off the "back burner": Meaning making within an action community of practice', *Journal of Science Teacher Education,* Vol. *19*(1), pp. 15-39.

Gorarda, S., Roberts, K.and Taylor, C. (2004) 'What kind of creature is a design experiment?', *British Educational Research Journal,* Vol. 30(4), pp. 577-590.

Greeno, J. G. (1978). *A study of problem solving*. In Glaser, R. (Ed.),Advances in instructional psychology, pp. 13-75. Hillsdale, NJ: Erlbaum.

Greeno, J. G., Collins, A. M. and Resnick, L. B. (1996) *'Cognition and Learning'*. In Berliner, D. and Calfee, R. (eds). Handbook of Educational Psychology, Macmillan, New York: pp. 15-46.

Griffiths, K. (2005) 'Personal coaching: A model for effective learning', *Journal of Learning Design*, Vol. 1(2), 55-65.

Guba, E. G. and Lincoln, Y. S., (1989) *Fourth Generation Evolution*. NewBury Park: SAGE publication.

Guskey, T. and Petterson, K. (1995–1996) 'The road to classroom change',. *Educational Leadership*, Vol. 53, pp10–15.

Guskey, T. R. (1986) 'Staff development and the process of teacher change', *Educational Researcher*, Vol. 15(5), pp. 5-12.

Guskey, T. R. (2002) 'Professional Development and Teacher change', *Teachers and Teaching: Theory and Practice.* Vol. 8(3/4), pp. 381-391.

Habermas, J. (1975) *Legitimation crisis.* Boston, MA: Beacon Press.

Habermas, J. (1984) *The theory of communicative action.* Vol.1, *Reason and the rationalization of society / translated by Thomas McCarthy*. London: Heinemann Education.

Haggarty, L. and Postlethwaite, K. (2003) 'Action Research: a strategy for teacher change and school development?', *Oxford Review of Education*, Vol. 29, No. 4,pp. 423-448.

Haggarty, L., Postlethwaite, K., Diment, K. and Ellins, J. (2013) 'Improving the Learning of Newly Qualified Teachers in the Induction Year', *British Educational Research Journal.* Vol. 37(6), pp. 935-954.

Ham, V., Wenmoth, D. and Davey, R. (2010) *Teachers Doing IT for Themselves: Action Research as Professional Development*. In Borthwick, A., and Pierson, M . Transforming Classroom Practice: Professional Development Strategies in Educational Technology (Kindle Locations 3104-3108). International Society for Technology in Education (ISTE). Kindle Edition.

Hammond, M. (2011) 'Beliefs and ICT: What Can We Learn From Experienced Educators? *Technology, Pedagogy and Education',* Vol. 20(3), pp. 289-300.

Hanks, William F. "Forward." (1991) *Situated Learning: Legitimate Peripheral Participation* Ed. Jean Lave and Etienne Wenger. Cambridge: Cambridge Press, pp. 13-24.

Hattie, J. (2009) *Visible learning: A Synthesis of Over 800 Meta-analyses Relating to Achievement*. New York: Routledge.

Hattie, J. (2012) *Visible Learning for Teachers: Maximizing Impact on Learning (Kindle edition).* London: Routledge (Taylor & Francis Group).

Hattie, J., and Timperley H. (2007) 'The power of feedback', *Review of Educational Research*, Vol. 77(1), pp. 81–112.

Haydn, T. and Barton, R. (2008) 'First do no Harm': Factors Influencing Teachers' Ability and Willingness to Use ICT in Their Subject Teaching. *Computer & Education, Vol. 51, pp. 439-447.*

Herrington, J., & Oliver, R. (1999)'Using situated learning and multimedia to investigate higher-order thinking', *Journal of Interactive Learning Research*, Vol. 10(1), pp. 3-24.

Herrington, J., and Knibb, K. (1999). 'Multimedia and student activity: An interpretive study using Video Search', *Australian Journal of Educational Technology*, Vol. 15(1), 47-57.

Hiebert, J., Gallimore, R. and Stigler, J. (2002) 'A knowledge base for the teaching profession: what would it look like and how can we get one?', *Educational Researcher,* Vol. 31(5), 3–15.

Hirsch, Jr., E. D. (1988) *Cultural Literacy: What Every American Needs To Know.* New York: First Vintage Books Edition.

Hirsch, Jr., E. D. (1996) *The Schools We Need: And Why We Don't Have Them.* New York: First Anchor Books Edition.

Hollingsworth, S., (1997) *International action research: A casebook for educational reform.*London: Flamer Press.

Hopan, G. (2002) *Teacher learning for Educational Change: A system thinking approach.* Open University Press: Buckingham.

Huberman, A. M. and Miles, M. B. (1984) *Innovation up close: How school improvement works.* New York: Plenum Press.

In Conversation (2008) An Interview with Michael Fullan. *In Conversation page of the Ministry.* Vol. 1(1), pp. 1-8.

Jaipal, K. and Figg, C. (2010) 'Unpacking the "Total PACKage": Emergent TPACK Characteristics from a Study of Preservice Teachers Teaching with Technology', *Journal of Technology and Teacher Education,* Vol. 18(3), pp. 415-441.

Jenlink, P. M.and Jenlink, K. E. (2008)'Creating democratic learning communities: Transformative work as spatial practice*', Theory Into Practice*, Vol. 47(4), pp. 311-317.

Jik, T. D. (1979) 'Mixing Qualitative and Quantitative Methods: Triangulation in Action', *Administrative Science Quarterly,* Vol. 24(4), pp. 602-611.

Jiménez Raya, M. (2007) 'Developing Professional Autonomy: A balance between License and Responsibility', *Independence* Vol. 40,pp. 32-34

Joseph, D. (2004) 'The practice of design-based research: Uncovering the interplay between design, research, and the real-world context*', Educational Psychologist*, Vol. 39(4), pp. 235-242. Lawrence Erlbaum Associates, Inc.

Juuti, K. and Lavonen, J. (2006) 'Design-Based Research in Science Education: One Step towards Methodology', *Nordina*, Vol. 4, pp. 54-68.

Kagan, D. (1990) 'Ways of Evaluating Teacher Cognition: Inferences Concerning the Goldilocks Principle', *Review of Educational Research,* Vol. 6, pp. 419-469.

Kagan, D. (1992) 'Implications of research on teacher belief', *Educational Psychologist*, Vol. 27(1), pp. 65-90.

Kennedy, A. (2005) 'Models of Continuing Professional Development: a Framework for Analysis',*Journal of In-service Education,* Vol. 31(2), pp. 235-350.

Kennedy, M. M. (2010) 'Knowledge and Teaching', *Teachers and Teaching: Theory and practice.* Vol. 8(3), pp. 355-370.

Ketelaar, E., Brok, P. D., Beijaard, D. & Boshuizen, H. P. A. (2012) 'Teachers' Perceptions of the Coaching Role in Secondary Vocational Education', *Journal of Vocational Education and Training,* Vol. 64(3), pp. 295-315.

Keys, P. M. (2007) 'A knowledge Filter Model for Observing and Facilitating Change in Teachers' Beliefs',. *Journal of Education Change.* Vol. 8(1), pp. 41-60.

Kuwait Society for the Advancement of Arab Children (KSAAC) (1998) *Education Indicator and Building National Capacity Project.* Final report. Kuwait.

Laurillard, D. (2008) 'The Teacher as Action Researcher: Using Technology to Capture Pedagogical Form', *Studies in Higher Education,* Vol. 33(2), pp. 139-154.

Laurillard, D., Stratfold, M., Luckin, R., Plowman, L. and Taylor, J. (2000) 'Affordances for Learning in a Non-Linear Narrative Medium', *Journal of Interactive Media in Education.* Available on-line http://wwwjime.open.ac.uk/00/2 .

Lave, J. & Wenger, E. (1991) *Situated Learning Legitimate Peripheral Participation.* Cambridge: Cambridge University Press.

Law, N. (2009) 'Mathematics and Science Teachers' Pedagogical Orientations and Their use of ICT in Teaching', *Education & Information Technologies,* Vol. 14, pp. 309-323.

Lawless, K. A. and Pellegrino, J. W. (2007) 'Professional Development in Integrating Technology into Teaching and Learning: Knowns, Unknowns,

and Ways to Pursue Questions and Answers', *Review of Educational Research,* Vol. 77, pp. 575-614.

Levin, J. R., and O‟Donnell, A. M. (1999)'What to do about educational research's credibility gaps?', *Issues in Education*, Vol. 5, pp. 177-229.

Levin, J. R., and Robinson, D. H. (1999)'Further reflections on hypothesis testing and editorial policy for primary research journals', Educational Psychology Review, Vol. 11: pp. 143-155.

Lewin, C., Somekh, B., and Steadman, S. (2008) 'Embedding interactive whiteboards in teaching and learning: The process of change in pedagogic practice'*, Education and Information Technology*, Vol. 13(4), pp. 291–303.

Lewin, K. (1946/1948). *Action research and minority problems*. In Lewin, G. W. (Ed.), Resolving social conflicts (pp. 201–216). New York: Harper & Row.

Lewis, H. (1990) *A question of values*. San Francisco: Harper& Row.

Lieberman, J. (2009) 'Reinventing Teacher professional norms and identities: The role of lesson study and learning communities', *Professional Development in Education,* Vol. 35(1), pp. 83-99.

Lincoln, Y. S., and Guba, E. G. (1985) *Naturalistic inquiry*. Beverly Hills, CA: SAGE.

Little, J. W. (1990) 'The Persistence of Privacy: Autonomy and Initiative in Teachers' Professional Relations', *Teacher College Records,* Vol. 91(4), pp. 509-536.

Little, J. W. (2002) 'Locating Learning in Teachers' Communities of Practice: Opening up Problems of Analysis in Records of Everyday work', *Teaching and Teacher Education,* Vol. 18, pp. 917-946.

Lloyds, M. and McRobbie, C. (2005) 'The "Whole Approach": An Investigation of A School-Based Practicum Model of Teacher Professional Development in ICT', *Journal of Educational Computing Research,* Vol. 32(4), pp. 341-351.

Loucks-Horsley, S., Harding, C. K., Arbuckle, M. A., Murray, L. B., Dubea, C. and Williams, M. K. (1987) *Continuing to Learn: a guidebook for teacher development* (Andover), MA, Regional Laboratory for Educational

Improvement of the Northeast and Islands& Oxford, OH: National Staff Development Council.

Loucks-Horsley, S., Hewson, P., Love, N. and Stiles, K. E. (1998) *Designing Professional Development for Teachers of Science and Mathematics.* Thousand Oaks, CA: Corwin.

Louden, W. (1992) *Understanding Reflection through Collaborative Research*. In Fullan, M. and Hargreaves, A. Teacher Development and Educational Change. London: The Falmer Press.

Loveless, A. (2003) 'Creating Space in the Primary Curriculum: ICT in Creative Subjects', *The Curriculum Journal,* Vol. 14(1), pp. 5-21.

Loveless, A. and Dore, B. (2002) *ICT in the Primary School.* Buckingham: Open University Press.

Loveless, A. M. (2003) 'The Interaction Between Primary Teachers' Perception of ICT and Their Pedagogy', *Education and Information Technologies,* Vol. 8(4), pp. 313-326.

Loveless, A. M. and Williamson, B. (2013) *Learning Identities in a Digital Age: Rethinking Creativity, Education and Technology.* London: Routledge, Taylor & Francis Group.

Loveless, A., DeVoogd, G. and Bohlin, R. (2001) *Something Old, Something New.* In Loveless, A. and Ellis, V. (Eds) ICT, Pedagogy and the Curriculum. (pp. 63-83). London: Routledge Falmer.

Mansour, N. (2006) *The mediating factors between Egyptian science teachers' beliefs and practices concerning teaching science through Science-Technology-Society (STS): Implications for teacher education*. A paper presented at the British Educational Research Association (BERA) annual conference at Warwick University, UK, Sep. 6 - 9.

Mansour, N. (2008*) Models of Understanding Science Teachers' Beliefs and Practices: Challenges and Potentials for Science Education*. VDM Verlag Dr. Müller.

Mansour, N. (2008a) 'The experiences and personal religious beliefs of Egyptian science teachers as a framework for understanding the shaping and reshaping of their beliefs and practices about Science-Technology-Society (STS*',. International Journal of Science Education, Vol. 30(12), pp. 1605- 1634.*

Mansour, N. (2008b). *Science- technology- society education in Egypt: The beliefs and practices of Egyptian science teachers*. Ph.D Thesis. Exeter, UK: University of Exeter.

Mansour, N., El. Deghaday, H. Alshamrani, S., & Aldahmash, A. (2014) 'Rethinking the theory and practice of continuing professional development: Science teachers' perspectives', *Research in Science Education*. Published Online First. DOI: 10.1007/s11165-014-9409-y

Marlowe,B. A. and Page, M. L. (2005) *Creating and Sustaining the Constructivist Classroom* (2nd edn). Thousand Oaks: Crown Press

Marris, P. (1975). *Loss and Change*. New York: Anchor Press/Doubleday.

Maslow, A. (1943) 'A Theory of Human Motivation', *Psychological Review*. Vol. 50, pp. 370-396.

Maslow, A. (1987) *Motivation and Personality* (3rd edition). New York: Harper & Row, Publishers, Inc.

Mathison, S. (1988) 'Why triangulate?', *Educational Researcher*, Vol. 17(2), pp. 13-17.

Maxwell, J. A. (1992) Understanding and validity in qualitative research. *Harvard Educational Review*, Vol. 62, pp. 279-299.

Maxwell, J. A. (2005). *Qualitative research design: An interactive approach.*2nd. edn. Newbury Park, CA: Sage.

Mclaughlin, M. W. and Marsh, D. D. (1978) 'Staff development and school change', *Teachers College Record*, Vol. 40, pp. 69- 93.

Means, B., and Olson, K. (1994) 'The link between technology and authentic learning', *Educational Leadership, Vol. 51*(7), pp. 15-18.

Middlewood, D., Parker, R. and Beere, J. (2005) *Creating a Learning School*. London: Paul Chapman Publications.

Ministry of Education (MoE) (2007) *Kuwait Educational Indicators and Assessment Project.* 3rd edn. Kuwait.

Ministry of Education (MoE) (2008) *The National Report Development of Education in the State of Kuwait, 2004-2008*. Depository Number: 323/2008.

Ministry of Education (MoE) (2009) *The Final Report of the Evaluation of the Primary Development Project*. The National Centre for Education Development. Kuwait.

Ministry of Education (MoE) (2012) "Competences for the 21st Century Kuwait": National Curriculum Framework for Pre-school, Primary, Intermediate and Secondary Education. In press.

Mishra, P. and Koehler, M. J. (2006) 'Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge', *Teachers College Record.* Vol. 108(6), pp. 1017-1054.

Moser, C. A., and Kalton, G. (1971) *Survey Methods in Social Investigation.*2nd edn.London: Heinemann Educational.

Mouzakis, C. (2008) 'Teachers' Perceptions of the Effectiveness of a Blended Learning Approach for ICT Teacher Training', *Journal of Technology and Teacher Education.* 16(4), pp. 459-481.

Nelson, B. (2005) *Investigating the Impact of Individualized, Reflective Guidance on Student Learning in an Educational Multi-User Virtual Environment.* Unpublished dissertation: Harvard University.

Nespor,J . (1987) 'The role of beliefs in the practice of teaching', *Journal o Curriculum Studies*, Vol. 19, pp. 317-328.

Neubert, Stefan. 2003. "Some Perspectives of Interactive Constructivism on the Theory of Education," http://www.uni-koeln.de/ew-fak/konstrukt/texte/download/introduction.pdf (March 3, 2008).

Nisbet, S. and Warren, E. (2000) 'Primary School Teachers' Beliefs Relating to Mathematics, Teaching and Assessing Mathematics and Factors that Influence these Beliefs', *Mathematics Teacher Education and Development.* Vol. 2, pp. 34-47.

Nisbett, R., and Ross, L. (1980) *Human inference: Strategies and shortcomings of social judgment.* Englewood Cliffs, NJ: Prentice-Hal

Onwuegbuzie, A. J. and Johnson, B. R. (2006) 'The Validity Issue in Mixed Research', *Research in the Schools*, Vol. 13, (1), pp. 48-63.

Open Net Initiative (2009b). *Internet filtering in Kuwait.* Retrieved December 26, 2011, from http://opennet.net/sites/opennet.net/files/ONI_Kuwait_2009.pdf

Oppenheim, A.N. (1966) *Questionnaire design and attitude measurement.* London: Heinemann.

Pajares, M. F. (1992) 'Teachers' Beliefs and Educational Research: Cleaning Up a Messy Construct', *Review of Educational Research*. Vol. 62, (3), pp. 307-332.

Pajares, M. F. (1998) *Pre-service Teachers' beliefs: a focus on teacher education. Retrieved May 14, 2004, on-line: http://www.emory.edu/EDUCATION/html* .

Palincsar, A.S. (1982). *Improving the reading comprehension of junior high school students through the reciprocal teaching of comprehension-monitoring strategies*. Unpublished Doctoral Dissertation, University of Illinois at Urbana–Champaign.

Palincsar, A.S. (1986). 'The role of dialogue in providing scaffolded instruction', *Educational Psychologist*, Vol. 21, pp. 73–98.

Palincsar,A . S. and Brown, A. L. (1984). 'Reciprocal teaching of comprehension-fostering and monitoring activities. *Cognition and Instruction'*, Vol. 1(2), pp. 117-175.

Pallant, J. (2007) *SPSS Survival Manual*.3rd edn. Open University Press.

Parsloe, E. (1999) *The Manager as Coach and Mentor.* London: Chartered Institute of Personnel and Development.

Partnership for 21st Century Skills (2007)*Beyond the Three Rs: Voter Attitudes Toward 21st Century Skills*. Tucson, AZ: Author.

Patton. M. Q. (2002) Q*ualitative research & Evaluation Methods*. Thousand Oaks: SAGE Publication.

Pelgrum, W. J. (2001) 'Obstacles to the integration of ICT in education: Results from a worldwide educational assessment', *Computer and Education.* Vol. 37, pp. 163-178.

Pine, G. J. (2009) *Teacher Action Research: Building Knowledge Democracies*. Thousand Oaks: SAGE Publications, Inc.

Pintrich, P. R. and Schunk, D. H. (1996) *Motivation in Education: Theory, Research and Applications.* Englewood Cliffs: NJ: Prentice.

Pollard, A. (2002) *Reflective Teaching: Effective and Evidence-Informed Professional Practice.*Continuum: International Publishing Group Ltd.

Postholm, M. B. (2006) 'The Teacher's Role When Pupils Work on Task Using ICT in Project Work', *Educational Research,* Vol. 48(2), pp. 155-175.

Pring, R. (2006) *Philosophy of Educational Research.* London: Continuum.

Putnam, R. and Borko, H. (1997). *Teacher learning: Implications of new views of cognition.* In Biddle, B. J., Good, T. L. & Goodson, I. F. (Eds.). The international handbook of teachers and teaching (pp. 1223–1296).Dordrecht, The Netherlands: Kluwer.

Putnam, R. and Borko, H. (2000) 'What do new views of knowledge and thinking have to say about research on teacher learning?', *Educational Researcher*, Vol. 29(1), pp. 4–15.

Radnor, H. (2001) *Researching your Professional Practice: Doing Interpretation research.* Buckingham: Open University Press.

Reason, P. and Bradbury, H. (Eds.) (2001)*Handbook of action research*. Thousand Oaks, CA: Sage Publications.

Redecker, C. and Johannessen, Ø. (2013) 'Changing Assessment-Towards a New Assessment Paradigm Using ICT', *European Journal of Education*, Vol, 48(1), pp. 79-96.

Reeves, T. C. (2000). *Enhancing the Worth of Instructional Technology Research through Design Experiments and Other Development Research Strategies,* Paper presented on April 27, 2000 at Session 41.29, International Perspectives on Instructional Technology Research for the 21st Century, a Symposium sponsored by SIG/Instructional Technology at the Annual Meeting of the American Educational Research Association, New Orleans, LA.

Resnick, L. (1987) 'Learning in School and out*', Educational Researcher,* Vol. 16, pp. 13-20.

Richardson, V. (2002) *Finding a Center for research on teaching*. Vice Presidential Address Presented at the *Annual Meeting of the American Educational Research Association*, New Orleans, LA.

Richardson, V. (ed.) (1997) *Constructivist Teacher Education: Building a World of New Understandings.* London: Falmer Press.

Richey, R. C., Klein, J. D., and Nelson, W. A. (2004). *Developmental research: Studies of instructional design and development.* In Jonassen, D. H. (Ed.) Handbook of Research for Educational Communications and Technology (pp. 1099-1130). Mahwah, N.J.: Lawrence Erlbaum Associates, Inc.

Roberts, J. (2000) 'From Know-how to Show How? Questioning the role of Information and Communication Technologies in Knowledge Transfer', *Technology Analysis & Strategic Management,* Vol. 12(4), pp. 429- 443.

Robinson, B. (1997) *Getting ready to change: the place of change theory in the information technology of teachers.* In Passey, D. & Samways, B. (1997) Information Technology Supporting change through teacher education. London: Chapman & Hall.

Roblyer, M. D. (2005)'Educational technology research that makes a difference: Series introduction', *Contemporary Issues in Technology and Teacher Education*, Vol. 5(2), pp. 192-201.

Rodgers, C. (2002)'Defining reflection: Another look at John Dewey and Reflective Thinking', *Teachers College Record*, Vol.104, pp. 842-866.

Rogers, E. M. (1995) *Diffusion of innovations.* 4th ed. New York: Free Press.

Rogers, E. M. (2002) 'Diffusion of preventive innovations', *Addictive Behaviors,* Vol. 27, pp 989-993.

Rogers, E.M. (2003*) Diffusion of innovations. Fifth edition.* New York: Free Press. A comprehensive textbook that reviews the main investigations of diffusion and provides a general framework (which is an updated version of the Ryan and Gross paradigm).

Rogoff, B. (1990) *Cognitive Development in Social Context.* Oxford: Oxford University Press.

Rotherham, A. J. and Willingham, D. T. (2010) '"21st-Century" Skills: Not New, but a Worthy Challenge', *American Educator,* Vol. 34(1), pp. 17

Rudduck, J. (1988) *The Ownership of Change as a Basic for Teacher Professional learning.* In Calderhead, J. Teacher Professional Learning. London: The Falmer Press.

Rust, F. O. (2009) 'Teacher Research and the Problem of Practice', *Teacher College Record,* Vol. 111(8), pp. 1882-1893.

Sandoval, W. (2004) 'Developing learning theory by refining conjectures embodied in educational designs', *Educational Psychologist.* Vol. 39(4), pp. 213−223.

Savery, J. R. and Duffy, T. M. (1998). *Problem based learning: An instructional model and its constructivist framework.* In B. G. Wilson (Ed.). Constructivist learning environments: Case studies in instructional

design(pp. 135-148). Englewood Cliffs, New Jersey: Educational Technology Publications.

Scardamalia, M., and Bereiter, C. (1994) 'Computer support for knowledge-building communities', *The Journal of the Learning Sciences*, Vol. 3(3), pp. 265-283.

Schön, D. (1971). *Beyond the stable state.* New York: Norton.

Schön, D. (1987) *Educating the Reflective Practitioner*. San Francisco: Jossey-Bass.

Schön, D. (2007). *The reflective practitioner: How professionals think in action.* England: Ashgate.

Scrimshaw, P. (1997) *Computers and the Teacher's Role.* In Somekh, B. & Davis, N. Using Information Technology Effectively in Teaching and Learning: Studies in Pre-service and In-service Teacher Education. London: Routledge.

Seidman, I. (2006) *Interviewing as Qualitative Research: A Guide for Researchers in Education and the Social Sciences (3rd ed.).* New York: Teacher College Press.

Selley, N. (1999) *The Art of Constructivist Teaching in the Primary School: A Guide for Students and Teachers.* London: David Fulton Publishers.

Selwyn, N. (2006) 'Digital Division or Digital Decision? A Study of non-Users and Low Users of Computers', *Poetics*, Vol. (34), pp. 273-292.

Selwyn, N. (2008) 'Realising the Potential of New Technology? Assessing the Legacy of New Labour's ICT Agenda 1997-2007',*Oxford Review of Education,* Vol. 34(6), pp. 701-712.

Selwyn, N. (2012) 'Making Sense of Young People, Education and Digital Technology: The Role of Sociological Theory', *Oxford Review of Education*, Vol. 38(1), pp. 81-96.

Selwyn, N. and Facer, K. (2007) *Beyond the Digital Divide: Rethinking Digital Inclusion for the 21st Century.* Bristol: FutureLab.

Senge, P and Scharmer, O. (2001) *Community Action Research: Learning as a community of Practitioners, Consultants and Researchers.* In Reason, P. & Bradbury, B. (Eds) Handbook of Action Research: Participative Inquiry and practice. London: SAGE Publications.

Shavelson, R. J., and Stern, P. (1981) 'Research on Teachers' Pedagogical Thoughts, Judgments, Decisions, and Behavior', *Review of educational research*: Vol. 51(4), pp. 455-498.

Shavelson, R. J., Phillips, D. C., Towne, L. and Feuer, M. J. (2003) 'On the Science of Education Design Studies', *Educational Researcher.* Vol. 32, (1), pp. 25-28.

Shulman, L. S. (1987) 'Knowledge and Teaching: Foundations of the New Reform', *Harvard Educational Review.* Vol. 57(1), pp. 1-22.

Skinner, N. (2010)'Developing a curriculum for initial teacher education using a situated learning perspective', *Teacher Development*, Vol. 14 (3), pp. 279-293.

Smeets, Ed. (2005) 'Does ICT Contribute to Powerful Learning Environments in Primary Education', *Computers & Education,* Vol. 44, pp. 343-355.

Smith, R. C. (2003). *Teacher education for teacher-learner autonomy.* In Symposium for Language Teacher Educators: Papers from Three IALS Symposia (CD-ROM). Edinburgh: IALS, University of Edinburgh. Retrieved from: http://www. warwick. ac. uk/~ elsdr/Teacher_autonomy. Pdf.

Solomon, J. and Tresman, S. (2006) 'A Model for Continued Professional Development: Knowledge, Beliefs and Action', *Journal of In-Service Education,* Vol. 25(2), pp. 307-319.

Somakh, B. (2006) 'Cognitive Tools Mind tools for Collaborative Learning', *Educational Computing Reseach*, Vol. 32(2) pp. 199-209.

Somekh, B. (2007) *Pedagogy and Learning with ICT: Researching the Art of Innovation.* London: Routledge Taylor & Francis Group.

Somekh, B. (2008) *Factors Affecting Teachers' Pedagogical Adoption of ICT.* In Voogt, J. and Knezek (eds) *International Handbook of Information Technology in Primary and Secondary Education.* Springer Science: Business Media, LLC.

Somekh, B., and Davis,N. (eds) (1997) *Using IT effectively in teaching and learning: studies in pre-service and in-service teacher education.* London: Routledge.

Somekh, B., Sunders, L. (2007) 'Developing Knowledge through intervention: Meaning and definition of 'quality' in research into change', *Research Papers in Education*, Vol. 22(2), pp. 183-198.

Spivey, N. N. (1997) *The Constructivist Metaphor: Reading, Writing, and the Making of Meaning.* San Diego: Academic Press.

Squire, K (2006) 'From Content to Context: Videogames as Design Experience', *Educational Researcher,* Vol. 35(8), pp. 19-29.

Stenhouse, L. (1975) *An introduction to Curriculum Research and Development.* London: Heinemann.

Stenhouse, L. (1983) *Authority, Education and Emancipation: a Collection of Paper*s. London: Heinemann Education.

Strauss, A. L., Schatzman, L., Bucher, R., Ehrlich, D. and Sabshin, M., (1964) *Psychiatric Ideologies and Institutions.* New York: Free Press of Glencoe.

Sylvia, R. D., and T. Hutchinson. 1985. 'What makes Ms. Johnson teach? A study of teacher motivation', *Human Relations.* Vol. 38, pp. 841- 56.

Talbert, J. E. and Mclaughlin, M. W. (2002) 'Professional Communities and the Artisan Model of Teaching', *Teachers and Teaching: Theory and Practice*, Vol. 8(3), pp. 325-343

Tashakkori, A. and Teddlie, C. (eds) (2003) *Handbook on Mixed Methods in the Behavioural and Social Sciences.* Thousand Oaks, CA: Sage Publications.

Tillema, H. H. (1995) 'Changing the Professional Knowledge and Beliefs of Teachers: A Training Study', *Learning and Instruction*, Vol. 5, pp. 291-318.

Tinca, L., Son, S.H. and Williams L. (2001) *TIPS for Teachers- Becoming a Coach.* Available on-line http://www.edb.utexas.edu/pbl/TIPS/coach.html.

Tolhurst, J. (2006) *Coaching for Schools: A Practical Guide to Using Coaching to build Sustainable learning and Leadership in Schools.* Harlow: Pearson Education.

Torp, L. and Sage, S. (1998). *Problems as possibilities: Problem-based learning for K-12 education.* Alexandria, VA: Association for Supervision and curriculum Development.

Valcke, M., Rots, I., Verbeke, M. and van Braak, J. (2007) 'ICT Teacher Training: Evaluation of the Curriculum and Training Approach in Flanders', *Teaching and Teacher Education,* Vol. 23, pp. 795-808.

Volman, M. (2005) 'A Variety of Roles for New Type of Teacher Educatonal Technology and the teaching profession', *Teaching and Teacher Education, Vol. 2, pp. 15-31.*

Von Glasersfeld, E. (1995) *Constructivist Approach to Teaching.* In Steffe, L. P. and Gale, J. Constructivism in Education. New Jersey: Lawrence Erlbaum Associates, Inc.

Voogt, J. (2010) 'Teacher Factors Associated with Innovative Curriculum Goals and Pedagogical Practice: Differences Between Extensive and non-Extensive ICT-Using Science Teachers', *Journal of Computer Assisted Learning,* Vol. 26, pp. 453-464.

Voogt, J., Knezek,G., Cox, M., Knezek, D. and ten Brummelhuis, A. (2011) 'Under Which Conditions Does ICT Have a Positive Effect on Teaching and Learning? A Call to Action', *Journal of Computer Assisted Learning,* Vol. 29(1), pp. 1-11.

Vygotsky, L. (1986). *Thought and language.* Cambridge, MA: The MIT Press.

Vygotsky, L. S. (1978) *Mind in society: the development of higher psychological processes.* Cambridge, MA: Harvard University Press.

Wasserman, S. and Faust, K. (1994) *Social network analysis: Methods and applications*. New York: Cambridge University Press.

Watson, D. M. (2001) 'Pedagogy before Technology: Re-thinking the Relationship between ICT and Teaching', *Education and Information Technology*. Vol. 6(4), pp. 251-266.

Watson, G. (2006) 'Technology Professional development: Long-term Effects on Teachers Self-Efficacy', *Journal of Technology and Teacher Education,* Vol. 14, pp. 151-165.

Watts, M. & Ebbutt, D. (1987) 'More than the sum of the parts: research methods in group interviewing', *British Educational Research Journal*, Vol.13 (1), pp. 25-34.

Webb, M & Cox, M. (2004) 'A Review of Pedagogy related to Information and Communications Technology', *Technology, Pedagogy and Education*, Vol. 13, pp. 235-286.

Webb, M. (2013) 'Changing Models for Researching Pedagogy with Information and Communication Technologies', *Journal of Computer Assisted Learning,* Vol. 29(1),pp. 53-67.

Wegerif, R.B., McLaren, B.M., Chamrada, M., Scheuer, O., Mansour, N., Mikšátko, J., Williams, M. (2010) 'Exploring Creative Thinking in Graphically Mediated Synchronous Dialogues', *Computers and Education*, Vol. 54(3), pp. 613-621.

Wellington, J. (2000) *Educational Research: Contemporary Issues and Practical Approaches.* London: Continuum.

Wenger, E. (1998) *Community of Practice: Learning, Meaning, and Identity.* Cambridge: University Press.

Wentworth, N., Earle, R. & Connell, M.L editors. (2004)*Integrating information technology into the teacher education curriculum: process and products of change.* New York; London: Haworth Press.

Wideman, R. (1991) *How Secondary school teachers change their classroom practices.* Ed.D thesis, Toronto: University of Toronto.

Williams, M. B., Robert. (1997) *Psychology for Language Teachers: A Social Constructivist view*. New York: Cambridge.

Windschitl, M. (2002) 'Framing Constructivism in Practice as the Negotiation of Dilemmas: An Analysis of the Conceptual, Pedagogical, Cultural, and Political Challenges Facing Teachers', *Review of Educational research.* Vol. 72(2), pp. 131-175.

Windschitl, M., & Sahl. K. (2002) 'Tracing Teachers' Use of Technology in Laptop Computer School: The Interplay of Teacher Beliefs, Social Dynamics, and institutional Culture', *American Educational Research Journal,* Vol. 39, pp. 165-205.

Yin, R. K. (1994)*Case Study Research: Design and Methods.* 2nded. Thousand Oaks: SAGE Publications.

York-Barr, J., Dommers, W. A.,Ghere. G. S. & Montie, J. K. (2006) *Reflective Practice to Improve Schools: an Action Guide for Educators.*2nd ed. Thousand Oaks: Crowin Press, A SAGE Publications Company.

Appendix A: Arabic's Version of TBS Questionnaire

The Final TBS Version no. 3

No. ☐

<div dir="rtl">

استطلاع حول آراء واعتقادات المعلم في التعليم

الرجاء ملئ الفراغات التالية:

الأسم: --- :

التخصص: --

المرحلة: ------------------------------   الصف:------------------------------

الشهادة العلمية الحاصل عليها :

- دبلوم قبل جامعي – جامعي - دبلوم بعد جامعي – ماجستير - دكتوراه

سنوات الخبرة في التعليم:

- أقل من 5 سنوات
- أقل من 10 سنوات
- أقل من 15 سنة
- أقل من 20 سنة
- 20 سنة فأكثر

</div>

Table 31:TBS' Arabic version.

<div dir="rtl">

لا أوافق بشدة	لا أوافق	أحيانا	أوافق	أوافق بشدة	العبارات	الرقم
1	2	3	4	5		
					من المهم وضع قواعد لضبط الفصل قبل أن أكون ودودا مع التلاميذ.	.1
					أعتقد من الطرق الفعالة لبناء المنهج التوسع والإستفاده من أفكار التلاميذ.	.2
					أفضل نظام المجموعات للتلاميذ للعمل معا.	.3

</div>

						أدعو التلاميذ للمشاركة في عمل العديد من لوحاتي الإعلانية والنشرات.	4.
						أفضل إستخدام طاولة واحدة للتلاميذ للعمل معا.	5.
						أفضل أن أقوم باختيارات المنهج للتلاميذ لانهم لا يستطيعون معرفة ما يحتاجون لتعلمه.	6.
						أحدد درجات التلاميذ بناء على مستوى أدائهم والاختبارات القصيرة والإمتحانات.	7.
						عند وجود مشاكل تعيق تعلم التلميذ فإني أساند أسرته كجزء جوهري من دوري كمعلم.	8.
						أطبق الديموقراطية في الفصل الدراسي لأعتقادي بأنه تنمى التعلم الاجتماعي لدى التلاميذ.	9.
						أتبع الكتاب المدرسي والعملي للتأكد من إنني أدرس التلاميذ المحتوى والمهارات الضرورية.	10
						بالرغم من إدراكي للتداخل بين المحتوى والمهارات فأنا أدرس المواضيع بشكل منفصل.	11
						إذا شعر التلاميذ بأن القوانين الحالية للفصل لا فائدة منها، أشجعهم على إقتراح والتفاوض حول قوانين جديدة للفصل.	12
						أنا أجعل التلاميذ يشاركون في تقييم أعمالهم وكتابة أهدافهم الخاصة.	13
						أنتظر أن يتقرب مني التلاميذ لأقدم لهم مساعدات إضافية.	14
						إذا حدث جدال بين تلاميذي في الفصل، أحاول التدخل فوراً لحل المشكلة.	15
						أعتقد أن التلاميذ يتعلمون بشكل أفضل في حالة وجود جدول ثابت.	16
						أعدل خطة الدرس بناء على نتائج الواجبات المنزلية.	17
						الأولوية في فصلي إعطاء الفرصة للتلاميذ للعمل معاً في حالة عدم توجيهي لهم.	18
						أشجع التلاميذ على حل مشاكلهم الداخلية بالاعتماد على أنفسهم أثناء العمل في المجموعات.	19
						أستطيع وصف تلاميذي بأنهم مساعدي مدراء للمواقف وإجراءات العمل والمناسبات داخل الفصل.	20
						أسمح لأولياء الأمور للاتصال خلال ساعات العمل في المدرسة في أي وقت.	21
						أحيانا اسمح لاولياء الامور الاتصال بعد ساعات العمل في البيت للضرورة.	22
						أشجع تلاميذي لمناقشة الأفكار المتناقضة أثناء لقاءات المجموعة.	23

						النص	#
						الأنشطة المتعلقة بالمناهج المختلفة (المناهج المتكاملة) مهمة لتطوير التلاميذ (مثل: الكتابة في الدراسات الاجتماعية ، القراءة في الرياضيات).	24
						عندما لا يستطيع التلاميذ استنتاج الإجابات الصحيحة بأنفسهم أخبرهم بها بسرعة.	25
						بهدف التقييم ، أهتم بما يستطيع التلاميذ عمله معتمدين على أنفسهم.	26
						أشجع التلاميذ على حل صراعاتهم بالاعتماد على أنفسهم.	27
						أدعو أولياء الأمور للتطوع أو لزيارة الفصل في أي وقت.	28
						أنا أوجه التلاميذ لاستنتاج أجوبتهم للمشاكل العلمية.	29
						استخدم دليل المعلم لكي أرشد الفصل في مناقشاتهم حول قصة أو نص.	30
						أنا أفضل مساعدة التلاميذ بطريقة غير رسمية من خلال الملاحظات أو الاجتماعات المدرسية.	31
						أتصرف مع تلاميذي في الفصل كمتعلم او مشارك في التعليم.	32
						اكتشفت أن الكتب المدرسية والمواد التعليمية المنشورة هي أفضل مصدر لابتكار منهجي.	33
						أشجع أولياء أمور على أن يتابعوا في المنزل الأنشطة الصفية للتلاميذ.	34
						أعتقد في تطوير فصلي كجماعة من المتعلمين.	35
						أنا أشجع التلاميذ لاقتراح أفكار لترتيب الفصل.	36
						إن تعليم التلاميذ طاعة القوانين أهم من اتخاذ قراراتهم الخاصة.	37
						عندما لا تفيد التعليمات، أنا أقوم بتغيرها اعتمادا على خبرتي.	38
						كثيرا ما ابتكر مواضيع تعتمد على اهتمامات التلاميذ وأفكارهم.	39
						أكافئ التلاميذ لفظيا عندما يتصرفون كمواطنين صالحين هي أفضل طريقة لتعليمهم الاهتمام ببعضهم بعض.	40
						أشجع المناقشات الخاصة بالآراء والأسباب المختلفة.	41
						أعتقد أنه من المهم مشاركة التلاميذ في تعديل قوانين الصف عند الحاجة.	42
						أعتقد أن التلاميذ يتعلمون بفعالية أكبر عندما تقسم المهام التي يتعلمونها إلى خطوات متسلسلة صغيرة.	43

					أعيد مسؤولية اتخاذ القرار للطفل عندما يطلب الأطفال مساعدتي.	44
					من المهم جداً أن يكافئ المعلم التلاميذ لفظيا لإتباعهم قوانين الفصل.	45
					تزويد التلاميذ بالمعلومات التي يحتاجون إلى معرفتها أكثر تأثيرا ، بدلاً من تشجيعهم على التجربة.	46
					أنظر إلى الصراعات بين التلاميذ كفرصة لتنقية نموهم الأخلاقي والاجتماعي.	47
					من المهم جداً أن يفرض المعلم قوانين الفصل فور الانتهاء من تحديدها.	48
					أعتقد أن تشجيع التلاميذ على التنافس يحفزهم على تعلم الكثير.	49
					أشجع التلاميذ على مراقبة تصرفاتهم بأنفسهم بدلاًمن إخضاعهم لمراقبتي.	50

Table 32: The 50 items of TBS translated to English

No	Categories
1.	BT It is important that I establish classroom control before I become too friendly with students.
2.	CT I believe that expanding on students' ideas is an effective way to build my curriculum.
3.	BM I prefer to cluster students so they can work together in groups.
4.	CT I invite students to create many of my bulletin boards.
5.	BM I prefer to use one table so they can work together.
6.	BM I like to make curriculum choices for students because they can't know what they need to learn.
7.	BT I base student grades primarily on homework, quizzes, and tests.
8.	CT An essential part of my teacher role is supporting a student's family when problems are interfering with a student's learning.
9.	CM I operate a democratic classroom because I believe it promotes social learning.
10.	BT To be sure that I teach students all necessary content and skills, I follow a textbook or workbook.
11.	CT I teach subjects separately, although I am aware of the overlap of content and skills.
12.	CM I encourage students to propose and negotiate new classroom rules if they feel the current rules are not working.
13.	CT I involve students in evaluating their own work and setting their own goals.
14.	BM I wait for students to approach me before offering extra help.
15.	BM When there is a dispute between students in my classroom, I try to intervene immediately to resolve the problem.
16.	BT I believe students learn best when there is a fixed schedule.
17.	CT I adjust my lesson plan based on results of homework assignments.
18.	CT I make it a priority in my classroom to give students time to work together when I am not directing them.
19.	CM I encourage students to solve internal problems independently when doing group work.
20.	CM I would describe my students as co-managers of classroom procedures and events.
21.	CT I make it easy for parents to contact me at school anytime.
22.	CT I make it easy for parents to contact me at home only if it urgent.

23. CT I encourage students to discuss conflicts in group meetings.
24. CM Cross-curricular activities are important to a student's development (e.g., writing in social studies, reading in math).
25. BM I immediately tell students the correct answers when they cannot figure them out by themselves.
26. CM For assessment purposes, I am interested in what students can do independently.
27. CM I encourage students to resolve conflicts independently.
28. CT I invite parents to volunteer in or visit my classroom almost any time.
29. CT I guide students in finding their own answers to academic problems.
30. BT I generally use the teacher's guide to lead class discussions of a story or text.
31. BT I prefer to assess students informally through observations and conferences.
32. CM I function in my classroom as a learner and partner in learning with my students.
33. BT I find that textbooks and other published materials are the best sources for creating my curriculum.
34. CT I encourage parents to follow up on classroom activities with students at home.
35. CT I believe in developing my classroom as a community of learners.
36. CT I encourage students to suggest ideas for arranging our classroom.
37. BM It is more important for students to learn to obey rules than to make their own decisions.
38. BM When rules don't work, I change the rules based on my professional judgment.
39. CT I often create thematic units based on the students' interests and ideas.
40. BM Rewarding students for being good citizens is a good way to teach students to care about one another.
41. CT I encourage discussions of different opinions and reasons.
42. CT I believe it is important to involve students in revising classroom rules as needed.
43. BT I believe students learn most effectively when learning tasks are broken down into small sequential steps.
44. CM When children request my assistance, I turn the decision-making responsibility back to the child.
45. BM It is important for teachers to reward students for following classroom rules.
46. BT It is more effective to provide students with the information they need to know, rather than encouraging them to experiment.
47. CM I view conflicts between students as opportunities to foster their social and moral development.
48. BM It is very important that teachers enforce classroom rules once they are established.
49. BT I believe that encouraging competition among students motivates them to learn more.
50. CM I encourage students to monitor their own behaviors rather than comply with my authority.

Permission Letter to use Dr. Jane Benjamin TBS

Subject:	asking for premisson
From:	"Benjamin, Jane" <jbenjami@mansfielded>
Date:	Mon Septmber 29, 28 10 pm
To:	"Mohamma, Hasba" <hgmm201@exeter.ac.uk>
Cc:	"Wolley, Sanda" <swoolley@mansfield.edu>
Priority:	Normal
Options:	View Full Header	View Printable Version	View as HTML	Download this as a file	View Message details

Dr. Jane Benjamin,

My name is Hasibah Mohammad. I am a PhD. candidate in school of Educational and

Lifelong Learning, University of Exeter- UK. My first Supervisor is Prof. Dr. Rupert Wegerif. The research will be conducted in Kuwait's future schools starting November 2008.

I would be grateful for you to provide me with your permission to use your teachers' beliefs survey in my study after translating it to Arabic and I will send you the translation version. I will mention that I have adopted your TBS in my thesis referring to your website and university.

Thanking in advance your kind cooperation with me.

Best Regards

Hasibah Mohammad

The respond from Dr. Benjamin

Dear Hasibah:

Thank you for your interest in our teacher beliefs survey. You have my permission to use this survey for your research.

Best wish to your future work.

Dr. Benjamin

Jane Benjamin, Ph.D.

Full Professor,

Department of Education and Special Education

Mansfield University,

Mansfield, PA 16933

(o) 570-662-4797

e-mail: jbenjami@mansfield.edu

Appendix B: Protocol of the Teacher's semi-structured interview

The teacher's semi-structured interview protocol is consists of two phases pre-post-post interviews with teachers. The semi-interviews are being implemented to understand, explore and measure the changes in teachers' beliefs and practice

Stage one semi-Structured Interview

Purpose of the interview is **'Identify the Problem'** to;

1- Gather backgrounds information about the participants.
2- Explore the knowledge and information of the participants about different methods and styles of teaching and learning.
3- Identify the new role teachers should play in the future education and practice in Kuwait's primary schools.
4- Identify and discuss the meaning of teachers-as-coach, teachers-as-researchers and teachers' autonomy.
5- Collect information about teachers' knowledge and beliefs about classroom practice.
6- Explore the interrelationship between teachers' beliefs and practice regarding the use of ICT.
7- Discuss the impact of ICT on teachers' role.
8- Teachers' acquisition of knowledge and skills about the integration of ICT in classroom practice.

Interview Questions:
Teacher's background:

- What is your subject area of teaching? Is it literature or science? What were you previous experience with teaching before you were transferred to future schools?

- What is your Education background? College studies (KW Uni. Or PAAET)? Specialization field of study? Graduate courses or degree? In-service PD courses?
- Describe the teacher education programme you had in college? Do you keep updating your-self with the new methods of teaching and learning or you apply the methods that were supplied by your supervisors and the Ministry?
- How you describe your relationship and interaction with you pupils?

Teacher's definition of teaching, learning and coaching:

- What does teaching means to you as teacher? How you know when you are teaching well? How you think teaching should be?
- What is learning means to you? How you know your students are learning? Do you think you should be part of the learning process? Why? Why not?
- What do you think of coaching? Would you use coaching methods instead of teaching (lecturing) your pupils? Why?

Teacher's beliefs about teaching with ICT:

- What is your experience with ICT such as computers and internet?
- How you think teaching with ICT should be? What do you think that ICT should add to or change your teaching style
- What kind of ICT tools you need or your pupils need? Why?

Relationship between the use of ICT and teacher's beliefs and practice:

- How do you think of using ICT as a way of changing your practice and roles inside the classroom? Why not?

- Is ICT a way to change your classroom practice? What changes would ICT tools such as: computer software will add to your practice or your pupils learning?
- How would you use computer activities in the classroom?
- What make you choose particular activities and leave others?
- How do you make decision about using computer activities?
- What factors affect your decision-making?
- Describe the roles in the classroom using computer activities?
- How would you deal with pupils' roles in group activities? Why?

Stage two semi-Structured Interview

Interview Questions: Two phases during the six months participation in the AR-BCPD

The purpose of the second stage interview 'Understands the Process of Change':

After the first and the second three months teachers have to answer the interviews' questions:

You have been engaged in CPD workshops and community of practice with group of your colleagues; try to reflect on your experience responding to these questions;

Teachers view about the experiment and the CPD workshops:

Continuing professional development program (CPD)

1- How do you think this experience will affect your beliefs and practice?
   - How did it affect you personally?
   - What were your expectations?
   - What is the output for you from this experience?

- Have you had such experience before during in-service CPD? How different it was?

- What aspect of your present experience not included in your initial teacher training?

- Was this experiment in any way beneficiary to you and your colleagues? How? Why not?

- How CPD did inspired you to be more creative in teaching methods with ICT?

- How did it influence your teaching style to be more effective?

Teacher's beliefs, knowledge and practice during and after the intervention:

2- What is your definition for teaching and learning? Do you think it changed?

- How did you respond to it? Did you accept or resist it? Why

- What are the factors that affected you to change?

- Would you like to improve your capacity to cope with the change? Why?

3- What is your own constructed definition of facilitating and coaching?

- If you think coaching is better than teaching how? Why? In what ways or methods?

- How did you feel as coach?

- How did it affect your teaching? Your self-image? Your relationship with your pupils?

- What did it add to you as a teacher?

- How it changed your beliefs and practice? Why not?

- How creative you were as coach for your pupils?

- How would you describe your interaction with your pupils as coach?

- From your point of view to what extent is your desire to adopt coach skills in your classroom practice instead of teaching?

Information Communication Technology

4- How do you think the integration of ICT in classroom practice should be?

- What ways of ICT have you created for your classroom activities?
- What ways of ICT activities were more effective?
- In what ways did the availability of ICT tools in the classroom inspired you to create learning activities for your pupils?
- What should be teacher's role in ICT integrated classroom using computer activities?
- What is the right way to use ICT for pupils learning from your point of view?
- How do you think ICT changed your teacher's role inside the classroom?
- In what ways ICT would change the teaching and learning process?
- In what ways did the use of ICT improved the teaching and learning inside the classroom from your point of view?

Teachers-as-researchers

5- During the intervention new skills were introduced to teachers (teachers-as-researchers) how did you accept it?

- How your role as researcher helped you to identify the problems about your classroom practice?
- What knowledge and skills did the researcher role add to your personality as a teacher?
- What kind of resources you used in your research for developing solutions to improve your classroom practice?
- How did your research affect your beliefs and practice, and contributed to your group discussion?
- Have you had this kind of professional development programme during your in-service years? Why not?

Community of practice

6- What do you think of your involvement in the community of practice? How it affect your beliefs and practice? How did you contribute to the community?

Critical thinking

7- Applying a reflective approach as a critical thinking skill in the experiment, how did it affect you?

- How did you handle it? Why this way? Would you try different way? Why?
- How did you handle your colleagues' reflection on your practice and action? How did they handle your reflection on their practices and actions?
- How did it affect you decision on changing the way you teach the lessons? And how it affects your colleagues practice?
- How did your interaction with your colleagues and the researcher affect your belief, ideas and practice? Why not?
- How did you affect the group? If no why?
- How did it help you to construct new beliefs?

Autonomy

1- During the experiment you have been practicing your teaching skills inside the classroom with no intervening from your head teacher or teacher' inspector, what you think of it? Have you experienced this way of practice during your previous teaching years? Why not?

2- Started teaching the way you wanted, what challenges has this experience presented to you?

3- How did this experiment encourage you to continue in improving and developing your classroom practice as coach? Why not? Would you recommend it to other teacher?

Appendix C: Protocol of the Pupils' Pre-Post-semi-structured interview

The pupils' semi-structured interview protocol is consists of two pre and post interviews with pupils who is their teachers engaged in the main study experiment. The semi-interviews are being implemented to understand, explore and measure the changes in teachers' practice before, during and after the implementations of the main study from the point view of their pupils.

Pre-semi-Structured Interview

Purpose of the interview to;

1- Establish friendly trustful relationship with the pupils.
2- Collect background information about pupils and teachers classroom interaction and relationship?
3- Explore how the pupils perceive their teachers teaching and behaviour.
4- Explain the purposes of the study.

Interview Questions:

1- What are the things that your teacher does that makes you feel good? How often this happen?
2- How do you view your interaction with your teacher and classmate in the classroom?
3- How do you view the learning activities in the classroom? Could you think of any example?
4- Does your teacher help you with the class activities when you need?
5- Does your teacher give you a chance to express your opinion and appreciate it in the classroom?

Post-semi-Structured Interview

Purpose of the interview to;

1- Discuss the new teaching and learning experience they have been engaged in with their teacher.
2- Elicit the effects of teacher's role change on pupils learning and achievements.

Interview Questions:

1- Do you notice a change in the teaching since last term?
2- Is their difference from last term and the learning with computer activities?
3- What do you think of the way of learning with computer activities?
4- Does your teacher help you with the computer activities? Why not? Do you think you need her help all the time?
5- Do you work alone or in group? What do you prefer? Why?
6- Did you notice change with the way your teacher giving you a chance to express your opinion and appreciate it in the classroom? How?

Appendix D: Classroom observation Protocol

Categories and elements of Brown's instrument that detect conformity between teacher's practices and his educational philosophy

Table 33: TPOR English version.

	Teacher practices	10	10	10	10	Total
	A. NATURE OF THE SITUATION					
1	Teacher occupies centre of attention					
2	Teacher makes students centre of attention					
3	Teacher makes some thing as a thing centre of student's attention					
4	Teacher makes doing something centre of student's attention					
5	Teacher has students spend time waiting, watching, listening.					
6	Teacher has students participate actively.					
7	Teacher remains aloof or detached from student's activities.					
8	Teacher joins or participates in student's activities.					
9	Teacher discourages or prevents student from expressing self freely.					
10	Teacher encourages student to express self freely.					
	B. NATURE OF THE PROBLEM					
11	Teacher organises learning around question posed by teacher.					
12	Teacher organises learning around student's own problem or question					
13	Teacher prevents situation, which causes student doubt or perplexity.					
14	Teacher involves students in uncertain or incomplete situation.					
15	Teacher steers student away from "hard" question or problem.					
16	Teacher leads students to question or problem which "stumps" them					
17	Teacher emphasizes idealized, reassuring, or "pretty" aspects of topic.					
18	Teacher emphasizes realistic, disconcerting, or "ugly" aspects of topic					
19	Teacher asks question that students can answer only if they studied the lesson					

20	Teacher asks question that is not readily answerable by study the lesson					
	C. DEVELOPMENT OF IDEAS					
21	Teacher accepts only one answer as being correct.					
22	Teacher permits students to suggest additional or alternative answers.					
23	Teacher expects student to come up with answer teacher has in mind.					
24	Teacher asks student to judge comparative value of answers or suggestions.					
25	Teacher expects student to know rather than to guess answer to question.					
26	Teacher encourages student to guess or hypothesise about the unknown or untested.					
27	Teacher accepts only answers or suggestions closely related to topic.					
28	Teacher entertains even" wild" or far-fetched suggestion of student.					
29	Teacher lets student "get by" with opinionated or stereotyped answer.					
30	Teacher asks to support answer or opinion with evidence.					
	D. USE OF SUBJECT MATTER					
31	Teacher collects and analyses subject matter for students.					
32	Teacher has students make their own collection and analysis of subject matter.					
33	Teacher provides students with detailed facts and information.					
34	Teacher has students find detailed facts and information on their own.					
35	Teacher relies heavily on textbook as source of information.					
36	Teacher makes a wide range of information material available.					
37	Teacher accepts and uses inaccurate information.					
38	Teacher helps students discover and correct factual errors and inaccuracies.					
39	Teacher permits formation of misconceptions and over generalisations.					
40	Teacher questions misconceptions, faulty logic, and unwarranted conclusions.					

	E. EVALUATION					
41	Teacher passes judgment on student's behaviour or work.					
42	Teacher withholds judgment on student's behaviour or work.					
43	Teacher stops student from going ahead with plan which teacher knows will fail.					
44	Teacher encourages students to put their ideas to a test.					
45	Teacher immediately reinforces student's answer as"right" or"wrong".					
46	Teacher has students decide when question has been answered satisfactorily.					
47	Teacher asks another student to give answer if one fails to answer quickly.					
48	Teacher asks student to evaluate his own work.					
49	Teacher provides answer to student who seems confused or puzzled.					
50	Teacher gives student time to sit and think, mull things over.					
	F. DIFFERENTATION					
51	Teacher has all students working at same task at same time.					
52	Teacher has different students working at different tasks.					
53	Teacher holds all students responsible for certain material to be learned.					
54	Teacher has students work independently on what concerns students.					
55	Teacher evaluates work of all students by a set standard.					
56	Teacher evaluates work of different students by different standards.					
	G. MOTIVATION, CONTROL					
57	Teacher motivates students with privileges, prizes, and grades.					
58	Teacher motivates students with intrinsic value of ideas or activity.					
59	Teacher approaches subject matter in direct, business-like way.					
60	Teacher approaches subject matter in indirect, informal way.					
61	Teacher imposes external disciplinary control on students.					
62	Teacher encourages self-discipline on part of students.					
	Total					

TPOR Arabic Version

Table 34: TPOR Arabic version.

المجموع		10د	10د	10د	طبيعة الموقف التربوي
النهائي	الخام				
					1- المعلم يشغل محور الانتباه.
					2- المعلم يجعل من التلميذ محور الانتباه.
					3- المعلم يجعل من المادة محور انتباه التلميذ.
					4- المعلم يجعل من عمل المهمة محور انتباه التلميذ.
					5- المعلم ينفق وقت التلميذ في الانتظار والمراقبة والاستماع.
					6- المعلم يحفز التلميذ للمشاركة الفعالة في أنشطة الفصل.
					7- المعلم يبقى منعزلا أو بعيدا عن أنشطة التلميذ.
					8- المعلم ينضم للتميذ ويشاركه في أنشطته.
					9- المعلم يثبط التلميذ ويمنعه من التعبير الحر عن نفسه.
					10- المعلم يشجع التعبير الحر عن نفسه.
					طبيعة المشكلة التربوية
					11- المعلم ينظم التعلم حول سؤال منه.
					12- المعلم ينظم التعلم حول سؤال أو مشكلة للتميذ.
					13- المعلم يحد من الموقف التربوي الذي يثير فضول التلميذ وحيرته.
					14- المعلم يقحم التلميذ في المواقف الغامضة.
					15- المعلم يبعد التلميذ عن سؤال أو مشكلة صعبة.
					16- المعلم يوجه التلميذ لمشكلة مربكة أو محيرة.
					17- المعلم يؤكد مثالية الموضوع أو مظاهره الحسنة.
					18- المعلم يؤكد خصائص وسلبيات الموضوع.
					19- المعلم يوجه سؤالا يتطلب إجابة مباشرة من المادة.
					20- المعلم يوجه سؤالا يتطلب إجابة من خارج المادة.
					تطوير الافكار
					21- المعلم يقبل جوابا واحدا فقط لسؤاله.
					22- المعلم يسمح باقتراح إجابات إضافية / بديلة.
					23- المعلم يتوقع من التلميذ إجابة يريدها.
					24- المعلم يطلب من التلميذ تبرير إجابته/ اقتراحاته.
					25- المعلم يتوقع من التلميذ إجابة مؤكدة بعيدة عن التخمين.

				26- المعلم يشجع التلميذ على التخمين أو الافتراض.
				27- المعلم يقبل فقط الاقتراحات / الاجابات المتصلة بالموضوع.
				28- المعلم ينوه بالاقتراحات الغريبة او المستهجنة للتلميذ.
				29- المعلم يجيز الاجابات التقليدية أو غير المؤكدة للتلميذ.
				30- المعلم يطلب من التلميذ تعزيز إجاباته وأفكاره بالبراهين.
				إستعمال المادة الدراسية
				31- المعلم يجمع ويحلل المادة الدراسية للتلميذ.
				32- المعلم يكلف التلميذ بجمع وتحليل المادة الدراسية.
				33- المعلم يزود التلميذ بحقائق ومعلومات مفصلة.
				34- المعلم يسمح للتلميذ بإيجاد الحقائق والمعلومات المفصلة بنفسه.
				35- المعلم يعتمد كثيرا على المقرر الدراسي كمصدر للمعلومات.
				36- المعلم يوفر معلومات متنوعه للتلميذ.
				37- المعلم يقبل ويستعمل معلومات غير صحيحة.
				38- المعلم يساعد التلميذ على اكتشاف وتصحيح المعلومات الخاطئة.
				39- المعلم يسمح بتطوير المفاهيم والعموميات الخاطئة.
				40- المعلم يستفسر عن صحة المفاهيم الخاطئة أو الحلول غير المنطقية.
				التقييم
				41- المعلم يعطي حكمه حول سلوك أو نشاط التلميذ.
				42- المعلم يحتفظ بحكمه حول سلوك أو نشاط التلميذ.
				43- المعلم يمنع التلميذ من الاستمرار بخطة متعثرة.
				44- المعلم يشجع التلميذ لاختبار أفكاره ذاتيا.
				45- المعلم يخبر التلميذ عن خطأ أو صحة إجاباته.
				46- المعلم يسمح للتلميذ بتقرير كفاية إجاباته.
				47- المعلم ينقل السؤال لتلميذ آخر عند عدم الاجابة السريعة من الأول.
				48- المعلم يطلب من التلميذ تقييم عمله بنفسه.
				49- المعلم يزود التلميذ المختار بالاجابة المطلوبة.
				50- المعلم يوفر وقتا للتلميذ للجلوس والتفكير الملي.
				تنويع الأنشطة والمهمات
				51- المعلم يكلف جميع التلاميذ بعمل نفس الواجب في الوقت الواحد.
				52- المعلم يكلف أفراد التلاميذ بواجبات مختلفة.

					53- المعلم يكلف جميع التلاميذ بتعلم مدة واحدة.
					54- المعلم يكلف أفراد التلاميذ بعمل ما يريده كل منهم.
					55- المعلم يقيم إنجاز التلاميذ بمعايير موحدة.
					56- المعلم يقيم إنجاز التلاميذ بمعايير مختلفة.
					التحفيز والضبط
					57- المعلم يحفز التلميذ بمنحه الامتيازات والجوائز والعلامات.
					58- المعلم يحفز التلميذ بقيمة أفكاره وإنجازاته.
					59- المعلم يدرس المادة بأساليب مباشرة ورسمية.
					60- المعلم يدرس المادة بأساليب غير مباشرة وغير رسمية.
					61- المعلم يفرض وسائل ضبط خارجية على التلاميذ.
					62- المعلم يشجع الضبط الذاتي للتلاميذ.
					المجموع النهائي العام لممارسات المعلم.

1- Content of the lesson

Describe the subject and content of the lesson, the time spent on the each subject, tasks and activities inside the classroom, the way teacher demonstrate the lesson, the way that teacher divide the roles between him and his pupils in class activities.

2- Organization of the pupils

Describe the way teacher organize the pupils role in the computer activities, working in groups or individuals, the interaction between teacher and her pupils and among pupils during the computer activities and other activities depending on teachers lesson plan. Describe the discussion between pupils during the group work around the computer.

3- Purpose of Lesson

Describe the purpose of the lesson, is it new learning skills, new method of teaching the same lesson, the role of the teacher and pupils in the lesson.

4- Representation, Tools and Resources

Describe the representation, tools and resources used in the lesson, the use of ICT tools, the computer activities used, and other sources.

5- Assessment during Lesson

Describe teacher's role as coaching, guiding and monitoring students learning or using assessment to test pupils' knowledge.

6- Focus of Classroom discourse

Explain the main focus of the classroom discourse, how teacher dominate or stimulate the discourse, the way teacher challenge pupils thinking or questioning pupils' knowledge, encourage pupils to involve deep in learning outside their personal experience or limit it to school curriculum.

[1]Brown's instrument "Teacher Practices Observation Record (TPOR)"

Elements of Brown's instrument

Brown clarified the different elements of his instrument that reveals conformity of teacher's practices to his/her educational philosophy. Table (32) shows the elements of TPOR.

- **The nature of the situation**

Teacher's practices in even items provide the student with opportunities to test concepts and objects and sense their effect on him. Practices in odd items get the student to learn theoretically without application or experimentation. Practices in even items refer in fact to Dewey's experimentalism, whereas practices in odd items refer to traditional instruction.

---

[1] Brown, B.B. (1970). Experimentalism in teaching practice, *Journal of Research & Development in Education*, (4), 1, 14-22.

- **The nature of the problem**

This category includes the type of questions and problems, and educational situations around which students' activities and work are organized. Elements in even items describe the problems and situations that relate directly to students' life and desires. Their odd counterparts describe teacher's practices that seek special answers from students and theoretical knowledge rather than serious inquiry and search.

- **Development of ideas**

This category of teacher's practices focuses on the development, testing and clarification of ideas, suggestions and hypotheses. Even items describe teacher's practices of encouraging students to hypothesize and create. Odd items, on the other hand, refer to teacher's deterring students' thinking and energies.

- **Use of the subject matter**

Even items' practices incorporate students' serious participation in collecting and analysing the subject matter, and their useful understanding of it. Odd items' practices incorporate the teacher's being the only source of information that the students have to understand. Besides, some of the items in this category refer to the teacher's use of faulty concepts and information in teaching and the students' acceptance of these concepts and information (practices in odd items) or the teacher's use of correct facts and information and the students' proper, logical processing of these facts and information (practices in even items).

- **Evaluation**

Practices in this category distinguish between two types of evaluation. These are self-evaluation and external evaluation. Self-evaluation is referred to in even items, whereas teacher's evaluation is referred to in odd items.

- **Differentiation**

Even practice refers to the teacher's variation of teaching activities and experiences that suit the largest number of students' abilities and desires, using different techniques to assess their achievement and competencies. Odd practice refers to the teacher's getting the students to do one assignment or learning material collaboratively and following same instructions in same period, using same techniques to assess their achievement.

- **Motivation, control**

Even practice here refers to the teacher's focus on self-control and stimulation, and indirect, informal instruction techniques. The teacher's use of direct techniques of teaching and external control and stimulation without considering students' needs and desires is represented in odd items.

Appendix E: Pilot Study

Introduction

The pilot study was implemented in March 2009 to examine the instruments of the intervention study. The instruments were designed and adopted to cover the research objectives and aims. The purpose of this pilot study is to test, validate and modify the research instruments before implementing them in the main study on the full semester of 2009.

The objectives:

- To introduce the main study for the administrators and teachers of the future schools and to establish a friendly relationship with future schools' teachers.
- To evaluate the efficiency of the research instrument for the main study.
- To validate and modify the Arabic version of the TBS questions.
- To check the reliability of the Arabic version of the TBS questions.
- To practice classroom observations using TPOR.
- To modify the interview's questions depending on teachers' responses and TBS results.
- To estimate the time needed for each instrument.

The pilot study Sample

The study was introduced and offered to the 352 in-service female teachers from four future schools participated in the study from varies subject area and 150 self-selecting teachers accepted to participated in the study. The sample was from four Kuwaiti' public future schools in-service teachers. Teachers were asked to participate voluntarily in the study.The number of Kuwaiti teachers who graduate annually from both Education College (UoK) and Basic Education College (PAAET) do not cover the public schools' needs from teachers in all subject area, thus the Ministry of Education has to Hire teachers from other Arabian countries to cover the needs.

Since the main study will be implemented only in Kuwait's future schools, it was more appropriate to apply the pilot study on a sample from the future schools as a representative of the future schools' teachers. The pilot study took place in four out of six future schools located in three different districts in Kuwait. I had to obtain the permission from the Civil Service Commission to present it to the Ministry of Education to apply the pilot study in the Future schools, and then the permission was sent to the educational districts in which the four schools were located. The sample used in this study was to check out the reliability of the Arabic version of TBS questions and the other research instruments. Comparing to Benjamin (2003) revised study of the 48 items of TBS which included n=661 from two different samples of freshmen and pre-service teachers; I had n=150 teacher from one sample of in-service teachers for my pilot study. As it mentioned in chapter two the primary schools' teachers are only females' teachers. The decision for choosing the sample size of 150 to estimate a parameter as it a representative of future schools' teachers, to have greater reliability, to enable more sophisticated statistics to be used and to have significant and more confident results (Cohen et. al. 2007). Moser and Kalton (1971) argue that the increase of the sample size will increase the precision of the sample result for the overall and sub-group analysis (p. 146, 138). Figure 19 shows the pilot study samples.
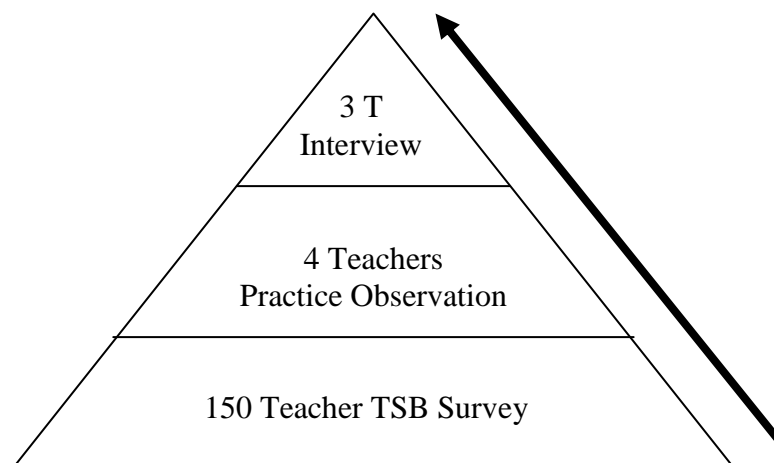
Figure20: the Sample of pilot study.

The process of confidentiality was explained for the participants, and consent letters were obtained from teachers who accept to participate in the study, and to be videotaped or to use their information if the study was

published. Table 45 and Figure 20 show the outlines of the instruments and the pilot study's design.

Table 45 : Pilot study instruments

Instruments	Dates	Samples	From
TBS questionnaire	March, 2009	150 in-service teachers	4 Future schools
Semi-structured interview	March, 2009	3 Kuwaiti in-service teachers	3 Future schools
Structured classroom observation TPOR	March, 2009	4 Kuwaiti and Egyptian in-service teachers	2 Future schools

Figure 21: The Pilot Study Design
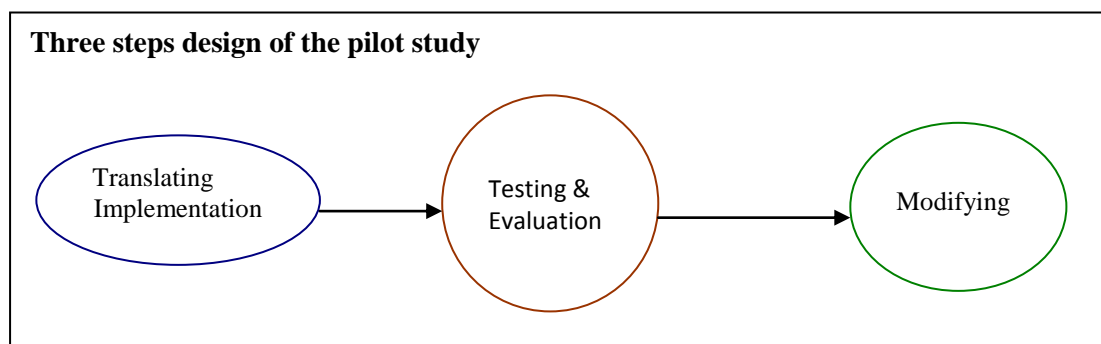
Translation of the research instruments

The research instruments were presented to my research supervisors to have their acceptance and permission to use them in my study. Since the Arabic is the official and mother's tong in Kuwait I translated the instrument to Arabic. For the purposes of validity of the translation, the Arabic versions of instruments were given to two specialists in English and Arabic languages (the 2 specialists from the Curriculum development department- MOE- KW). The specialist confirmed the translation and the structure of the sentences, and then their feedback and notes were used to revise the translation.

The piloting of the Arabic version of TSB questionnaire

The TBS questionnaire was adopted from Mansfield University in USA. I got the permission to translate it and use it in my study from Doctor Jane Benjamin Associate Professor in Mansfield University through her university

e-mail (See Appendix A & G for final version). The revised TBS questionnaire of 48 items (Benjamin, 2003) was translated to Arabic to be used with Kuwait's future schools teachers in the main study. The feedback from the experts and pilot study revealed with some difficulties and confusion and were used to modify the TBS survey items in the Arabic language to be later 50 items.

Reliability and Validation of the Arabic TBS version

The Arabic TBS questionnaire was piloted with a total of 150 in-service self-selecting teachers from four Kuwait's future schools in two educational districts. Internal Consistency Reliability cronbach's coefficient alpha was computed for the total and sub-scale to measure the internal consistency and the inter-correlations among the items within each construct. All data was analyzed with SPSS version 16 for windows.

Content Validity

According to Cohen et. al., (2007) demonstrated the content validity as the instrument must show that it fairly and comprehensively covers the domain or items that it purports to cover (p. 137). Further, Pallant, (2007) explained that the validity of a scale refers to the degree to which it measures what it is supposed to measure (p.7). The Arabic TBS was sent to three juries in Kuwait for the content validity. The three juries were experts in the field of designing and implementing questionnaire for general public schools. The first expert was assistant professor in science education in the college of education at the University of Kuwait. The other two juries' experts were from the ministry of education – sector of educational researches and curricula-second experthas a PhD in psychology and a counselorat theEvaluation and Quality Control of Education Department and the third expert has a PhD in Curriculum and teaching methodsat the Curriculum Development Department. The three experts were asked to rate each item to approve the structure of the Arabic statements, to avoid any conflicts and confusion, and to determine whether the used measurements scale and variables are appropriate for current study.

The experts' juries suggested excluding some of the demographic questionnaires such as the age and use the years of experience only with in-

service teachers since it serve the same purpose. Some changes were made to the degree earning question to fit with the education system in Kuwait, such as the Teaching Certificate. The pupils' teachers who graduate from the colleges of Education and Basic Education earn their degrees as teachers they do not need teaching certificate. Thus the earning degree was change to include the 2 years diploma before university, undergraduate, master and PhD. Further, it was mentioned in chapter 2 that all primary schools in Kuwait general public schools are females' teachers, thus the gender was excluded in the analyzing of the data. The Previous Teaching Experience scale was changed to be: less than 5, less than 10, less than 15, less than 20 and 20 and above which they usually use in their instruments.

The juries preferred that the Arabic version of TSB follow five Likert's scale responses: strongly agree, agree, undecided (often), disagree and strongly disagree (Gliem & Gliem, 2003). This will help avoid any confusionthe six responses may cause for the participants. Based on the feedback from the three experts the Arabic TBS questions' words were changed to apply to the teachers.

The Arabic version of TBS was piloted in Kuwait's future schools with in-service teachers "Pilot work is also needed to ensure that we use terms that are like those the respondents use" (Oppenheim, 1966: 83). It took the participants approximately 15-20 minutes to complete the questionnaire. The piloting of the TBS revealed with some confusion, conflicts and difficulties in some items and terms that was not used by the participants and new for them. The feedback from the piloting the Arabic TBS was used to improve the translated questions (see appendix 1 for the Arabic version of TBS).

Reliability

"Reliability in quantitative research is essentially a synonym for dependability, consistency and re-applicability over time, over instruments and over groups of respondents" (Cohen et al., 2007: 146). Cronbach's alpha coefficient was computed for the total scale and the sub-scale to examine the inter-correlations among the items within each construct. The reliability for the total 48 items of the Arabic TBS revealed with r= .82. According to Gliem and Gliem (2003) an alpha of .8 is a good and probably a reasonable goal (p. 87).

The overall internal consistency reliability (see Table 46) for each construct is shown in table 2. The internal consistency reliability for the BM scale was low, I tried to delete two items to get r= .505. Some teachers suggested revising some items like q3 and q20. It appears that they would do one thing but not the other and it was very confused for them to make their decision about the statements. Also, some culture conflicts were involved in making their decisions such as accepting parents to call them at home. Thus, after revising the two questions the number of the TBS items raised from 49 to 50. The questionnaire data from the participants will be used in the main study based on the richness of the data and its benefits for the study.

Table 46: Internal Consistency Reliability of the total items and each construct of the TBS Arabic version.

Total items	N= 48, r= .826
CT (Constructivist Teaching)	N= 17, r= .720
BT (Behavioural Teaching)	N= 10, r= .586
CM (Constructivist Management)	N= 11, r= .589
BM (Behavioural Management)	N= 10, r= .457

The reliability and validity findings of the Arabic TBS version support Benjamin (2003) conclusion that it could be used to assess changes in teachers' beliefs (p.7). The purpose of using the TBS Arabic version in the main study is to understand the process of change in teachers' beliefs before during and after participating in the main study in the Full semester of 2009.

The Piloting of the Semi-Structured Interview

The semi-structured interview's questions were piloted with 3 teachers from three future schools. Teachers were asked by their schools' managers to voluntarily participate in the interview. The estimated time to complete the interview was 1:30 hours, and it was videotaped with teachers' acceptance and school's permission. The interview took place in one of the four future schools. The teachers differed in the years of experience, two of them were science teachers teaching math and science subjects and one of them English teacher. One of the science teaches had experience with the normal

education system in all general primary schools and the new education system of the future schools, the other two were new in-service teachers and they started with future schools. The teachers were asked a total of 12 questions. The interview questions focused on teachers' knowledge about ICT and teachers' beliefs, teaching, learning, coaching, and researching classroom practice and autonomy in teaching and using computer's activities. The interview tendency developed new ideas which will be taken in consideration while revising the interview's questions for the main study and building my case studies with future schools' teachers.

According to Cohen et al., (2007) triangulation "map[s] out, or explain more fully, the richness and complexity of human behaviour by studying it from more than standpoint and, in so doing, by making use of both quantitative and qualitative data" (p.141). The science teacher who has experiences with both education systems and the English teacher have completed the TBS questionnaire and attended the semi-structured interview. The outcomes from TBS questionnaires correspond to the semi-structured interviews outcomes that these two teachers are more constructivist than traditional in their classroom practice. Triangulation between the two methods was undertaken for the purpose of being confident and to have a sense of credibility while constructing the data (Cohen et al., 2007). In the interview the science teachers responded to the questions by describing the methods she applied to develop her teaching style using ICT (computer).

ScTP1 said "Because the manager of the school asked me to teach science when I actually majored in math only, I had to read the science book before I enter the classroom and I used the internet to have variety of information to present it for my pupils" (ScTP1).

ScTP1 read the national curriculum then she used the internet as a source for her research and taught her pupils how to search using Google search engine.

"I taught my pupils how to search in Google and to present their finding in paper which will be posted in the Girls' Research Board in the class so everyone could read their work"(ScTP1).

ScTP1 used her own laptop in the classroom and divided her pupils into groups and asked them to search for certain theme from the lesson and share it with the class. I asked her if she tried to take her pupils to the computer lab so that each pupil will have her own computer or they work in groups (see figure 1), but she did not tried that. However, she has a kind of traditional definition for learning. For instance, in the math class ScTP1 would demonstrate step by step a math problem, then she would ask her pupils one by one to come to the board and solve a problem and explain the steps for the class exactly the way she does and using the same words she used.

"Follow me, my method and words; I want you to explain it for the girls, each girl has to do full demonstration just like I did"(ScTP1).

On the other hand, the English teacher EnTP1 has different experience with ICT, in her school each classroom supplied with interactive whiteboard and a computer for the teacher. EnTP1 encouraged her pupils to interact with her during the lesson. She said:

"I started with the demonstration of the activity so my pupils will have the instructions, then I ask them to use the voting-system [multi-choice response devices to enable pupils responses to display in the IWB] to choose the answers they want. I also did that in the workshop for the education districts teachers. I divide my pupils in groups and asked them to interact with me by clicking on one of four choices (A B C D), they could write, draw and make questions, and they can do all that alone and in groups. They were free to choose their roles in the group which gave them a sense of self-confidence by giving them the opportunity to express themselves in their groups and individually" (EnTP1).

Beauchamp and Kennewell (2008) argue that the interactive whiteboard makes pupils spent longer time looking at the board than the teacher; however, still these activities were also used as a whole class activity (p. 309-311).

These two teachers were showing and describing their classrooms practice as more constructivist- style teaching by the use of ICT. It would be

more applicable to observe their practices and understand the changes as a result of using ICT. What if these two teachers were asked to give their lessons in the computer lab? How the use of computers activities will change their practice? What will be their role and their pupils' role? I have asked both teachers if they would like to attend and participated in the main study or the community of learner and they expressed their acceptance. The second science teacher's experience will be discussed in the next section.

Figure 22: Shows the design of future schools classrooms and computer labs.

Future School Classroom   Computer Lab
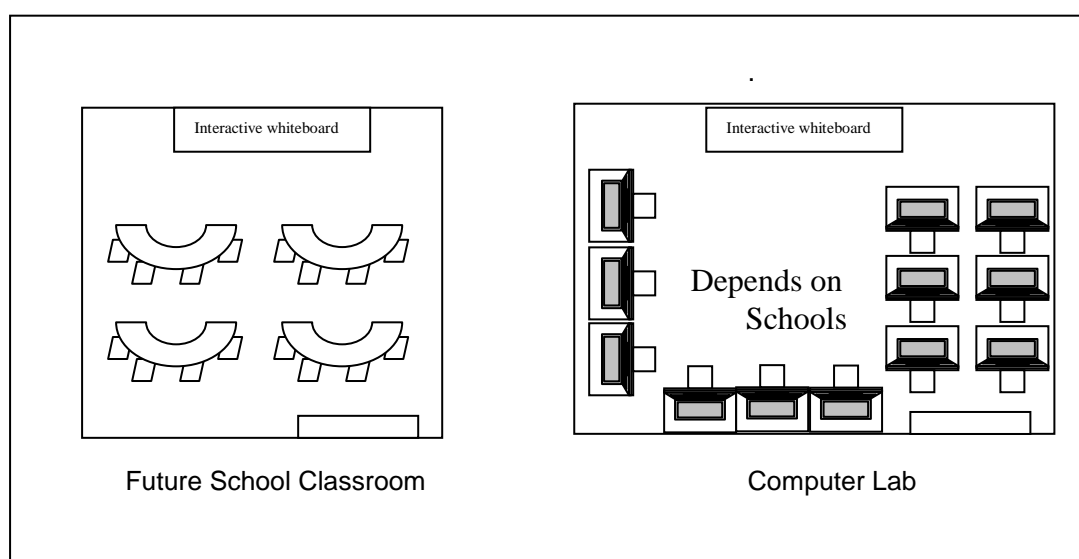
The Piloting of the TPOR Observation Tool

The Teacher Practice Observation Records (TPOR) was designed by Brown (1968) to "measure the congruency of teachers' observed classroom behaviour with educational practice advocated by John Dewey" (Brown, 1970: 14). In order to use it in the main study I had to pilot it to make sure I can use it. The piloting of the TPOR tool (See Appendix) was carried out to train myself implementing classroom observation. The TPOR has a total of 62 items to measure teacher's beliefs from the point view of constructivist and traditional classroom practice. Four teachers from two future schools voluntarily accepted that I observe their classrooms. The teachers were from different subject area such as languages and science. One of the four teachers was the science and math teacher, the only teacher who participated in the three piloted instruments. ScTP2 accepted that I observe her science

and math (ScTP2) class. ScTP2 was a good example to measure the congruency of the three instruments about her classroom practice "Teachers like others, do not always practice what they preach" (Brown, 1970). The triangulation of the three instruments collected data revealed with contradiction between what she said and actually practice inside her classroom. Reviewing ScTP2's TBS questionnaire results, it showed that ScTP2's practice is more constructivists – style teaching. It might be difficult to criticize or make a decision about ScT2 practice from one or two classes. Though ScTP2 explained in the interview the intention to become more constructive in her teaching, still ScTP2 had traditional choices in her classroom pedagogic practice.

"In our school we do not have interactive white board in the classroom, thus I use my laptop and I brought my own data show. I do not use the textbook anymore because I have it in a CD. I do not need to prepare any instructional materials like other teacher in the school. I just use the data show and the CD of the textbook" (ScTP2).

"I used to bring my laptop last year and let my pupils use it. I downloaded a mathematic game from the internet and I let the pupils play the game in turns using the ten minute refreshment in the beginning of the class time, they liked it a lot and asked me every day to play before the start of the lesson. I feel they had achieved simple math skills from this game" (ScTP2).

Observing ScTP2 practice in the math and science lessons suggests that her teaching style is more traditional. Instead of having blackboard and chalk she has whiteboard and the data show and ScTP2 used the textbook in computer as PDF file (e-book). Further, the science lesson was the same except that ScTP2 shared some information from the internet. ScTP2's concept of the teaching and learning with ICT is that she has to demonstrate the lesson and train the pupils how to do math and science problems using the data show. Then the pupils have to complete and solve the math problems and science questions in their textbooks together as whole class. However, ScTP2 preferred only in the ten minutes refreshing time to let her pupils to play with

computer games, and ScTP2 did not mentioned if she does that for both subjects' math and science.

In the TBS questionnaire ScTP2 strongly agreed to items 30 and 33, in which she described herself as a learner in her classroom with her pupils, and that she develop her classroom as a community of learners. Observing ScTP2 classroom practice shows that she is knowledge provider most of the time. Furthermore, ScTP2 disagreed responding to item 31 that she finds textbooks and other published materials are the best sources for creating her curriculum. However, classroom practice observation and the interview data shows that ScTP2 is using a CD which contains the textbooks and used the data show to display the exercises from textbooks to the whiteboard for the classroom. ScTP2 did not use any other materials during the lesson beyond the textbooks. ScTP2's classroom practice suggest that there is a misconception about the meaning of the constructivist and the right use of the ICT in teaching and learning, also, that her beliefs inconsistency with her practice.

Conclusion

The pilot study was undertaken to examine and revise the research methods. I have piloted the TBS survey, the structured observation TPOR, the semi-structured interview. The piloting of the TBS survey revealed with a few reformation of some questions to adapt it with the Kuwait's future schools context and culture. The piloting of the TPOR observation tool suggested the use of another observation tool to support it like the videotaped for the validity and credibility purposes. Finally the piloting of the semi-structured interviews in the future schools was an opportunity to look close in the future schools context and refine the questions to get better results that might be useful for the research focus. I have presented some of the finding applying the triangulation technique between the three piloted instruments.

Appendix F: Teacher's Reflective Activities and Questions (English and Arabic versions)

Activity 1:

<div dir="rtl">

اجيبي عن الاسئلة التالية مبينة رأيك وانطباعاتك حول الطريقة الحالية في التخطيط والتعليم.

1- هل تستطيعين التفكير في طريقة التعليم الحالية التي تتبعينها اعتمادا على ما يقترحه او يقرره الآخرين ؟

2- هل يمكنك أن تقترحي طرق وتقنيات بديلة للتعليم؟ لماذا طريقتك صحيحة؟

3- ما هو مقدار التفكير الذي تقومين به قبل الدرس ، وكيف تخططين لدرسك بحذر؟

4- كيف توازني بين حاجتك لتغطية المنهج وحاجتك لأن تكوني سريعة الاستجابة لتلاميذك؟

5- قارني بين ما تعلمتي في الدورات التدريب أو في الجامعه وما تعلمتيه من خبراتك؟

أسئلة للتفكير العميق والمتأمل أثناء البحث العملي

أسئلة تدعم إعادة التصميم

كيف يمكن أن أفكر بهذا الموقف بشكل مختلف؟

ماالذي لم اتخذه في الاعتبار؟

ما الأحكام والافتراضات التي تعيق الطرق البديلة لرؤية الموقف؟

لماذا اتمسك بقوة بهذا الرأي أو النظرة؟ ما هي الوظيفة التي تخدمها؟

هل هناك شيئ اخافه أو أحميه؟

هل كانت الحالة دائما هكذا أم أحيانا ما تحدث أشياء مختلفة؟ ولماذا؟

ما هي المؤثرات على تفكيري، والتصرف الذي لم اتخذه في الاعتبار؟

ما هي المؤثرات على تفكير الاخرين وتصرفاتهم التي لم اتخذها في اعتباري؟

كيف يمكن ان استفيد من خبرة الاخرين لرؤية الأشياء بطريقة جديدة؟

كيف لخبرتي في الحياة أن تعيقني من رؤية الاشياء بطريقة جديدة؟

كيف يمكن لمعتقداتي وقيمي الخاصة ان تقيدني للتفكير بهذه الطريقة؟

كيف يمكن لقيم ومعتقدات الآخرين أن تنوع من تفكيري؟

إذا وثقت بقصد الناس، هل اعلل ردودهم بشكل مختلف؟

هل هناك اشخاص آخرين ممكن أن يساعدوني في رؤية هذا بشكل مختلف؟

ماذا ممكن ان يحدث إذا فكرت بهذا كفرصة للتعلم بدلا من ان يكون تهديد او خوف احمي شخصي منه؟

ما هي الطرق الأخرى التي ممكن ان اسلكها لمواجهة هذا الهدف؟

</div>

Activity 2:

1- عندما تفكرين في تطوير شخصك كمعلمة، ما هو أكثر اهتماماتك ؟ لماذا يبدو هذا مهم بالنسبة لك؟

2- بينما تفكر بتأمل في طريقة ممارستك للتعليم والتعلم مع التلاميذ، ما هي اكبر اهتمامتك واسئلتك؟ أي جزء من المنهج يفتقده التلاميذ؟ كيف يمكنك ان تزيد من قدرات التعلم لجميع تلاميذك؟

3- ماذا ممكن أن تكون افضل طريقة لمواجهة هذه الاهتمامات والأسئلة؟ أي طرق التفكير المتأمل المنعكس الأفضل متوازي مع أسلوب ونمط تعلمك (المذكرات، التمارين، القراءة، رسم الخرائط (التخطيط))؟

4- كيف ممكن ان توجد المجال والوقت في حياتك للتفكير المتأمل المنعكس والتعلم بشكل دوري منظم وأساسي؟

5- هل هناك أشخاص إضافيين تودتضمينهم في عملية التفكير المتأمل والمنعكس؟
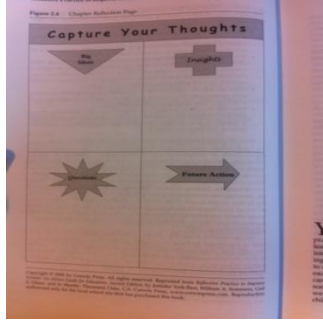
Activity 3:

تقييم طرق تدريس بديلة في المرحلة الابتدائية من مدارس المملكة المتحدة

1- أوصف الموقف التعليمي؟

2- ما هي البيئة الخاصة بالموقف التعليمي؟

3- ماذا حدث؟

4- ما هو شعورك؟

5- ما هو الجيد والسيئ حول طريقة التعليم والتعلم؟

6- هل لديك اهتمام أو قلق معين؟

7- ما هي نقاط الضعف والقوة في طريقة التعليم والتعلم؟

Activity 4:

الإطارالعمليلإنهاءالتفكيرالعميق Capture Your Thoughts .

ألتقطيأفكارك	
	الأفكار الكبيره
	الحكمة- البصيرة
	الأسئلة
Adopted from York-Barr et al,) **(2006: p. 29**	الأداء في المستقبل

Activity 5:

<div align="center">

المعلم المفكر يتابع ماتم حصده من أفكار من خلال الحوار مع الاخرين

Reflective Teacher (personal Inventory)

</div>

(Adopted from York-Barr et al, 2006: 27)

	الواقع الحالي في اي موقف معين تجدي نفسك؟	التفكير العميق ما هو مدى التفكير العميق والتعلم الجاري؟	الاحتمالات كيف يمكن للتفكير العميق والتعلم أن يتقدم؟
	منفردا ؟		
	مع زميلة أو زميلتان ؟		
	في مجموعات صغيرة؟		
	في مجموعات كبيرة ؟ على مستوى المدرسة أو الهيئات؟		

المعلم المفكر يتابع ما تم حصده من أفكار من خلال الحوار مع الاخرين

Personal Inventory of Reflective Practices

	CURRENT REALITIES In what specific situations do you find yourself…	REFLECTION PROMPT How much reflection and learning is going on?	POSSIBILITIES How might reflection and learning be advanced?
	… on your own?		
	… in dyads or triads?		
	… in small groups or teams?		
	… in large groups (e.g., school or organizational level)?		

Activity 6:(Reflecting on Colleague's practice)

Reflecting on your colleagues' classroom practice and suggestingalternative practice with ICT.

1- Describe the learning situation?
2- What do you see?
3- The teacher doing,
4- The students doing, how did the students engage in with the lesson?
5- Structures that support learning?
6- The weakest and strength points in teacher's practice?
7- Suggest other ICT? And why?

Appendix G: The record for Teachers Beliefs Survey (TBS) Pre-Post

(1 strongly disagree - 2 disagree - 3 sometimes – 4 agree – 5 strongly agree)

Table 45: The nine participants teachers respond to TBS first category (Constructivist Teaching)

CT Items	2		4		8		11		13		17		18		21		22		23		28		29		34		35		36		39		41		42	
	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af
LiT1	A	SA	St	St	SA	SA	St	D	A	A	A	A	St	St	A	A	A	St	A	St	St	St	A	A	A	St	-	A	A	A	SA	SA	A	A	A	A
ScT1	SA	SA	A	St	SA	SA	St	St	A	SA	A	SA	St	SA	A	A	A	A	A	SA	St	St	A	A	A	D	-	St	A	SA	A	SA	A	A	A	A
EnT1	St	A	St	A	A	A	SA	D	A	St	St	A	A	D	St	A	SD	D	St	St	A	A	A	A	A	A	A	A	St	A	A	A	A	A	A	St
LiT2	A	SA	SA	SA	SA	SA	SA	SA	St	SA	SA	SA	SA	SA	St	St	St	SD	SA	SA	A	A	SA	A	A	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA
ScT2	A	A	St	SA	A	SA	D	D	A	SA	SA	SA	A	A	St	St	A	A	A	SA	A	St	SA	SA	SA	SA	A	A	SA	SA	SA	SA	A	A	SA	A
EnT2	SA	St	A	SA	SA	St	-	St	St	A	SA	SA	St	D	SA	SA	SD	SA	St	SA	St	D	SA	SA	A	A	A	A	A	St	SA	SA	SA	SA	A	D
CIT2	A	A	D	D	SA	A	St	A	D	St	SA	St	SA	A	A	A	D	D	A	St	St	D	A	A	A	A	A	A	St	St	A	A	A	A	A	St
LiT3	SA	A	SA	A	A	SA	D	St	A	SA	St	St	D	A	D	St	SD	D	A	A	St	St	A	A	St	St	-	-	SA	SA	A	A	A	A	A	A
ScT3	SA	SA	A	A	SA	St	St	SD	SA	SA	SA	SA	SA	SA	SA	SA	A	SD	SA	SA	SA	St	SA	A	SA	SA	SA	SA	SA	SA	A	SA	SA	SA	SA	SA

Table 46: The nine participant teachers respond to TBS first category (Constructivist Teaching)

BT Items	1		7		10		16		30		31		33		43		46		49	
	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af
LiT1	SA	SA	A	A	A	A	-	D	D	D	ST	A	St	D	A	A	SD	SD	SA	St
ScT1	SA	SA	A	A	A	A	-	D	A	SD	ST	A	St	St	A	SA	SD	D	A	SA
EnT1	SA	SA	St	A	A	A	St	A	A	St	A	D	St	D	St	A	A	A	A	A

LiT2	SA	SA	SA	A	A	A	A	St	St	St	SA	A	St	St	A	SA	St	SA	SA	SA
ScT2	SA	A	St	St	A	A	A	A	St	D	A	St	St	A	SA	SA	D	D	A	A
EnT2	A	SA	A	SA	A	St	D	St	-	SD	SA	St	SD	D	A	A	St	D	St	SA
CIT2	SA	SA	SA	SA	SA	SA	SA	St	A	St	A	A	D	St	SA	SA	D	St	SA	SA
LiT3	St	D	A	St	A	A	St	St	D	D	St	St	St	D	SA	SA	SD	SD	SA	SA
ScT3	SA	SA	A	St	SA	SA	St	D	SA	D	A	St	St	D	SA	SA	SD	SD	SA	SA

Table 47: The nine participants teachers respond to TBS first category (Behavioural Management)

CM Items	9		12		19		20		24		26		27		32		44		47		50	
	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af
LiT1	A	A	A	St	St	St	SA	A	A	A	A	-	St	St	A	St	St	A	SA	A	A	A
ScT1	SA	SA	A	SA	A	A	SA	D	A	SA	A	SA	St	St	A	A	St	A	A	A	SA	SA
EnT1	A	A	St	St	SA	A	A	St	A	A	St	St	St	A	St	D	St	A	A	A	St	St
LiT2	SA	SA	SA	SA	SA	SA	SA	SA	St	SA	SA	A	St	A	St	SA	SA	SA	St	SA	SA	SA
ScT2	A	A	St	A	A	A	SA	A	SA	SA	SA	SA	St	St	St	St	D	SA	SA	St	SA	St
EnT2	A	SA	A	SD	SA	SA	A	SA	SA	St	A	SA	SA	SA	D	A	A	St	A	SA	SA	SA
CIT2	A	-	A	SA	A	A	A	St	SA	SA	A	A	A	St	St	St	A	A	SA	St	SA	A
LiT3	A	SA	A	A	A	A	St	A	A	SA	-	A	St	St	A	St	A	A	A	St	A	SA
ScT3	SA	SA	SA	A	SA	SA	SA	A	SA	SA	SA	A	SA	SA	SA	A	SA	St	SA	SA	SA	SA

Table 48: The nine participants teachers respond to TBS first category (Behavioural Management)

BM Items	3		5		6		14		15		25		37		38		40		45		48	
	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af	be	af
LiT1	St	St	St	D	A	St	St	D	A	St	SD	SD	A	D	A	A	A	St	SA	St	A	A
ScT1	St	A	St	D	A	SA	St	St	A	St	SD	SD	A	A	A	SA	A	A	A	SA	A	A
EnT1	A	St	St	St	A	D	A	St	A	A	A	D	St	A	St	A	A	A	A	A	A	A
LiT2	SA	SA	A	St	SA	St	SA	SA	SA	SA	St	St	St	SA	SA	St	SA	SA	SA	SA	A	SA
ScT2	St	A	D	D	A	St	St	D	St	SA	D	D	SA	St	SA	SA	SA	A	SA	SA	St	St
EnT2	St	D	St	St	A	SA	SA	A	St	St	D	SD	SA	St	A	A	SA	SA	SA	SA	A	SA
ClT2	St	St	St	D	D	St	SA	St	SA	SA	St	St	St	St	A	A	SA	A	A	A	A	SA
LiT3	A	A	D	D	A	A	D	SD	St	St	SD	SD	D	SD	A	A	A	St	A	A	A	A
ScT3	SA	SA	SA	SA	SA	SD	St	SD	D	SD	SD	SD	D	SD	SA	St	SA	SA	SA	SA	SA	SA

Appendix H: Example of the TPOR results records

Table 49: shows the frequencies of TOPR observations for five teachers' classroom practice minimum of six observations and maximum of nine observations. Odd numbers represents traditional practice and even numbers represents constructivist practice. The frequencies under each teacher column show the times that the teacher did make this action for the odd gray rows, and the number of times that the teacher did take the action for the even white rows.

Table 49: TPOR results for five teachers.

		Ent1- 7 ob	EnT2 -6 ob	LiT2- 9 ob	ScT1- 7 ob	ScT3- 7 ob
	A. NATURE OF THE SITUATION	Fr.	Fr.	Fr.	Fr.	Fr.
1	Teacher occupies centre of attention	6	5	0	13	11
2	Teacher makes students centre of attention	13	11	8	15	15
3	Teacher makes some thing as a thing centre of student's attention	10	9	5	13	12
4	Teacher makes doing something centre of student's attention	15	10	7	14	16
5	Teacher has students spend time waiting, watching, listening.	5	5	5	13	15
6	Teacher has students participate actively.	16	12	16	14	17
7	Teacher remains aloof or detached from student's activities.	18	14	21	17	16
8	Teacher joins or participates in student's activities.	16	18	17	15	17
9	Teacher discourages or prevents student from expressing self freely.	16	14	21	17	18
10	Teacher encourages student to express self freely.	12	12	12	15	16
	B. NATURE OF THE PROBLEM					
11	Teacher organizes learning around question posed by teacher.	9	9	1	12	6
12	Teacher organizes learning around student's own problem or question	10	7	3	12	9
13	Teacher prevents situation,	18	9	19	21	15

	which causes student doubt or perplexity.					
14	Teacher involves students in uncertain or incomplete situation.	7	8	11	15	17
15	Teacher steers student away from "hard" question or problem.	18	9	20	21	18
16	Teacher leads students to question or problem which "stumps" them	16	8	17	18	17
17	Teacher emphasizes idealized, reassuring, or "pretty" aspects of topic.	18	18	15	18	16
18	Teacher emphasizes realistic, disconcerting, or "ugly" aspects of topic	8	6	10	12	13
19	Teacher asks question that students can answer only if they studied the lesson	10	18	15	15	12
20	Teacher asks question that is not readily answerable by study the lesson	12	8	9	17	12
	C. DEVELOPMENT OF IDEAS					
21	Teacher accepts only one answer as being correct.	8	4	6	12	9
22	Teacher permits students to suggest additional or alternative answers.	7	6	13	9	11
23	Teacher expects student to come up with answer teacher has in mind.	4	7	5	12	11
24	Teacher asks student to judge comparative value of answers or suggestions.	4	7	7	11	15
25	Teacher expects student to know rather than to guess answer to question.	9	9	11	13	12
26	Teacher encourages student to guess or hypothesis about the unknown or untested.	6	8	9	16	16
27	Teacher accepts only answers or suggestions closely related to topic.	9	9	5	8	12
28	Teacher entertains even" wild" or far-fetched suggestion of student.	1	3	2	1	2
29	Teacher lets student "get by" with opinionated or stereotyped answer.	18	18	27	21	18
30	Teacher asks to support answer	5	8	14	17	18

|						
	or opinion with evidence.					
	D. USE OF SUBJECT MATTER					
31	Teacher collects and analyses subject matter for students.	6	7	6	14	12
32	Teacher has students make their own collection and analysis of subject matter.	8	7	9	15	11
33	Teacher provides students with detailed facts and information.	9	7	4	13	9
34	Teacher has students find detailed facts and information on their own.	9	16	11	16	12
35	Teacher relies heavily on textbook as source of information.	6	8	8	13	10
36	Teacher makes a wide range of information material available.	12	15	15	16	17
37	Teacher accepts and uses inaccurate information.	18	18	27	21	18
38	Teacher helps students discover and correct factual errors and inaccuracies.	12	11	11	14	18
39	Teacher permits formation of misconceptions and over generalizations.	18	18	27	21	18
40	Teacher questions misconceptions, faulty logic, and unwarranted conclusions.	11	11	8	15	18
	E. EVALUATION					
41	Teacher passes judgment on student's behavior or work.	5	6	3	6	12
42	Teacher withholds judgment on student's behavior or work.	7	7	3	7	12
43	Teacher stops student from going ahead with plan which teacher knows will fail.	11	9	14	16	14
44	Teacher encourages students to put their ideas to a test.	8	8	7	16	16
45	Teacher immediately reinforces student's answer as"right" or"wrong".	5	9	3	13	14
46	Teacher has students decide when question has been answered satisfactorily.	9	10	4	8	11
47	Teacher asks another student to give answer if one fails to answer quickly.	13	9	17	16	10
48	Teacher asks student to evaluate his own work.	3	4	1	7	4

49	Teacher provides answer to student who seems confused or puzzled.	12	9	21	15	16
50	Teacher gives student time to sit and think, mull things over.	12	14	10	16	16
	F. DIFFERENTATION					
51	Teacher has all students working at same task at same time.	6	6	8	10	7
52	Teacher has different students working at different tasks.	5	3	1	8	5
53	Teacher holds all students responsible for certain material to be learned.	7	8	4	10	9
54	Teacher has students work independently on what concerns students.	1	1	1	2	0
55	Teacher evaluates work of all students by a set standard.	9	8	5	11	9
56	Teacher evaluates work of different students by different standards.	1	1	0	0	0
	G. MOTIVATION, CONTROL					
57	Teacher motivates students with privileges, prizes, and grades.	12	6	12	8	2
58	Teacher motivates students with intrinsic value of ideas or activity.	12	6	16	15	17
59	Teacher approaches subject matter in direct, business-like way.	14	7	18	14	11
60	Teacher approaches subject matter in indirect, informal way.	9	7	17	12	11
61	Teacher imposes external disciplinary control on students.	15	9	23	12	18
62	Teacher encourages self-discipline on part of students.	1	3	4	0	1

Table 52: The shift in the nine participated teachers' TPOR scores during the two cycles of the Action research.

T	Teachers TPOR scores observed classes before AR-CPD's interventions			Teachers TPOR scores Observed classes from two cycles of AR-CPD's interventions					
No.	1	2	3	4	5	6	7	8	9
LiT1	33	45	59	113	140	168	166		
ScT1	65	68	88	168	163	160	169		
EnT1	50	56	58	127	137	98	143		
LiT2	35	52	36	83	94	90	98	88	85
ScT2	65	61	62	157	155	156	139		
ClT2	38	40	41	153	138	151			
EnT2	36	36	36	168	115	163			
LiT3	43	46	40	158	165	131	133		
ScT3	74	74	74	166	161	141	157		

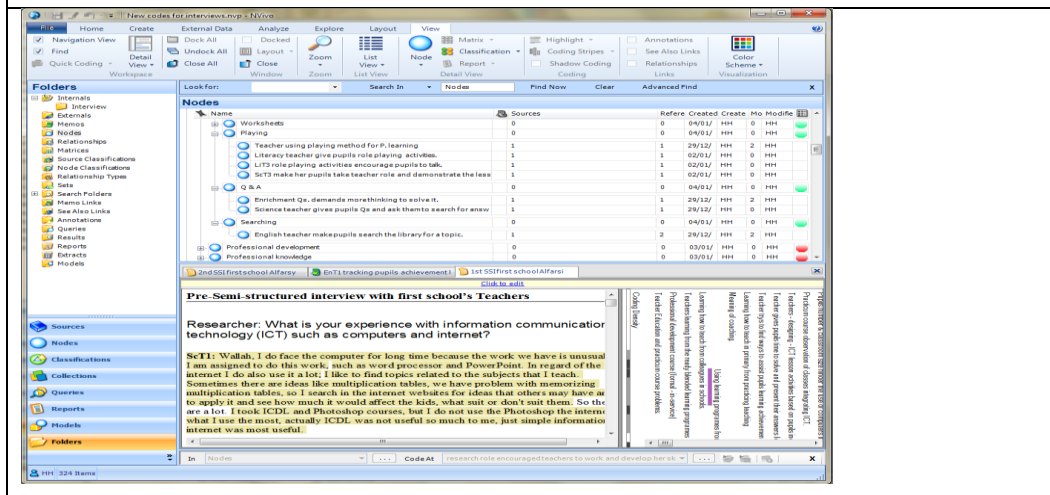# Appendix I: The Nvivo programme qualitative data coding

The stagers of coding qualitative data included teacher and pupils' semi-structured interview, videotaped and audiotape observation and community of practice and teachers reflections.
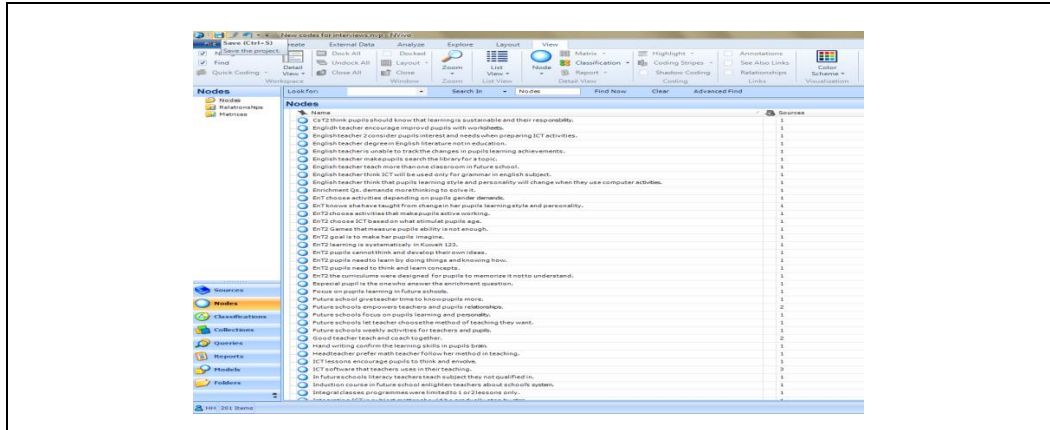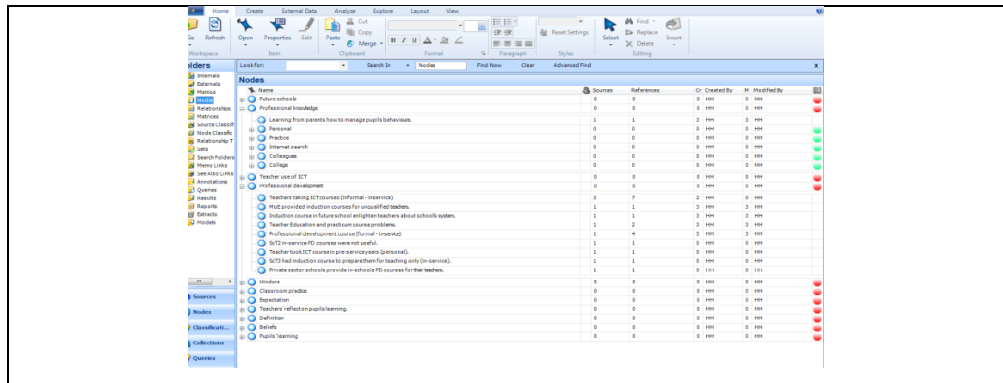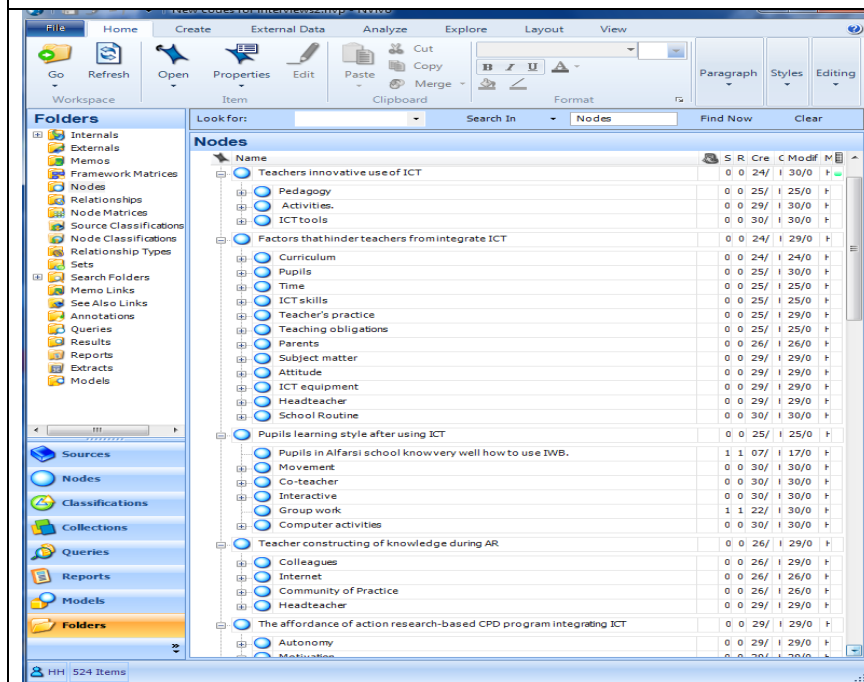

Nvivo analysis: Open codes
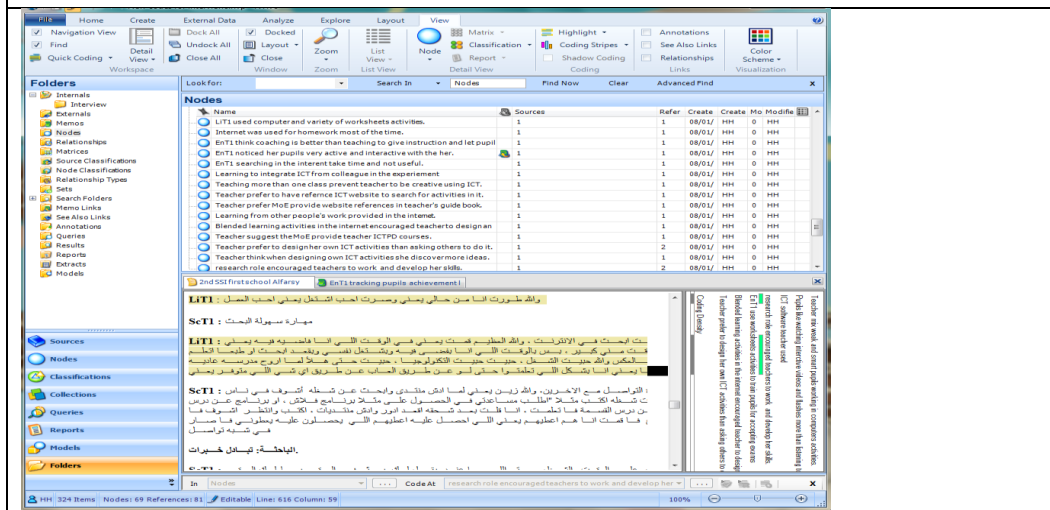
Nvivo analysis: Arabic coding making free nodes.

Nvivo analysis: English coding making free nodes.

Nvivo analysis: Second coding making tree nodes(Categories step).

Nvivo analysis: Final coding (Themes stage)

Appendix J: Teachers' ICT-lessons plan & Journals

EnT1: example of ICT-based Lesson

Weekly PLANNING   From 27 to 31st of Dec   2009-2010   Year ..3... Class..3/2..Teacher ...Hessa Alzarayya...

Subject	Learning objectives	Whole class activity	Differentiation and support incl extension activities			Resources/ vocab
			Independent	Teaching assistant	Teacher	
Unite 6 Step 1/2/3

Polly and the fire. | How to act when there's a fire. | Watch PowerPoint and pictures about fire/ safety/ firemen/ policeman. Give new vocabulary. Talk about the pictures and discuss the video.
Features:
use Microsoft word (the arrow to read and match) pictures with words/ numbers with numerals.

Include sound of the story given in the book.

Use my videos (from www.youtube.com). About the fire fighters and how kids should do at the fire. | In mixed ability groups; some pupils draw what they understand from the story/ another group crack the code to find a given word/ another group identify words in the past and words in the present. | Helps in guiding the pupils using the laptop or the computers.

Take photos

Preparing the groups for the group works. (Who will work on computers and who will work on laptops and who will participate in another activity?) | Explaining new materials for pupils (the topic Polly and the fire)

Facilitate group work on the laptops and computers. Check that children are working together at some point. | Presentation and Notes. Pictures of fire/ ambulance/ fire fighters/ police man/ hospital Little white board for the group activity. Active board for the video show. |

ScT1: example of ICT-based lesson plan including teacher's journals

خطة الدرس: التاريخ: ٢٠٠٩/١٢/٢٩م الفصل: ٢/٣ المعلمة: هاجر الكندري	
المادة	رياضيات (الضرب في ٣)
أهداف التعلّم	١ ـ إيجاد ناتج الضرب في العدد ٣ ٢ ـ حل مسائل تتضمن الضرب في ٣
نشاط الفصل ككل	* حل وتطبيق كتاب التلميذ ص ٩٦ ، حفظ جدول ٣ من خلال لعبة صيد المركبات وتطبيق برنامج جدول الضرب
نشاط المجموعات	* تم تقسيم التلاميذ إلى ٥ مجموعات ، المجموعة الأولى تحل ورقة عمل تتضمن إيجاد ناتج جدول ٣ ويقوم كل تلميذ يحل سؤال من الورقة ، المجموعة الثانية تقوم أيضا يحل ورقة عمل تتضمن جدول ٣ بنفس الطريقة السابقة ، المجموعة الثالثة يقوم التلاميذ جميعهم بممارسة لعبة التركيب وذلك يتركيب كل رأس بالجسم المناسب له من خلال إيجد ناتج الضرب في ٣
النشاط الفردي	* المجموعة الرابعة يقوم كل تلميذ يحل ورقة عمل باستخدام الحاسوب ، المجموعة الخامسة يقوم كل تلميذ يحل جدول ٣ من خلال برنامج الشمس وبرنامج يتدريبات على الضرب باستخدام الحاسوب * المجموعة التي تنتهي من تطبيق النشاط يقوم أفرادها يحل تمارين الكتاب والذي ينتهي من حل الكتاب يقوم ياللعب يلعبة صيد المركبات باستخدام الحاسوب
دور مساعدة المعلمة	ضبط التلاميذ أثناء ممارسة الأنشطة
دور المعلمة	إعطاء التلاميذ تتبيهات وتوجيهات قبل ممارسة الأنشطة و متابعة التلاميذ أثناء قيامهم بالأنشطة
مصادر التعلم والتكنولوجيا المستخدمة	برامج تعليمية لجدول الضرب للأطفال من منتديات مختلفة منها منتدى مملكة المعلم ، منتدى صدى الإسلام ، منتدى المحترف التعليمية ، منتديات برامج نت ، منتديات برامج جدول الضرب
ملاحظات المعلمة على سير الدرس	
نقاط الضعف	* تدريب التلاميذ على تشغيل البرامج التعليمية * توزيع الأدوار على أفراد المجموعة للتغلب على الفوضى * اختيار أفضل مجموعة وتكريمهم في نفس الحصة لإعطاء حافز لبقية التلاميذ للانضباط والاهتمام
نقاط القوة	* التنوع في عرض الأنشطة * إتاحة الفرصة للتلاميذ على التعلم الذاتي والتعلم من خلال الأقران

Example of some teacher's Journals

Appendix K: Ethical Issues

Gaining Access for the pilot study and the main study

دولة الـكـويت
ديوان الخدمة المدنية

الإشارة : ٦٥٠٩٠٢٠١٤٠٢٦

التاريخ : ١٧/٩/٦١٩

الأخ المحترم/ وكيل وزارة التربية
إدارة التطوير – مراقبة التدريب و تنمية القوى العاملة

تحية طيبة وبعد ،،،

الموضوع : البعثة الدراسية للسيدة/ حسيبة غضبان مشاري
رقم / ٢٦٧٠٦٢٦٠٠٥٨١

يرجى الاحاطة بان المذكورة اعلاه موفدة في بعثة دراسية للحصول على
درجة الدكتوراه في المناهج و طرق التدريس من المملكة المتحدة براتب و قد
وافتنا المذكورة اعلاه بكتاب خطي من المشرف على البرنامج بعمل دراسة على
(مدارس المستقبل في الكويت) لذا يرجى التفضل بتسهيل المهمة العلمية
للمذكورة راجين منكم التعاون معنا .

وتفضلوا بقبول فائق الاحترام ،،،،

رئيس الديوان

مرفقات عدد(١)

وزارة التربية

قطاع البحوث التربوية والمناهج

إدارة البحوث والتطوير التربوي

14هـ	/	/	التاريخ
م 200 / 9 / 9			الموافق

الرقم : وت / ....

مرفـقـات / ....

مدير عام منطقة حولي التعليمية

أ. منى الصلال المحترمة

تحية طيبة وبعد ،،،

الموضوع/تسهيل مهمة

تقوم الطالبة / حسيبة غضبان مشاري المسجلة على برنامج الدكتوراه في المملكة
المتحدة بإجراء دراسة تحت عنوان " طرق التدريس باستخدام تكنولوجيا الاتصال
والمعلومات .

فيرجى تسهيل مهمة المذكورة أعلاه بتطبيق ما يلي :

• حضور حصص دراسية وتصوير فيديو

• تطبيق استبيان

• إجراء مقابلات جماعية وفردية للمدرسات والتلاميذ

• عقد حلقات نقاشية وورش عمل بالتنسيق مع إدارة التطوير والتنمية .

وذلك في مدارس المستقبل التابعة لمنطقتكم التعليمية .

مع خالص التحية والتقدير ،،

Hasibah Mohammad PhD Thesis 2014

رقــم : ٤٤.٤.....

التاريخ : ....

السيدة المحترمة / مديرة مدرسة الفضل بن العباس .أ. بنين

السيدة المحترمة / مديرة مدرسة شيخان الفارسي .أ. بنين

السيدة المحترمة / مديرة مدرسة أسماء بنت عمير .أ. بنات

تحية طيبة وبعد ،،،

الموضوع

تسهيل مهمة الطالبة حسيبة غضبان محمد

يــرجى التكــرم بتسهيــل مهمــة الطالبــة / **حسيبة غضبان محمد**

مــن جامعة (Exeter) فــي المملكــة المتحــدة والمسجلــة ببرنامــج

الدكتــوراه ، لإجراء دراســة حــول " **دور المعلم في الفصل الدراسي**

واستخدامه للحاسب الآلي " .

وأدوات الدراسة المتمثلة :

١- حضور ٣ حصص دراسية .   ٢- تطبيق استبانه .

٣- بطاقة مقابلة .

مع خالص التحية ،،،

مدير عام منطقة حولي التعليمية

سني خالد الصلال

مدير عام منطقة حولي التعليمية

نسخة لكل من :
- الوكيل المساعد للتعليم العام .
- مدير الشئون التعليمية .
- مراقبة التعليم الابتدائي .
- الملف .

* طرغدير الجويسري *

75 / 30 / 0092852 / 07 / 5000

<div dir="rtl">

وزارة التربية

الإدارة العامة لمنطقة العاصمة التعليمية

مكتب مدير ادارة الشئون التعليمية

التاريخ . 2009/10/4م

السيدة المحترمة / مديرة مدرسة ابن سينا الابتدائية بنين .

تحية طيبة وبعد ،،،

يرجى التكرم بتسهيل مهمة الطالبة / حسيبة غضبان مشاري المسجلة على برنامج الدكتوراه في المملكة المتحدة باجراء دراسة تحت عنوان " طرق التدريس باستخدام تكنولوجيا الاتصال والمعلومات" وذلك بتطبيق ما يلي :

- حضور حصص دراسية .
- تطبيق استبيان .
- اجراء مقابلات جماعية وفردية للمدرسات والتلاميذ .
- عقـد حلقـات نقاشـية وورش عمـل بالتنـسيق مـع ادارة التطويروالتنمية .

شاكرين على حسن تعاونكم ،،،

مدير
ادارة الشؤون التعليمية

نسخة لكل من :
- ادارة الشؤون التعليمية
- قسم التخطيط والمعلومات

تلفون:٤٨٢٩٣٦٨ – فاكس:٤٨٢٩٣٧٤ – بدالة : ٤٨٢٩٣٥٦ – ٤ خطوط – ص.ب : ٢٣٩٦ الصفاة – الرمز البريدي : ١٣٠٢٤ الكويت

</div>

رقم : ٠٥٧٩٠
التاريخ : ٠٩/١/١/١

السيدة المحترمة / مديرة مدرسة شيخان الفارسي .أ. بنين

السيدة المحترمة / مديرة مدرسة الفضل بن العباس .أ. بنين

السيدة المحترمة / مديرة مدرسة أسماء بنت يزيد الأنصاري .أ. بنات

تحية طيبة وبعد ،،،

الموضوع
تسهيل مهمة الطالبة حسيبة غضبان مشاري

يرجى التكرم بتسهيل مهمة الطالبة / حسيبة غضبان مشاري المسجلة على برنامج الدكتوراه في المملكة المتحدة ، وذلك بإجراء دراسة تحت عنوان " طرق التدريس باستخدام تكنولوجيا الاتصال والمعلومات " .

وذلك بتطبيق ما يلي :

- حضور حصص دراسية وتصوير فيديو .

- تطبيق استبيان .

- إجراء مقابلات جماعية وفردية للمدرسات والتلاميذ .

- عقد حلقات نقاشية وورش عمل بالتنسيق مع إدارة التطوير والتنمية .

مع خالص التحية ،،،

مدير عام منطقة حولي التعليمية

نسخة لكل من :
- مدير الشئون التعليمية
- مراقبة التعليم الابتدائي
- الملف

* ط.عبير الجويسري *

Hasibah Mohammad PhD Thesis 2014

السيدة المحترمة / مديرة مدرسة شيخان الفارسي . أ. بنين

السيدة المحترمة / مديرة مدرسة الفضل بن العباس . أ. بنين

السيدة المحترمة / مديرة مدرسة أسماء بنت يزيد الأنصاري . أ. بنات

تحية طيبة وبعد ،،،

الموضوع
تسهيل مهمة الطالبة حسيبة غضبان مشاري

يرجى التكرم بتسهيل مهمة الطالبة / **حسيبة غضبان مشاري**

المسجلة على برنامج الدكتوراه في المملكة المتحدة ، وذلك بإجراء

دراسة تحت عنوان " **طرق التدريس باستخدام تكنولوجيا الاتصال**

والمعلومات " ، بتوفير عدد أربعة أجهزة مزودة بنقاط انترنت لكل فصل

من الفصول بواقع ١٢ جهاز كمبيوتر على سبيل الاستعارة للمشاركة في

التجربة الميدانية للبحث وذلك خلال الفترة من أكتوبر ٢٠٠٩ وحتى

نهاية ابريل ٢٠١٠م .

مع خالص التحية ،،،

مدير عام منطقة حولي التعليمية

مدير عام منطقة حولي التعليمية

UNIVERSITY OF
EXETER

GRADUATE SCHOOL OF
EDUCATION

Research Support Office
St. Luke's Campus
Heavitree Road
Exeter
EX1 2LU

Telephone	+44 (0)1392 264708/4843/4758
Fax	+44 (0)1392 264915
Email	R.B.Wegerif@exeter.ac.uk
	ed-research@exeter.ac.uk
Web	www.exeter.ac.uk/education

27 September 2009

Amal Al Shatti
Scholarship Dept.
Civil Service Commission

Dear Amal Al Shatti

As Hasibah Mohammad's PhD supervisor, I can inform you that she will be conducting her main study in Kuwait future schools starting from September 2009 till the first week of January 2010. She will also carry out more post data collection in April 2010.

Yours sincerely

Professor Rupert Wegerif
Professor of Education

Teacher Informed Consent

استمارة المواققه (المعلمة)

تم الشرح لي كاملا عن اهداف وغاية البحث الميداني.

أتفهم بأنه:

- المشاركة في البحث الميداني تطوعا وليس اجباريا، وإذا رغبت في المشاركة ، وممكن أن أنسحب من البحث في اي وقت.
- لي الحق في عدم السماح بنشر معلوماتي الخاصة.
- اي معلومات اوفرها سوف تستخدم في البحث والتي ممكن أن تتضمن المنشورات.
- إذا كان ملائم ، المعلومات التي أقدمها ممكن مشاركتها بين الباحثين المشاركين في البحث بأي شكل غير معرف.
- كل المعلومات التي أقدمها ستعامل بسرية تامة.
- الباحثة ستعمل كل جهدها للحفاظ على سرية شخصيتي ومعلوماتي.

حقوق النشر: تتمنى الباحثة من المشاركين في البحث الميداني عدم مناقشته او الحديث عنه مع اي شخص غير مشارك في البحث وذلك حتى يتم نشر البحث لما له اهمية في الحصول على نتائج افضل.

توقيع المشاركة...................   التاريخ.....................

الأسم...

نسخة من الاستمارة ستكون لدى المشاركة ، والنسخة الثانية ستكون مع الباحثة.

رقم هاتف الباحثة : ٠٥٥١٤٠٨٠٤

إذا كان لديكم اي استفسار حول البحث الميداني والذي ترغب في مناقشته يرجى الاتصال على الباحثة.

Exeter Ethical Certificate

STUDENT HIGHER-LEVEL RESEARCH

UNIVERSITY OF
EXETER

School of Education and Lifelong Learning

Certificate of ethical research approval

STUDENT RESEARCH/FIELDWORK/CASEWORK AND DISSERTATION/THESIS
You will need to complete this certificate when you undertake a piece of higher-level research (e.g. Masters, PhD, EdD level).

To activate this certificate you need to first sign it yourself, then have it signed by your supervisor and by the Chair of the School's Ethics Committee.

For further information on ethical educational research access the guidelines on the BERA web site: http://www.bera.ac.uk/publications/guides.php and view the School's statement in your handbooks.

READ THIS FORM CAREFULLY AND THEN COMPLETE IT ON YOUR COMPUTER (the form will expand to contain the text you enter).
DO **NOT** COMPLETE BY HAND

Your name: Hasibah GH. M. A. Mohammad

Your student no: 570031340

Return address for this certificate: Barley Brake, Nadderwater, Exeter, Devon, EX4 2JF.

Degree/Programme of Study: 4 Yr PHD

Project Supervisor(s): Prof. Dr. Rupert Wegerif

Your email address: hgmm201@exeter.ac.uk

Tel: UK: 07790677498

Title of your project:
Innovative professional development programme for Kuwait's Future Schools Teachers

Brief description of your research project:
The research project will be implemented is about implementing an innovative professional development programme involving teachers from Kuwait's future schools as they will complete the three stages of the programme during the school year 2009-2010, The programme will take three months starting from:

October 2009, (Pre) collecting data using quantitative qualitative methods, and then ICT workshop.
November 2009, Teachers applying their action research.

Chair of the School's Ethics Committee
last updated: July 2009

Researcher is coming back to UK for data analysis.

December 2009, (post) going back to Kuwait for more data collection.

January, February and March 2010 Teacher working on their own action research.
Researcher is back to UK for data analysis.

April 2010, (post) going back to Kuwait for post data collection. Then back to UK for final evaluation of the (Pre-Post-Post) data collection

The programme consists of workshops and community of practice applying the theory of Social constructivist approach to using ICT in classroom to mediate and change teachers practice, role and proving opportunities for pupils to learn with computers.

Give details of the participants in this research (giving ages of any children and/or young people involved):
The participants will be Teachers and pupils from Kuwait's primary future schools. Teachers' age between 20-40, and the male and female pupils' age 7-11. Teachers for the grades 1-5 are females only in all primary schools Kuwait public schools. Teachers and pupils will participate in the innovative professional development programme, teachers will attend workshops and community of practice and will be designing and implementing innovative lesson plans using computer's activities, and pupils will be learning with computers. Teachers will complete a survey questionnaire, both of teachers and pupils will be involved in the classroom observation, interviews, videotape.

Give details regarding the ethical issues of informed consent, anonymity and confidentiality (with special reference to any children or those with special needs) a blank consent form can be downloaded from the SELL student access on-line documents:

The researcher will fully inform children and teachers about the research and reinforce the voluntary nature of their prospective participation making it clear that no penalty exists for not participating.

The researcher will disclose any relationship in which they have 'power over' the prospective participants, such as exists in a teacher-student or other formal authority relationship, and all research methods must be fully transparent.

the researcher will discuss the research with prospective participants, they will take steps to minimize the potential of their power relationship by:
- ensuring all communication facilitates understanding;
- informing prospective participants that they can withdraw from or stop their
- interview at any time without penalty;
- ensuring prospective participants understand that they can request that
- information not be used or quoted by the researcher;
- informing prospective participants about confidentiality and privacy provisions;
- making it clear that the prospective participants can refuse to answer any question
- reminding prospective participants that they are free to ask questions at any time;
- using informal language.

The researcher will obtain verbal and written consent from all prospective child and teachers prior to their involvement in research using the informed consent form from School of education and lifelong learning will be used for the research participants.

Although that Kuwait's future schools are available for Kuwaiti researchers to implement their research and studies, and they do not have to obtain the approval of pupils' parents, a consent letter will be obtained from pupils' parents for ethical purposes.

Chair of the School's Ethics Committee
last updated: July 2009

The researcher will make sure to get the approval and acceptance to videotape teachers and female pupils and get their permission in advance for my supervisors to preview the videotapes for sharing idea of the data analysis.

Only special needs pupils with 5% disability are mixed with normal pupils in the general public schools and they have their own facilities, textbooks and classrooms, thus they will not be involved in the research.

Give details of the methods to be used for data collection and analysis and how you would ensure they do not cause any harm, detriment or unreasonable stress:

A mixed methods approach will be used for the data collection including teacher's Beliefs Survey, semi-structured interview, classroom observation, teachers' journals and videotape. The SPSS and Nvivo software will be used for data analysis.

Whenever possible, the researcher will provide feedback to participants during and at the conclusion of research projects, which may include offering transcribed transcripts of interviews for feedback and/or summaries of findings. The research findings will be discussed with teachers and pupils to make sure of the accuracy of the researcher's interpretation of the data. Also, the research will seek an approval from the participants to use their quotes in the thesis or in publication.

Give details of any other ethical issues which may arise from this project (e.g. secure storage of videos/recorded interviews/photos/completed questionnaires or special arrangements made for participants with special needs etc.):

All of the data collection will be stored in special external hard desk belongs to the researcher for security and confidentiality, and to make sure it is not accessible through the researcher's PC or the internet, and the participant will be informed in advance about the security of their data and information.

Give details of any exceptional factors, which may raise ethical issues (e.g. potential political or ideological conflicts which may pose danger or harm to participants):

Nothing in my research study will face any of the political or ideological conflicts that might cause any harm to the participants as I know, however, if in the process of the research any of these problems may raise, Children and adults will be provided with the opportunity to have a support person present during all personal contact with the researcher, if they wish and to make sure nothing will harm the participants.

The researcher will discuss with the distressed participants the options available to them unless, in the researcher's option, the distress is brief and mild or the participant has moved on. The options may include ending the research participation; deferring the research involvement; contacting a support person on the participant's behalf; and/or facilitating contact with a support person.

This form should now be printed out, *signed by you below and sent to your supervisor to sign. Your supervisor will forward this document to the School's* **Research Support Office** *for the Chair of the School's Ethics Committee to countersign. A unique approval reference will be added and this certificate will be returned to you to be included at the back of your dissertation/thesis.*

I hereby certify that I will abide by the details given above and that I undertake in my dissertation / thesis (delete whichever is inappropriate) **to respect the dignity and privacy of those participating in this research.**

Chair of the School's Ethics Committee
last updated: July 2009

I confirm that if my research should change radically, I will complete a further form.

Signed:...............Hasibah...date:....10/8/09........

N.B. You should not start the fieldwork part of the project until you have the signature of your supervisor

---

This project has been approved for the period: *Oct 2008*   until: *October 2012*

By (above mentioned supervisor's signature): ...[signature]........... date:....10/8/9....

N.B. To Supervisor: *Please ensure that ethical issues are addressed annually in your report and if any changes in the research occurs a further form is completed.*

SELL unique approval reference:...........D./08/09/13...............

Signed:....Salah Troudi.................................date:....2/09/2009
Chair of the School's Ethics Committee

This form is available from http://education.exeter.ac.uk/students/

Chair of the School's Ethics Committee
last updated: July 2009