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International student perceptions of the quality of learning experiences in vocational education and training

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International Student Perceptions of the Quality of Learning Experiences in Vocational Education and Training

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ABSTRACT

International student numbers in Vocational Education and Training (VET) have been declining in Australia since 2009. While part of this decline is probably due to the global financial crisis, another issue affecting enrolments has been the quality of learning experiences. There is a need to investigate the quality of learning experiences in VET, as perceived by the students. The general aim of the present study is to investigate the relationships between international students' perceptions of the Quality of Learning Experiences in VET, Self-Concept of Educational Achievement and Motivation to Achieve Academically (as dependent variables), in the context of differences in two sets of situation variables (or independent variables). One set is the chosen VET course characteristics (Value for Money, Suitability for the Education Background, Reasonable Adjustment, Leads to Good Career Opportunities, Utilises the Latest Technology, and High Reputation in Home Country) and the second set is the personal characteristics of the students (gender, age, personal safety, country of origin, financial background, and prior level of education).

Research data for this study were collected using a questionnaire and analysis was done through mixed methods. The quantitative data (N=315) were Rasch analysed using the RUMM2030 computer program to create three linear measures. Relationships between the dependent variables and the context variables were analysed using ANOVA with the RUMM2030 computer program. An inductive approach was used to condense raw qualitative data (N=285) into general themes (or categories) using the Miles and Huberman Approach.

The main conclusions of this research follow; Quality of learning experiences, Self-Concepts of educational achievement and Motivation to achieve academically were generally high but there were students with low values and experiences. Some students highlighted the lack of facilities and resources as being the major negatives for some of their courses. On the other hand, the students were emphatic and generous in their praise for the quality of the teachers from the colleges. Students cited factors like practicality of the knowledge acquired and confidence to apply the knowledge learnt as positive drivers of their quality perception.

The private VET education industry has done well to maintain a high self-concept among the students, and perhaps the overall high praise of the teaching staff have contributed to maintaining high self-concepts among the students. Most international students treasured the social cultural, environment and lifestyles aspects of their stay in Australia and these items are also among the easy items of the linear scale produced in this present study. The Rasch self-concept findings were consistent with the qualitative findings where students related much of their positive self-concept through their non-academic activities. Importantly, when the student's Self-Concept is high they are able to benefit beyond just passing the units, they are able to find value and purpose in their study.

The sub-group Standards which form part of the measure of Motivation to Achieve Academically seems to be rated harder by the students than was predicted, this may be due to the students not being familiar with the standard of the Australian VET system. Students may not have had sufficient understanding of the academic requirements of VET courses. This may have caused the students to be insufficiently prepared for their academic study and not fully informed of the standards expected of them. Some students perceive VET courses to be easier and can lead to good employment opportunities. Many international students do rate positively the opportunity to work and this could have provided the motivation for their courses.

Looking at the qualitative messages from the students, the colleges could do more to assist the students by assessing the language and study skills of the students and provide appropriate training to upgrade their skills accordingly. The colleges could also provide a more adequate explanation of the VET system to the students so as to better prepare the students with the necessary skills to pursue their academic studies. The negative responses were mainly about lack of resources and facilities among educational service providers and highlight the negative impacts when such expectations were not met. The colleges should be more aware that international students need more opportunities and facilities for these social, cultural and recreational activities.

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ACKNOWLEDGEMENTS

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DEFINITION OF MAIN TERMS

VET System

Vocational education and training (VET) enables students to gain qualifications for all types of employment, and specific skills to help them in the workplace.

The providers of VET include technical and further education (TAFE) institutes, adult and community education providers and agricultural colleges, as well as private providers, community organisations, industry skill centres, and commercial and enterprise training providers. In addition, some universities and schools provide VET.

Vocational education and training is provided through a network of eight state and territory governments and the Australian Government, along with industry, public and private training providers that work together to provide nationally consistent training across Australia. (NCVER, 2014, retrieved from http://asqa.gov.au/about-vet/australias-vet-sector.html)

VET - Vocational education and training

Post-compulsory education and training, excluding degree and higher level programs delivered by further education institutions, which provides people with occupational or work-related knowledge and skills. VET also includes programs which provide the basis for subsequent vocational programs. Alternative terms used internationally include technical and vocational education and training (TVET), vocational and technical education and training (VTET), technical and vocational education (TVE), vocational and technical education (VTE), further education and training (FET), and career and technical education (CTE).

ASQA - The Australian Skills Quality Authority

The national regulator for the vocational education and training (VET) sector which became operational in July 2011. Registered training organisations (RTOs) in the Australian Capital Territory, New South Wales, the Northern Territory, Queensland, South Australia and Tasmania come under ASQA's jurisdiction. ASQA is also the

regulatory body for some RTOs in Victoria and Western Australia that offer courses to overseas students or to students in states that come under ASQA's jurisdiction.

URL: http://www.asqa.gov.au/

AVETMISS - Australian Vocational Education and Training Management Information Statistical Standard

The agreed national data standard for the collection, analysis and reporting of vocational education and training information in Australia. The standard consists of three parts: the AVETMIS Standard for VET Providers, the AVETMIS Standard for New Apprenticeships (now called Australian Apprenticeships), and the AVETMIS Standard for Financial Data.

NCVER - National Centre for Vocational Education Research

A national research, evaluation and information organisation for the vocational education and training (VET) sector in Australia, jointly owned by the Commonwealth, state and territory ministers responsible for VET.

URL: http://www.ncver.edu.au

RTO - Registered training organisation

Training providers registered by the Australian Skills Quality Authority (ASQA) or in some cases, a state or territory registering and accrediting body to deliver training and/or conduct assessments and issue nationally recognised qualifications in accordance with the Australian Quality Training Framework or the VET Quality Framework. RTOs include TAFE colleges and institutes, adult and community education providers, private providers, community organisations, schools, higher education institutions, commercial and enterprise training providers, industry bodies and other organisations meeting the registration requirements.

Social and the Art

This is a sub-group included in the measure of quality of learning experience in this present study. This sub-group is made up of items which measure the frequency of social interactions among the students in campus and students' participation in the cultural and art events.

TAFE - Technical and Further Education

(1) A government training provider which provides a range of technical and vocational education and training (TVET) courses and other programs (e.g. entry and bridging courses, language and literacy courses, adult basic education courses, Senior Secondary Certificate of Education courses, personal enrichment courses, and small business courses). (2) An institution offering TAFE courses; a college or institute.

Training provider

An organisation which delivers vocational education and training (VET) programs. In Australia, VET providers comprise the state and territory TAFE systems, Australian Technical Colleges, adult and community education providers, agricultural colleges, the VET operations of some universities, schools, private providers, community organisations, industry skill centres, and commercial and enterprise training providers.

AQF - Australian Qualifications Framework

The national policy for regulated qualifications in Australian education and training. It incorporates the qualifications from each education and training sector into a single comprehensive national qualifications framework. The AQF, which replaced the Register of Australian Tertiary Education (RATE), was first introduced in 1995 to underpin the national system of qualifications in Australia, encompassing higher education, vocational education and training and schools. The qualification types are: Senior Secondary Certificate of Education; Certificate I; Certificate II; Certificate III; Certificate IV; Diploma; Advanced Diploma; Associate Degree; Bachelor Degree; Bachelor Honours Degree; Graduate Certificate; Graduate Diploma; Masters Degree; Doctoral Degree.
URL: http://www.aqf.edu.au/

AQTF - **Australian Quality Training Framework**

A set of nationally agreed quality assurance arrangements for the training and assessment services delivered by registered training organisations regulated by state and territory registering and course accrediting bodies. The first version of AQTF was established in 2001 and was implemented in 2002 and revised in 2005, 2007 and 2010. The AQTF comprises: AQTF Essential Conditions and Standards for Initial

Registration; AQTF Essential Conditions and Standards for Continuing Registration (including the AQTF Quality Indicators); AQTF Standards for State and Territory Registering Bodies; AQTF Standards for State and Territory Course Accrediting Bodies; and AQTF Excellence Criteria.

Accredited Course

A nationally accredited course developed to meet training needs that are not addressed by existing training packages. Details of nationally accredited courses and the training providers that deliver these courses are provided by Training.gov.au (TGA).

Training Packages

A nationally endorsed, integrated set of units of competency, assessment requirements, Australian Qualifications Framework (AQF) qualifications and credit arrangements, and one or more quality assured companion volumes. Training packages specify the skills and knowledge required to perform effectively in the workplace.

Units of competency

The nationally agreed statements of the skills and knowledge required for effective performance in a particular job or job function. They identify the skills and knowledge, as outcomes that contribute to the whole job function. Units of competency are an endorsed component of training packages.

Competency Based Assessment

Assessment is the process of collecting evidence and making judgments on whether competency has been achieved. The purpose of assessment is to confirm that an individual can perform the standard expected in the workplace, as expressed in the relevant endorsed competency standards.

URL: http://www.dhs.vic.gov.au/funded-agency-channel/management-toolkit/workforce/education-and-training/types/competency-based-training-and-assessment

ACPET - Australian Council for Private Education and Training

The national industry association for independent providers of post-compulsory education and training for Australian and international students, including higher education, vocational education and training, English language courses, senior secondary studies and foundation studies.

URL: http://www.acpet.edu.au/

VRQA - Victorian Registration and Qualifications Authority

URL: http://www.vrqa.vic.gov.au

TAC - Training Accreditation Council

The Training Accreditation Council (TAC or the Council) is Western Australia's independent statutory body for quality assurance of vocational education and training (VET) services.

The Council operates within the National Skills Framework. It is the Western Australian registering body and course accrediting body under the Australian Quality Training Framework (AQTF).

URL: http://www.tac.wa.gov.au

COAG - Council of Australian Governments

The COAG is the peak intergovernmental forum in Australia. The members of COAG are the Prime Minister, State and Territory Premiers and Chief Ministers and the President of the Australian Local Government Association (ALGA). The Prime Minister chairs COAG. The role of COAG is to promote policy reforms that are of national significance, or which need co-ordinated action by all Australian governments.

URL: http://www.coag.gov.au/about_coag

UNESCO - United Nations Educational, Scientific and Cultural Organisation

UNESCO is a specialised agency of the United Nations system.
The main objective of UNESCO is to contribute to peace and security in the world by promoting collaboration among nations through education, science, culture and communication in order to further universal respect for justice and the rule of law and

for the human rights and fundamental freedoms which are affirmed for the peoples of the world, without distinction of race, sex, language or religion.

NSSC - National Skills Standards Council

The NSSC commenced operations on 1 July 2011 as a committee of the Standing Council on Tertiary Education, Skills and Employment (SCOTESE), following the dissolution of the National Quality Council in June 2011.

As one of several Standing Councils that report to the Council of Australian Governments (COAG), SCOTESE is the successor of the Ministerial Council for tertiary Education and Employment (MCTEE). This change in structure reflects COAG's goal to strengthen Australia's vocational education and training sector. The NSSC was established from 1 July 2011, signifying the implementation of a decision made by COAG in December 2009.

ABS - Australian Bureau of Statistics

URL: http://www.abs.gov.au/

Access and equity - Also called Equity

A policy or set of strategies that ensures that vocational education and training (VET) is responsive to the needs of all members of the community.

Adult learning

The processes by which adults learn and build on their existing knowledge and skills.

Australian Education International

Acronym: AEI

An Australian Government agency that works with the Australian education and training industry to promote and advance Australia's education, science and training capabilities overseas. AEI was formerly known as the Australian International Education Foundation (AIEF).

URL: http://aei.gov.au

CHAPTER ONE - INTRODUCTION

This chapter provides an overview of the background to Vocational Education and Training (VET) industry in Australia and Western Australia. This is followed by an explanation of the importance of the VET industry to Australia and the challenges faced by the VET industry in Australia. A discussion of the quality issues in the VET industry follows and this background leads to the aims of the present research study and the research questions. The chapter ends with the significance of this research, its limitations, and the structure of the thesis.

THE VET INDUSTRY IN AUSTRALIA

The Australian Skills Quality Authority (ASQA) is the national regulator for Australia's VET sector. Under the current National Vocational Education and Training Regulator Act 2011, the Australian Skills Quality Authority ("Regulatory Approach", 2014) is the regulatory body for Registered Training Organisations (called RTOs in the VET sector) in all the states and territories in Australia, excluding certain training providers in Victoria and Western Australia. The Victorian Registration and Qualifications Authority (VRQA) is the regulatory body for registered training organisations that enrol only domestic learners, and learners in Victoria only (or in Victoria and Western Australia only) and, similarly, Training and Accreditation Council (TAC) OF Western Australia is the regulatory body for registered training organisations that enrol only domestic learners, and learners in Western Australia only (or in Victoria and Western Australia only).

As stated in the Australian Skills Quality Authority web site ("Issuing qualifications and statements of attainment", 2014) , The Australian Qualifications Framework (Australian Qualifications Framework Council, 2014) provides information on the unified system of national qualifications in schools, vocational education and training institutions, and the higher education sector, mainly universities. The Australian Skills Quality Authority web site states that:

*…*ASQA's vision is that students, employers and governments have full confidence in the quality of vocational education and training outcomes delivered by australian registered training organisations*….* ("Functions, vision and values", 2013)

Table: 1.1 Registered Training Organisation Count

Registration RCAB	RTO Status	ACT	NSW	NT	QLD	SA	TAS	VIC	WA
ASQA	Current	2274	2832	2288	3246	2423	2277	2539	2366
WA TAC	Current	1	6	4	6	6	4	19	339

Source: Training.gov.au – RTO Count (Training.gov.au, 2014)

The primary aim of the Australian Skills Quality Authority is to provide greater national consistency to register and monitor providers, and seeks to make sure that the sector's quality is maintained. Two of the key functions of The Australian Skills Quality Authority are registering training organisations and accrediting courses within the VET industry. It is clear that quality is one of the top priorities for the regulator. The latest report (Noonan & Condon, 2013) commissioned by the Industry Skills Councils (ISCs) with support from the National Skills Standards Council (NSSC) and the Department of Industry Innovation, Science, Research and Tertiary Education states:

> …in response to a concern, that while ISCs are the bodies responsible for competency standard development they currently have minimal ability to ensure that Registered Training Organisations (RTOs) consistently interpret, deliver and assess the requirements of the standards for all units and qualifications. (p.vi)

The report stated that it was undeniably clear that quality is the concern of all the stakeholders within the industry. The report goes further and states that the industry was specifically concerned with the quality in teaching, educational design, and the understanding of quality among other issues. This issue of quality applies across the industry, including all Registered Training Organisations made up of training providers from both the public and private sectors. Registered Training Organisations are those training providers registered by Australian Skills Quality Authority (or, in some cases, a state regulator) to deliver Vocational Education and Training services. Registered Training Organisations are recognised as providers of quality-assured and nationally recognised training and qualifications. There are currently around 2878

Registered Training Organisations in Western Australia as stated in the Training.gov.au website ("RTO Count", 2014), see Table 1.1.

IMPORTANCE OF THE VET INDUSTRY

According to a report by the Australian Education International (2013), the export income to Australia from Education Services in 2012-13 was $14.5 billion. Contribution from the VET sector was the second largest, generating $2.5 billion in earnings (17.4%), while English Language Intensive Courses for Overseas Students (ELICOS) contributed $736 million (5.1%). In the same report, Western Australia earned $ 1,159 Million in that same year through VET. However, as evidence from Figure 1.1 the declining trend is a concern.
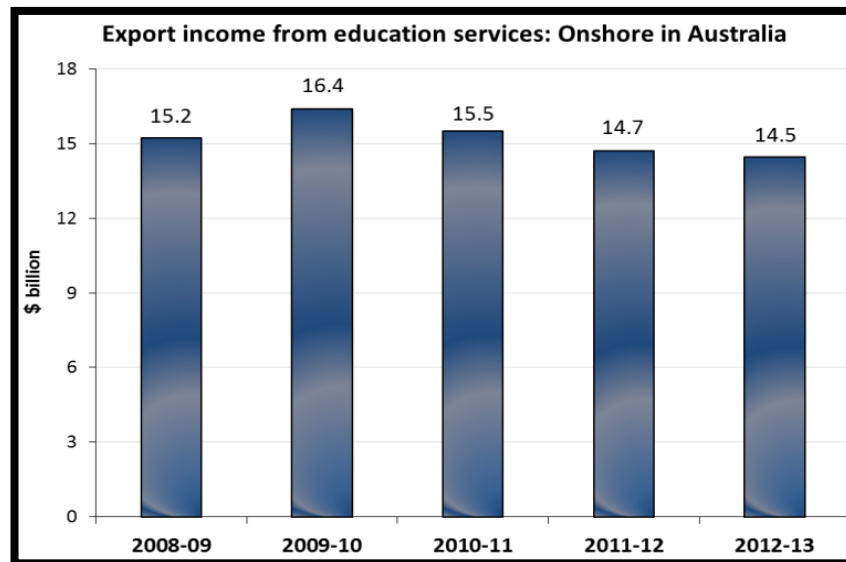
Figure 1.1 Export income from education services: onshore in Australia
Source: Australian Education International ("Export income from education services: onshore in Australia", 2013)

In the Australian Education Snapshots reports ("Distributions of foreign students in tertiary education by country of destination", Dec 2013), Australia ranked fifth in the world in terms of market shares of international tertiary students (see Figure 1.2). However, from the "Education at a Glance 2011: Highlights" (OECD, 2011) Australia was ranked third in 2009; it is possible that Australia has lost market shares in the international student market (see Figure 1.3). These reports reaffirmed the importance of education services to the Australian economy, and the declining trend both in number and in comparison to our share of the international education market is a real concern.
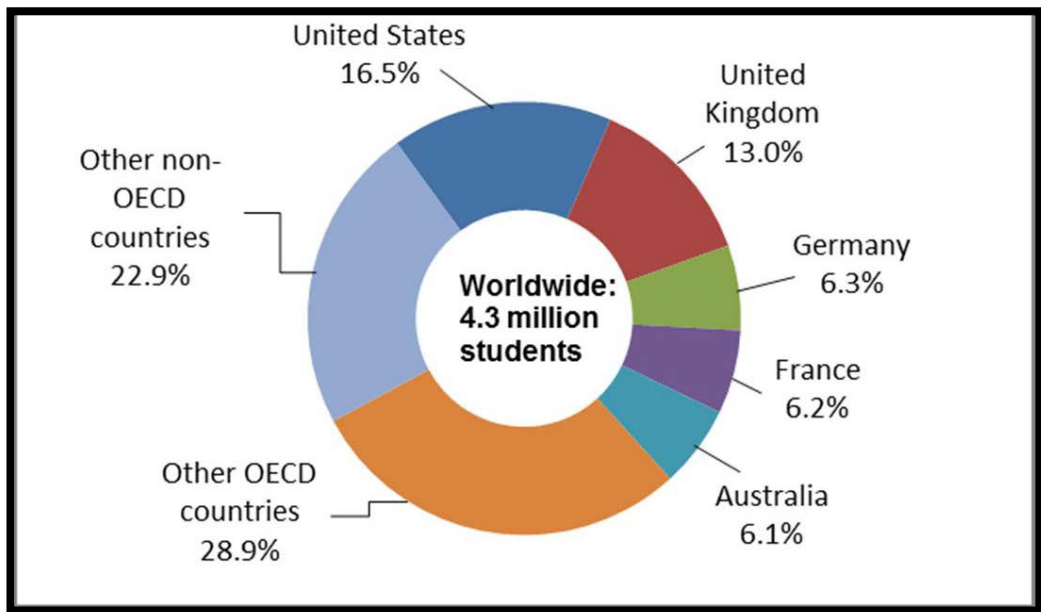
Figure 1.2 Distributions of foreign students in tertiary education by country of destination, 2011
Source: Australian Education International ("The global context of tertiary students mobility", 2013)
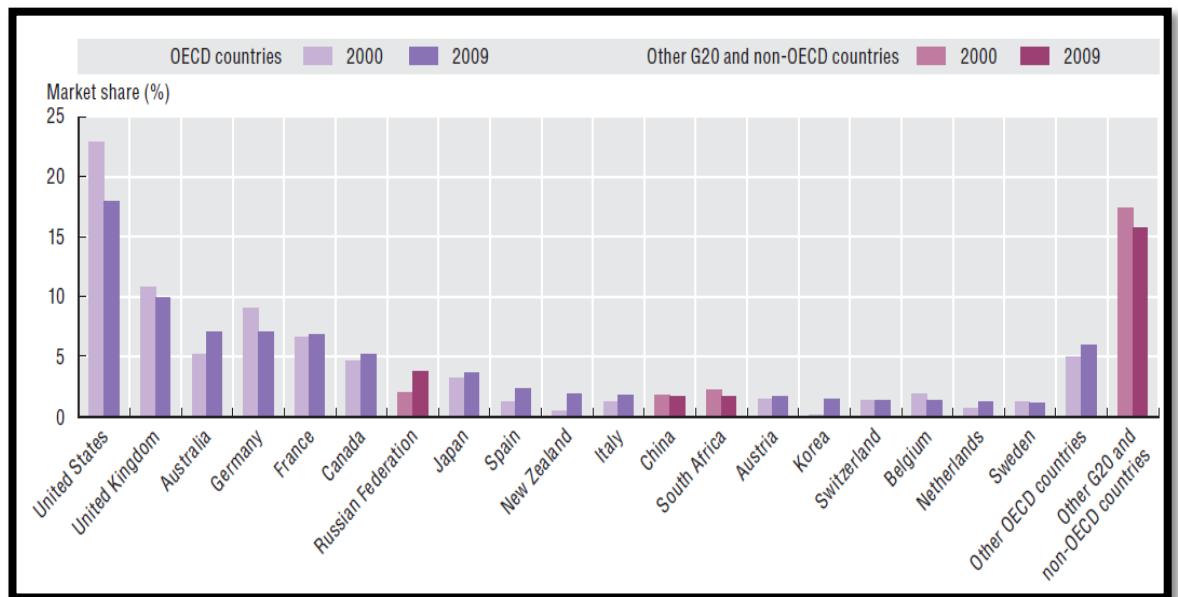
Figure 1.3 Market shares of international tertiary students - 2000, 2009(a)
Source: OECD (2011), *Education at a Glance 2011: Highlights*

Challenges Facing the VET Industry

One of the challenges faced by the VET education industry is the continuous

decline in enrolments and commencements of international student numbers in the VET

sector over recent years. Table 1.2 shows that, comparing the VET sector with all other international student market segments, it fared the worst. The year-to-date enrolments and commencements for October 2013 in the VET sector fell by 7.4% and 1.5% respectively. The enrolment numbers for the VET sector have been decreasing since 2010, from over 198,000 students to over 128,000 in 2013(see Figure 1.4, 1.5 & Table 1.2). There is a tentative sign of the English Language Intensive Courses for Overseas Students' (ELICOS) enrolment recovering, and this may feed into the VET sector. This will help in the recovery of the VET sector, moreover, the ELICOS sector is a relatively smaller market than the VET sector. The decline in the international enrolment in the VET sector has probably been mainly triggered by the recent global financial crisis and the high Australian dollar relative to the source countries' currencies and the slow recovery in the global economy as a whole. It is possible, too, that international students neither appreciate, nor understand, the full value of the Australian VET education system.

Table 1.2 International Student Data 2013 (AEI Pivot Table)

Month	Oct							
Nationality	(All)							
State	(All)							
	Data Year							
	Sum of DATA YTD Enrolments				Sum of DATA YTD Commencements			
Sector	2010	2011	2012	2013	2010	2011	2012	2013
Higher Education	239,239	238,917	227,400	228,263	98,188	93,138	85,790	92,788
VET	198,925	163,482	139,155	128,829	100,207	91,214	78,961	77,730
Schools	24,013	20,682	18,481	17,824	10,674	9,058	8,337	8,770
ELICOS	102,977	86,593	84,826	101,667	73,020	63,909	64,962	78,455
Non-award	30,813	27,619	25,150	27,961	24,278	21,536	20,469	22,800
Grand Total	595,967	537,293	495,012	504,544	306,367	278,855	258,519	280,543

Source – Australian Education International ("International Student Data 2013 - October", 2014)

Explanatory notes: Please refer hyperlink - www.aei.gov.au/research/international-student-data/pages/explanatorynotesforaeistudentenrolmentdata.aspx

Table 4: Monthly time series of Stock, Flow and Year to Date of Student Enrolments - VET

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Commencements	9,409	12,292	4,335	8,202	4,987	2,773	15,341	5,773	6,194	8,424
Total in month	60,508	68,864	67,854	68,561	67,363	64,056	68,225	66,712	66,503	67,626
Start of month	51,099	56,572	63,519	60,359	62,376	61,283	52,884	60,939	60,309	59,202
Year to date Commencements	9,409	21,701	26,036	34,238	39,225	41,998	57,339	63,112	69,306	77,730
Year to date Enrolments	60,508	72,800	77,135	85,337	90,324	93,097	108,438	114,211	120,405	128,829

Figure 1.4 Monthly Student Commencements and Enrolments - VET
Source – Australian Education International ("International Student Data 2013 - October", 2014)

Table 2: Monthly time series of Stock, Flow and Year to Date of Student Enrolments - ELICOS

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Commencements	8,508	7,112	7,535	7,872	5,400	4,700	9,068	8,833	10,293	9,134
Total in month	31,720	34,285	31,612	33,207	34,650	32,208	31,402	33,102	38,195	41,548
Start of month	23,212	27,173	24,077	25,335	29,250	27,508	22,334	24,269	27,902	32,414
Year to date Commencements	8,508	15,620	23,155	31,027	36,427	41,127	50,195	59,028	69,321	78,455
Year to date Enrolments	31,720	38,832	46,367	54,239	59,639	64,339	73,407	82,240	92,533	101,667

Figure 1.5 Monthly Student Commencements and Enrolments - ELICOS
Source – Australian Education International ("International Student Data 2013 - October", 2014)

Another challenge to the VET industry is the issue of cost and in particular the cost of compliance to industry regulations. The Australian Council for Private Education and Training (or ACPET), in response to ASQA's proposed fees and charges Cost Recovery Impact Statement (ASQA, 2013) explained the severity of the cost

increase and the impact on the Registered Training Organisations. In its' submission ACPET objected to the substantial cost increases for the items listed in Table 1.3.

Table 1.3 Aspects to which ACPET objected to Cost Increases.

1	Initial RTO registration and renewal of RTO registration
2	Change to scope of RTO registration
3	Annual RTO registration
4	Compliance monitoring audit of an RTO
5	Offshore monitoring relating to an RTO
6	Investigation of a complaint about an RTO
7	Initial CRICOS registration and renewal of CRICOS registration
8	Change to scope of CRICOS registration
9	Annual CRICOS registration
10	Compliance monitoring audit of a CRICOS provider
11	Investigation of a complaint about a CRICOS provider
12	Initial VET course accreditation, renewal of VET course accreditation and amendments to VET accredited courses
13	Reconsideration of an ASQA decision
14	Reassessment of an ASQA position

Source: ACPET (2013)

In summary, ACPET (2013) argued that:

1. It is ACPET's view that the benefits and beneficiaries of nationally recognised vocational education and training (VET) provided by registered training organisations or RTOs (as relevant providers) extend well beyond a commercial advantage achieved by one or a group of private individuals or companies operating Registered Training Organisations (RTO). (p. 2)

2. ACPET (2013) argues – as recognised in the COAG agreement – that the contribution of RTOs to the development of a highly skilled and productive workforce is of significant public benefit. (p. 2)

3. ACPET does not support the basis of the CRIS – namely the 2009 COAG decision that ASQA be established as a cost-recovery agency.

4. ACPET does not accept that the services provided by ASQA meet a key underlying principle of CRIS of the Government's cost recovery policy – namely that the beneficiaries of these services are 'a narrow and identifiable group.'(p.2) and

5.   ACPET is concerned that: "…the substantial increase in proposed fees and charges outlined in the CRIS threaten the viability of Registered Training Organizations… (p.3)"

To some Registered Training Organizations, some of the proposed increases are well over a 100%. The challenges faced by these Registered Training Organizations will negatively impact on services and will result in the closure of those non-viable, and conveying a poor image to the international students.

     The Australian government's education policy framework for the industry could be conveying an adverse message to international and local industry participants, resulting in an adverse perception of the VET industry in Australia. Specifically, the constant changes to the legislative framework for Registered Training Organisations, changes to the student visa policy, unfavourable safety and racial discrimination news against international students, and the declining reputations of Registered Training Organizations may have led to international students perceiving that the quality of VET education in Australia has declined. A recent report by Deloitte Access Economic (2011) identified the relative high Australian currency against source countries, economic performance of source markets, slowdown in the migration intake by Australia, and branding and reputation as the key factors having an impact on the student enrolment in Australia. As shown in Figure 1.2, except for ELICOS, the down-trend continues, and at present, there is no indication of the trend reversing. Looking at these factors, one may assume that the controllable factor for the industry is the branding and reputation which can be improved with an improvement to the delivery of the quality of the learning experiences. The quality issue could then possibly be a main focus of stakeholders in the education industry, including the training providers.
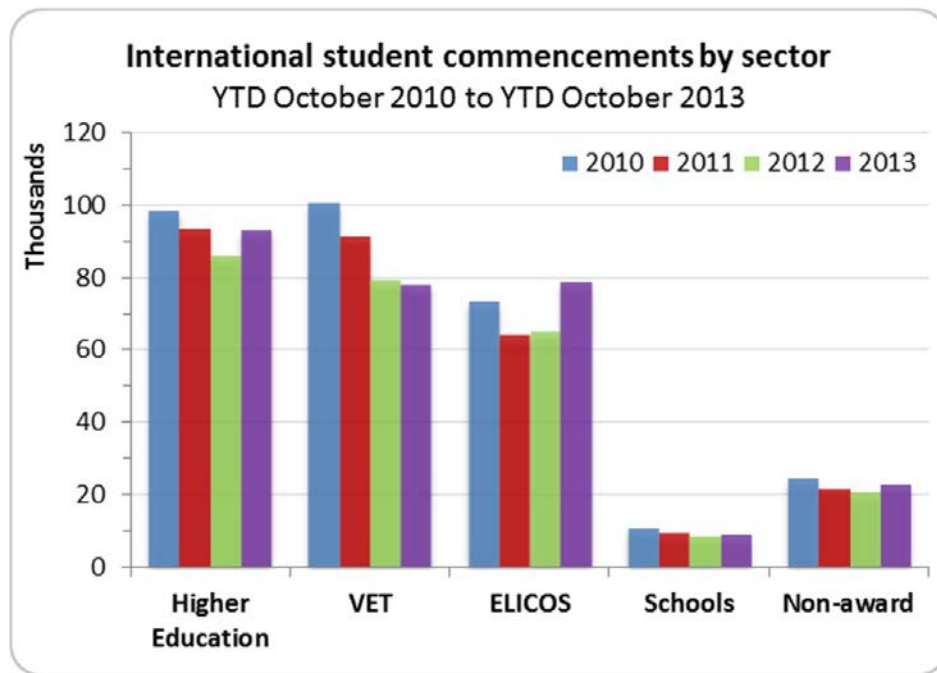
Figure 1.6 - Monthly Summary of International Student Enrolment Data, Australia, YTD October
Source: Australian Education International, 2014

THE QUALITY ISSUE

The Australian Quality Training Framework *(*AQTF), Essential Conditions and Standards for Initial Registration, and the Essential Conditions and Standards for Continuing Registrations, are guidelines with which registered training organizations previously had to comply. These are now replaced by the Standards for Initial Registration and Standards for Continue Registration (SNR), and collectively these form part of the National VET Regulator (NVR) standards. Both these standards target the delivery of quality services by registered training organizations. It is therefore expected that student perceived quality of learning experiences will have an impact on the VET education industry in Australia as a whole. A decline in the perceived quality of education would almost certainly be expected to lead to a decline in student enrolments and a perception of quality is likely to be related to issues such as student self-concept and academic motivation. Characteristics of the VET system and student personal characteristics (such as social economic background) are two other factors which can have a significant impact on the perception of quality.

Blom and Meyers (2003) state:

> …the VET system in Australia is mainly geared towards meeting the expectations of business and industry. As a consequence, the needs of learners and the broader community concerns are given seemingly less priority and have much less impact on VET policy in Australia. (p. 47).

This underscores the need for all VET providers to judiciously examine issues relating to delivering the quality of learning experiences that will promote the growth of the VET education market in Western Australia. Mitchell, Chappell, Bateman and Roy (2006) found that quality learning experiences remain the key focus for the authority and, in particular, the authors believe that

> …There is a heightened recognition by governments that improving the *quality of practices* in teaching, learning and assessment is crucial, if the sector is to respond to the new challenges now confronting it" (p. 31).

The report continues

> …especially in the context of the demands of clients, it is clear that multiple and comprehensive strategies and initiatives are needed to improve and sustain the quality of provision of VET courses" (p.31).

In a 2010 report published by Australian Education International (2010) focusing on outcomes and employer perceptions, it was concluded that most local employers were interested in employing international graduates, however, improvements in English language and providing internship to these students were recommended. Offshore employers however were mostly satisfied with the technical and functional skills of these graduates. While these are good indicators of quality of learning, they are not responses collected from the students directly. One of the significant points of the present study is the focus on the quality learning issue by asking the students who are undertaking the course directly, and then using established Rasch measurement methodology to create a linear scale of quality.

A recent report (Karmel, 2009), measuring the Quality of VET using the Student Outcomes Survey by the National Council of Vocational Education Research, concluded that there was very little information available to the students to determine how well each course meets their demands. The report further emphasised that without information on the quality of training, there is a risk that providers will compete on fees alone, to the detriment of quality. Some researchers have recommended a broader range of quality and outcome data at the provider level to support student choice (Hoeckel et

al., 2008). Their report also recommends extension to the Student Outcomes Survey. Lee and Polidano (2010) in their report *Measuring the quality of VET using the Student Outcomes Survey* quoted a report by Anderson (2005) 'commoditisation' that occurred in the VET sector in response to market reforms and reiterated the importance of making available relevant quality information to students to empower the students to make informed decisions on their choice of course, hence enticing the provider to be quality focused. In the recommendation Lee and Polidano (2010) emphasised that:

> …If differences in average outcomes among providers are not valid measures of quality - driven by differences in region or graduate characteristics rather than differences in course quality - then such indicators may reduce the benefits from providing students with quality information… (p.27)

On the other hand a recent research report by Australian Skills Quality Authority through a national strategic review of aged and community care sector training found 87.7% of RTOs delivering qualifications relating to aged care to be not compliant in the initial audit (Australian Skills Quality Authority, 2013). This is concerning, as potentially, the compliance system which is the key part of the quality assurance mechanism under the current legislations may not have delivered the quality as intended.

GENERAL AIM

The general aim of the present study is to investigate the relationships between international students' perceptions of the Quality of Learning Experiences in VET, Self-Concept of Educational Achievement and Motivation to Achieve Academically (as dependent variables), in the context of differences in two sets of situation variables (or independent variables). One set is the chosen VET course characteristics (Value for Money, Suitability for the Education Background, Reasonable Adjustment, Leads to Good Career Opportunities, Utilises the Latest Technology, and High Reputation in Home Country) and the second set is the personal characteristics of the students (gender, age, personal safety, country of origin, financial background, and prior level of education).

RESEARCH QUESTIONS

There are nine research questions related to the general aim stated above which leads to the theoretical framework and the measurement of the variables (explained in later chapters).

1. Using Rasch measurement, what do students perceive are the easy aspects pertaining to their perception of Quality of Learning Experiences in VET courses? What do the students perceive are the hard aspects pertaining to quality of learning experiences in VET courses?

2. Using Rasch measurement, what do students perceived are the easy aspects pertaining to their Self-Concept of Academic Achievement in VET courses? And what do the students perceive are the hard aspects pertaining to Self-Concept of Academic Achievement in VET courses?

3. Using Rasch measurement, what do students perceive are the easy aspects pertaining to their Motivation to Achieve Academically in VET courses? And what do the students perceive are the hard aspects pertaining to their Motivation to Achieve Academically in VET courses?

4. Using Rasch measurement, what is the relationship between Quality of Learning Experiences (as the dependent variable) and VET course characteristics (Value for Money, Suitability for the Education Background, Reasonable Adjustment, Lead to Good Career Opportunities, Utilises the Latest Technology, and High Reputation in Home Country)?

5. What is the relationship between Quality of Learning Experiences (as the dependent variable) and personal characteristics (Gender, Age, Personal Safety, Country of Origin, Financial Background, and Level of Prior Education)?

6. What is the relationship between the variable Self-Concept and VET course characteristics (value for money, reasonable adjustment, lead to good career, Application of technology, and high reputation in home country)?

7. What is the relationship between the variable Self-Concept and student personal characteristics (Gender, Age, Personal Safety, Country of Origin, Financial Background, and Level of Prior Education)?

8. What is the relationship between the variable Motivation and VET course characteristics (value for money, reasonable adjustment, lead to good career, Application of technology, and high reputation in home country)?

9. What is the relationship between the variable Motivation and student personal characteristics (Gender, Age, Personal Safety, Country of Origin, Financial Background, and Level of Prior Education)?

SIGNIFICANCE OF THE RESEARCH

The present study is significant for at least two reasons. One, the number of international VET students in Australia is declining and student perception of quality of learning experiences in VET courses seems to be a factor in this decline. As there are no recent research studies of student perceptions of quality in the context of VET in Western Australia, there is a need to investigate international student perceptions of quality in VET courses here in Western Australia.

A second significant factor is that the present study will use Rasch-created linear measures of these dependent variables – something that have not been done before in the context of VET in Western Australia or anywhere else in the world. Other studies have used non-linear measures based on True Score Theory Measurement (sometimes called Classical Test Theory) and these are less accurate than Rasch-created linear measures.

Related to this is the importance of measuring quality. It has been suggested that students who show the most academic and personal growth are the ones who put the greatest amount of effort and time into their tertiary education life and studies, and these are the students who will have the highest perception of quality in their tertiary education courses (see Waugh, 2003). This should be true of VET students too, but as

yet there have been no published studies of this using Western Australian data. Existing research literature for the VET sector focused mainly on compliance information gathered from registered training organizations. The system for collecting these data is called Australian Vocational Education and Training Management Information Statistical Standards (AVETMISS). Much of the compliance data collected by this system from various sources has its focus on training organisations, courses, modules or units, student information, qualifications and units completed. The common measure of quality in VET is the outcome achieved by the student, while the quality measure for the present research is derived from responses collected directly from the students and used to create linear measures.

Previous research (Karmel & Fieger, 2006) concluded that completion of higher levels of VET qualifications do provide increase wages and lead to further studies. VET qualifications have always ranked highly with employers and are welcomed by industry in the provision of skilled labour. Many of the trade-related courses like electricians, plumbers and so on fulfil the basic requirement for obtaining a trade license. Many of the international students focus on non-trade courses and it is important to investigate student characteristics in relation to all VET courses. Based on the Australian Bureau of Statistics data (Australian Social Trends 2011, International Students), students from China constitute almost 20 % of international student visas granted in 2011. This is followed by India 12% and South Korea 5% and these figures highlight the need to examine the learning experiences in the light of the varying personal and social economic characteristics. Most studies of quality in the VET industry are qualitative in nature or, if measures are used, they are mostly non-linear and based on True Score Theory. The present study uses a linear measure of quality and relates quality to personal characteristics which is an important advantage.

LIMITATIONS

There are four known limitations in this study. The first is that the data collected relate to six private Registered Training Organizations in Western Australia offering VET and/or ELICOS courses. Therefore, the findings strictly only relate to the students at these six organizations studying these courses. With regard to this limitation, it is important to note that the country of origin of the respondents of the present study closely resemble the international student profile as compiled by the Australian

Educational International (April 2013) in the International Student Enrolments by Nationality 2012 report.

The second limitation is that the data were collected from colleges from around Perth metropolitan areas and the geographical location may not reflect other types of VET colleges, especially those in other parts of Australia and in the rural areas.

The third limitation is that the questionnaires are designed to take into account the researcher's experience within the VET industry and are not necessarily compatible with the respondents' comprehension of the English language. That is, some international VET students are not as English proficient as we would like. The result was that some student answers had to be interpreted and thus some interpretations may not reflect the students intended answers (although this would only have involved a small number of students – no more than five percent).

The fourth limitation is the number of responses collected is 315. It is generally considered that a sample of N=384 may reflect the answers of the entire population of the students up to about one million with a 5% error (Zikmund, 2001), so the results may not be generalizable to the whole VET student population in Western Australia. But at least, the results should be representative of the international VET population in Perth.

STRUCTURE OF THE THESIS

This thesis is made up of thirteen chapters; a summary of each chapter is now briefly described.

Chapter Two is the Literature Review that provides a summary of studies and reports relevant to quality of learning experiences in the VET industry in Australia and it summarises recent research and reports on recent problems in the VET industry. Recent research and reports on the relationship between self-concept and motivation and how they influence the quality of learning experiences are then explained. The chapter also explains recent research into the impact of personal and social economic factors on quality and learning experiences.

Chapter Three explains the theoretical concept of student perceptions of quality of learning experiences; that is, it explains the predicted structure of the variable called Quality of learning experiences – a structure that will be tested through the Rasch measurement analysis. Similar theoretical explanations are given for the predicted

structure of self-concept and motivation. Then the expected relationships between Quality and Self-concept and Motivation and between Quality and VET Characteristics and student Personal Characteristics are explained.

Chapter Four discuss the applicable measurement theories, including True Score Theory Measurement (or Classical Test Theory), and more importantly, the Rasch measurement methodology. The output generated from the software RUMM2030 (Rasch Unidimensional Measurement Models) computer program, which is used for creating the linear scales for Quality, Self-concept and Motivation is explained.

Chapter Five explains the research design, the samples used, how the data were collected and the strategy of generating quality data from the respondents. The chapter also explains the administrative and ethical approvals required before data collection and the pilot studies were performed. Then there is a brief explanation of how the data were entered into the computer, checked for accuracy, and analysed. The actual data analyses are reported in later chapters, six to twelve.

Chapter Six, Data Analysis (Part 1), explains the Rasch analysis used to create a linear scale for quality of learning experiences. This shows the statistics supporting a fit to the measurement model and hence the reliability of the data from which valid inferences can be drawn. The scale shows which items are easy and which are hard, and calibrates the measures from low to high on the same scale as the item difficulties from easy to hard. This allows one to compare the predicted item difficulty structure of the variable to the actual measured item difficulty structure – a test of the construct validity of the variable.

Chapter Seven, Data Analysis (Part 2), explains the relationships between Quality of Learning Experiences and VET Characteristics and between Quality of Learning Experiences and some of the Personal Characteristics. The relationships are tested for significance using ANOVA.

Chapter Eight, Data Analysis (Part 3), explains the Rasch analysis for Self-concept.

Chapter Nine, Data Analysis (Part 4), explains the relationships between Self-concepts and VET Characteristics and between Self-concepts and some of the Personal Characteristics. The relationships are test for significance using ANOVA.

Chapter Ten, Data Analysis (Part 5), explains the Rasch Analysis for Motivations.

Chapter Eleven, Data Analysis (Part 6), explains the relationships between Motivations and VET Characteristics and between Motivations and some of the Personal Characteristics. The relationships are test for significance using ANOVA.

Chapter twelve, Data Analysis (Part 7), describes the collection and processing of the qualitative data, and explains the extraction of the inferences and categories (or themes) from the data generated from the five open-ended questions. This is followed by an explanation of the implications of the inferences in relation to the Quality of L Experiences, Self-Concept, Motivation, VET Qualification and Reasons for Studying in Australia. The chapter ends with a summary of findings.

Chapter thirteen is the final chapter where the research questions are answered, and the results are discussed with implications for administrators in Registered Training Organisations, lecturers and teachers, and students. The major findings of this research are discussed in relation to the relevant findings in the literature review and it provides implications for the VET training providers and areas with potential to improve are recommended.

The next chapter (Chapter Two) is the literature review.

CHAPTER TWO - LITERATURE REVIEW

The purpose of this review was to investigate the VET research literature in regards to: (1) Students' perceptions of quality of learning experiences; (2) how quality of learning experience can be measured; and (3) The influences of self-concept and motivation on quality of learning experiences; and (4) current theories relating quality to aspects of VET characteristics and to students' personal and social economic factors which may influence the quality of learning experiences. This chapter also reviews literature that suggests that the current system of quality assurance in the VET sector may negatively influence the delivery of quality learning and why this may be so.

QUALITY TEACHING AND LEARNING

The Organisation for Economic Co-operation and Development (OECD) in the "Guidelines for Quality Provision in Cross-border Higher Education" (2013) which have now been endorsed by the OECD and noted by UNESCO, has four main policy objectives:

1. Students/learners protection from the risks of misinformation, low-quality provision and qualifications of limited validity;
2. Qualifications should be readable and transparent in order to increase their international validity and portability. Reliable and user-friendly information sources should facilitate this;
3. Recognition procedures should be transparent, coherent, fair and reliable and impose as little burden as possible to mobile professionals; and
4. National quality assurance and accreditation agencies need to intensify their international cooperation in order to increase mutual understanding.

The quality element is squarely in focus in the guidelines above, even though Blackmur (2007) was critical of these guidelines in that the regulation of such guidelines was objectionable because of the rationale, purpose and scope of the guidelines, not the guidelines as a whole. Kuczera and Field (2013), in the OECD

Review of Vocational Education and Training - *A Skills beyond School Review of the United States*, stated in the summary - the Overarching recommendation:

> …While taking advantage of the vibrant diversity of the US postsecondary (CTE – "Career and Technical Education") system, balance the decentralized approach with a strategic pursuit of more quality, coherence and transparency. (p.10)

Knight (2011) stated a similar concern regarding quality, in particular the quality of academic qualifications and the recognition and legitimacy of the qualifications awarded. The OECD guidelines generated a debate on the regulation of cross-border higher education and their providers; it was said that the quality issue remains difficult to deal with within each jurisdiction and it is more complex across borders. As the mobility of international students increase and education providers grow in numbers it is inevitable that quality measures and the reporting of such measures needs improvement. Pedagogy, a word most commonly used to describe the science of teaching, focuses on children's learning. The early pedagogical approaches focused on teaching reading and writing, which is logical, as these are the means of propagating and recording the knowledge gained. With todays' rapid explosion of knowledge, the propagation and means of dissemination of a vast repository of human knowledge has made teaching and learning more diverse, sophisticated, and multifaceted (Knowles, Holton & Swanson, 2012). As new knowledge and skills are added to our repository, an ongoing update of students' knowledge and skill set is necessary in VET, the growth in adult education becomes a distinctive area of study and it is particularly relevant to this research Knowles, Holton and Swanson (2012) cited, six principles of andragogy: (1) learner's need to know; (2) self-concept of learner; (3) prior experience of learner; (4) readiness to learn; (5) orientation to learn; and (6) motivation to learn were extensively discussed and are relevant to the VET industry. As Knowles (1970) suggested not much about adult learning was known until adult education came to prominence in the 1920s. Knowles further suggested that the relevance of what and how to learn became more important as knowledge accumulation gathered pace and adults begin to exhibit discontent with teachings that were just "…fact-laden lectures, assigned readings, drill, quizzes, rote memorizing, and examinations." (p. 40). Learning about how to learn, lifelong learning and continuous improvement become more important and this relevant to the VET industry.

In discussing adult education, there is a need to distinguish teaching and learning versus the need for continuing education and training. As pointed out in the six principles of andragogy which address teaching and learning for adult learners, Knowles and others (Knowles et al., 2012), raise the question:-

> What models and practices of continuing tertiary education and training can best meet workplace demands and sustain Australian workers' ongoing occupational competence and employability across their working lives? (p. 6)

Three models were proposed in that working paper (Knowles et al, 2012): (1) Wholly practice-based – which allow learners to engage in everyday activities and interactions in the workplace and enriched by direct guidance from expert partners; (2) Practice-based experiences with educational interventions – practice-based and the use of educational activities to assist workers to consider, analyse and further develop their understandings of their work; and (3) Wholly education institution-based - wholly based in educational institutions. Currently the VET industry provides courses based on all the three models, and for courses which are wholly education institution-based, there is a requirement for workplace simulation which attempts to provide some form of workplace practices for the student. The other model being promoted is the eLearning, or online learning model. In the report "One size doesn't fit all" (Brennan, 2003) it considers that the students' learning styles are some of the determinants of the online pedagogy. eLearning is now one of the growing segments of the VET industry, and it is said to:

> …encourage active engagement, facilitate easy access, speed up communication between teacher and learner, provide useful learner choices and create learning environments where learners are able to construct knowledge for themselves as they learn. (p. 4)

Merriam, Caffarella, and Baumgartner (2012) discussed learning opportunities found in various settings and online learning in particular which is available in a formal setting, non-formal setting and a self-directed context. Merriam et al. (2012) advocate the importance for learning institutions to know their clientele in order to understand what the learners expect out of the learning activities.

Whether there is a growing provision of online learning courses, online assessment has many challenges because of the specific requirements of a competency-based assessment system required by industry standards. A blended-delivery and assessment involving a mix of in class and online self-study strategy approach is more widely implemented in the VET sector. The Australia National VET e-learning strategy is the body actively supporting this flexible learning approach. The online delivery is supplemented with teachers on standby to assist online or face-to-face as needed. This blended-approach overcomes some of the issues relating to eLearning and assessments. Curtis and Lawson in exploring Collaborative Online Learning (Curtis & Lawson, 2001) identified the lack of conventional interaction and a different kind of collaboration between students, and the demand of the technological challenges as some of the issues which need attentions. Tusting and Barton (2006) stated that adult learning involved different individual motivations, self-direction, learning processes, in real life practice, and reflections build upon their experience. The various models applicable to adult learning in VET are targeting these different learning preferences of the adult learners. Clarke and Volkoff (2008) classified the fifty-eight TAFE colleges in his study into three sub-groups; (1) passive commitment to inclusiveness practice; (2) being responsive to the diverse needs but no new pathway; and (3) those breaking the mould, revolutionising and enhancing the accessibility. Those in group 3 were applying the flexible blended-delivery strategy to be more inclusive, not just for adult learning preferences, but also to help in overcoming the disadvantage. Blended-delivery can be an effective method to embrace, engage and expand learning in the VET context in consultation with industries and communities.

QUALITY OF LEARNING EXPERIENCES

In the research "multi-models of quality in education", Cheng and Tam (1997) discussed the quality concept of input, process and outcome and proposed seven models for quality assurance in education. These seven models of quality in education include: (1) the goals and specifications model; (2) the resources input model; (3) the process model; (4) the satisfaction model; (5) the legitimacy model; (6) the absence-of-problems model; and (7) the organizational learning model. The authors suggest these models can

facilitate the development of management strategies to deliver quality learning. This argument is consistent with the quality assurance models used in other industries and it takes into account much less consideration of the inputs from the learners or consumers. The goal and specification model measures quality by achievement of stated goals and conformance to given specifications; the resources input model enforces quality through high quality student intake, employing qualified staff, providing better facilities and equipment, and better staff-student ratio. The process model deems smooth and efficient process will produce quality outcomes, much like a factory delivering quality products by deploying best practices. The satisfaction model considers quality as a relative concept; it depends on the expectations of the constituencies. This model emphasises satisfaction of clients or conformation to their expectations, as a sufficient measure of quality. The legitimacy model relies on the support of the community, gaining a good public image and demonstrating evidence of accountability as recognition of quality. The absence-of-problems model assumes that if there is an absence of problems, troubles, defects, weaknesses, difficulties, and dysfunctions in an educational institution, this institution delivers high education quality. Finally, the organization learning model is similar to the process model except that the former encourages institution learning to enhance quality.

In comparing relevant quality assurance systems across various countries, Bateman, Keating, and Vickers (2009) advocate that applications of a quality assurance system in VET are dependent on purpose and these include probity and financial accountability, health and duty of care, user protection, quality improvement and system effectiveness, and the quality status of VET products, providers and systems. In Australia, the governance and compliance monitoring authorities have significant influence over the implementation of quality assurance within the VET industry. The specific emphasis in the quality assurance system can vary within the same quality conceptual framework of front-end input mechanisms or back-end output mechanisms. In the same report Bateman , Keating and Vickers (Bateman, Keating & Vickers, 2009) stated that:

> …Front-end systems are designed to ensure the quality and authenticity of VET programs, and the quality, effectiveness and integrity of training providers" while "the Output mechanisms concentrate on the quality of the training product" (p. 5).

In the private registered training organization, it is widely argued that the front-end systems designed to ensure the quality and authenticity of VET programs, and the quality, effectiveness and integrity of training providers, are putting on too much pressure on the demand for resources and the costs of the training. When training providers can be influenced economically by the assessment outcome, this front-end input mechanism becomes an even less attractive proposition to providers. This study measures the perception quality learning experience and the associated factors which may have been impacted by such quality assurance system.

Cognitive learning theory defines learning as the construction of concepts and growth in general problem solving skills (Anderson, Reder & Simon, 1996). Defining any indicator or combination of indicators, to measure learning is controversial and difficult. It has been argued that the measure of quality of learning in VET is better based on measuring the process of enhancing quality rather than measuring the output mechanisms of learning as discussed above (Bateman, Keating & Vickers, 2009). Certainly this has been the strategy deployed by the various compliance regimes currently in place for the VET sector, both locally and abroad (Blom & Meyers, 2003; Bateman, Keating & Vickers, 2009). However, recent research commissioned by the National Centre of Vocational Research suggested that the My Skill web site should publish key performance indicators for the VET sector much like the My School web site for Australian schools. Among the proposed indictors included, the author of the present study consider that the Quality of teaching and learning indicators, and Student characteristics (Karmel, Fieger, Blomberg & Loveder, 2013) are most important. Should the authority proceed to publish indicators for each training provider, it will add to the transparency for the consumers (students and parents) in the relative performance between training providers. This should empower the students as consumers and help improve the quality of information available to the public.

Learning as a term is hard to quantify and so is measuring an abstract concept like learning experience, but teaching institutions, like the VET education providers are required to design assessments that attempt to measure learning outcomes as part of the compliance requirements. The Australian Vocational Education and Training Management Information Statistical Standard (AVETMISS) reporting requirement, which is part of the compliance regulation specified the outcomes to be reported; these include the results of the units and modules achieved, and the certificate and

qualifications issued. These outcomes are relied on by the governing authority Australian Skills Quality Authority (ASQA) as part of the overall assessment of the quality of learning delivered by the VET education providers. Presumably, higher assessment outcomes equate to greater learning experiences or better academic efficacies in the transfer of knowledge from teacher to student which results in better assessment outcomes. Over the years, academics have been reluctant to define learning outcomes in precise terms because knowledge is understood to be dynamic and open-ended. The precise and objective quantitative measure of learning is difficult too because there is empirical evidence suggesting many other factors influencing student learning which might make it inequitable just to compare assessment outcomes (Hattie, 1992). However, assessment can be used to enhance teaching (Shepard, 2000), it is an important tool to improve quality of education, and proper use of assessments in this regard should be encouraged.

Nightingale and O'Neil (1994) propose four levels of development for the purpose of quality enhancement. These are: (1) individual development which emphasizes partnership between students, teachers and mentors to improve quality of learning; (2) department and course team development which focuses on the courses; (3) institutional development which focuses on facilities and opportunities to assist student learning; and (4) development at the national level which focuses on funding of research and promotion of excellence. Nightingale and O'Neill (1994) concluded that, if these four levels function robustly, the focus of the stakeholders will be more on the quality of the learning experience rather than on accountability to the outcomes. Quality has and continues to be the main focus in the VET system and the learning experiences from the perspective of the learners played a smaller role in the quality assurance system. This same issue was echoed by Vallence, Falk and Kilpatrick, (2001):

> …they have more or less failed to come to grips with a student/participant's vocational learning. Instead, their emphasis has been on training products, administrative consistency and assessment… (p. 3).

There are aspects of recent developments in the VET industry which are thought to have negatively impacted on learning experiences. The diminishing teacher student relationship is one of them. Hattie (2009) discussed the key elements leading to excellence in learning based on the role of teachers. He concluded that a teacher has a powerful influence on student learning through effective strategies in directing,

influencing, caring and engaging in the teaching and learning process. In the VET context, Snell and Hart (2007) concluded that:

> …data suggesting training quality in Australia is being threatened by fully on-the-job training, the narrowing of training skills, the loss of transferable skills and a lack of training… (p.500)

The same paper also found that:

> …growing concern has emerged about the quality of training for apprentices and trainees in what has become an increasingly deregulated environment dominated by private interests… (p. 512).

There are also issues with growth in the VET industry which impact on quality. In a conference paper, Schofield (2000) stated that, while VET was originally conceived as a relatively small niche system, the contracts of the training system have now become a mass system and its management systems are struggling to keep up, and quality appears to be suffering. There are other quality concerns including impropriety of practices:

> ...evidence of some abuse of the apprenticeship and traineeship system by unethical and, in a small number of cases, possibly fraudulent organisations.... (p. iv).

The growth in the number of private registered training organisations in student enrolments in Western Australia has been significant since the 1990s, as was the focus of this Schofield research paper and the growth has continued. Private registered training organisations in 2003 had 2.2 million students compared with the 1.7 million students in the public sector in 2003 (Harris, Simons, & McCarthy, 2006).

Table 2.1 Descriptive statistics of composite scores

Variable	Method	N	Mean	Std dev.	Sum.	Min.	Max.
Teaching	Rasch scores	90 111	3.432	2.377	309 229	-4.85	6.27
	Means	90 486	4.354	0.687	393 946	1	5
	Weighted means	87 605	4.402	0.664	385 597	1	5
Assessment	Rasch scores	88 728	2.742	2.285	243 327	-4.77	5.93
	Means	89 556	4.184	0.717	374 745	1	5
	Weighted means	86 095	4.203	0.704	361 870	1	5
Generic skills and learning experiences	Rasch scores	87 443	2.326	2.460	203 431	-6.09	6.89
	Means	89 910	3.915	0.773	352 017	1	5
	Weighted means	79 268	3.889	0.785	308 293	1	5

Source: Fieger, 2012, p. 16

The recent National Centre for Vocational Education Research (NCVER) paper (Fieger, 2012) cited the definition of quality from the Australian National Audit Office as the assessment of inputs, processes, outputs and outcomes. This research has such a broad and non-specific view and, coming from the auditing perspective, conveys a message that consumers may not be exclusively focused on quality. The single-minded focus on processes output and outcome, may not necessarily deliver what the consumers expect. The same report highlighted that, based on the three quality variables (teaching, assessment and generic skills and learning experiences), the generic skills and learning experiences had the the lowest mean score of 3.915 of the three mean scores. This research was based on data collected in 2009 and verified against data collected in 2007 and 2008 (see Table 2.1). Quality of learning experience is an issue to the international student in the Australian VET sector, for example the Comparisons of International Quality Assurance Systems commissioned by the former Department of Education, Employment and Workplace Relations (Bateman, Keating & Vickers, 2009) found that:

> …there is no strategy to ensure that assessors hold advanced knowledge and skills in competency-based assessment…

> and

> …comparative lack of a developmental and continuous improvement culture and procedures for providers and teachers and trainers improvement… (p. 52 – 53).

Hill, Lomas, and MacGregor (2003) commented "…there appeared to be very little empirical research into student perceptions of quality in higher education…" (p. 15). The study asked the six focus groups "What does quality of education means to you" and the four themes that emerged from the study were: (1) quality of the lecturers (lecturers knew their subject, organised, and interesting to listen to); (2) student engagement with learning (curriculum that were related to their world and broaden their horizon), social and emotional support systems (support from college, their peers and families); and (3) very few students mentioned resource of IT and library as important. If these are what are important to the students then their views should be sought in the measure of quality.

The other aspect of VET Quality assurance system is the collection of data by the Australia Skills Quality Authority (ASQA) through The Australian Vocational Education and Training Management Information Statistical Standard (AVETMISS).
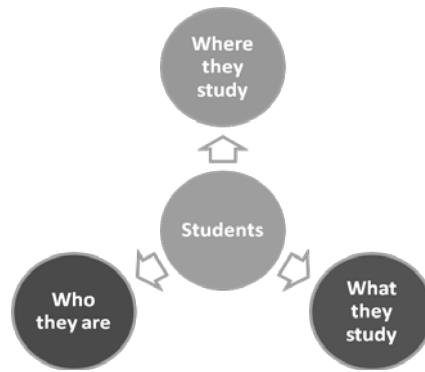
Who they are	Where they study	What they study
age, sex and other demographic information Indigenous and disability information geographic location	type of provider (for example, government or private) location of training delivery	enrolments in units of competency, as part of a qualification, and modules as part of courses how it was studied (for example, classroom, workplace or online) how it was funded the results obtained for unit/module (outcome)

Figure 2.1 Australian Vocational Education and Training Management Information Statistical Standard (AVETMISS) Specification Framework
Source: National Centre for Vocational Education Research (NCVER, 2014)

As per NVCER Web site Frequently Asked Questions, What is AVETMISS:

> It is a national data standard that ensures consistent and accurate capture and reporting of VET information about students. (NCVER - "Frequently Asked Questions", 2013)

AVETMISS is the national standard for the collection and analysis of the VET education information throughout Australia. The AVETMISS Provider Collection specification 7.0 provides a nationally consistent framework for the collection of vocational education and training (VET) activity in Australia (NCVER, 2014). The overview of specification framework is listed in Fig 2.1 above.

The VET Provider Collection specifications detail the collection requirements for vocational education and training providers. The specifications defined the files and fields to be collected and the formats and rules that govern them. The AVETMISS Data

element definitions describe the data elements used in the VET Provider Collection system (Department of Education, Employment and Work Place Relation, 2012). These data together with other mandated by the authority are submitted by VET Providers currently receiving public funding and will be compulsory for all VET providers from 1 January 2014. They are various bodies which will receive the AVETMISS data but ultimately NCVER will be the central body collecting and storing the data submitted. NCVER is the custodian of the AVETMIS Standard and provides technical support for the Competency Completion Online System (CCOS), which is used for reporting the Competency Completion Quality Indicator. Based on the information collected under AVETMISS, it is clear that quality measures will be based on outcomes achieved by the students and analysis can be performed to relate to the provider characteristics and social economic or personal characteristics of the students.

They are other surveys which regularly provide statistical data and are collected by NCVER and the Australian Bureau of Statistics. In the report Australian Vocational Education and Training Statistics explained (NCVER, 2013) "... These data provide the basis for research and enumeration to inform and measure performance of the VET system. Outputs from the VET system are the main focus of the National VET Provider Collection." Most of the research using these standard data are using measurements based on "True Score Theory" (See measurement section for more detailed explanation), however, a better approach using Rasch Measurement techniques can improve the validity and reliability of research (Waugh & Chapman, 2005, Bond & Fox, 2013).

SELF-CONCEPT

Hattie (1992) presented a comprehensive suite of arguments for the theory of self-concept. He began with the historical argument for the existence of such a concept and linked the theory to modern psychology. In tracing these historical perspectives he cited many literatures in explaining and defining the existence of self-concept; Descartes (1596-1650) "I think, therefore I am" provided a presentation of the body and the mind (cognitive) and is especially relevant in the education context. Hattie also defined self-concept as each person's ability as an appraiser of information about descriptions, prescriptions and expectations of ourselves. Hattie presented a hierarchical model of

self-concept and argued that at least seven categories exist, among them, classroom, ability, achievement, peer, family, confidence and physical. For the purpose of this research, the academic self-concept is used in the construct of the theoretical framework and focuses on ability, achievement and confidence. Following Song and Hattie's research (1984); the Academic Self-Concept is represented by three sub-groups including achievement, ability and classroom, these are adopted directly in the body of the questionnaire. As proposed in this research, a high self-concept and high expectation of themselves is driving students to achieve a higher quality of learning. Bong and Clark (1999) argued that:

> Decades of research on both constructs have contributed significantly as well as independently to our understandings of how critical students' appraisals of themselves can be for their successful functioning and well-being in school. These self-constructs have been particularly beneficial when used to predict or explain students' motivation and achievement (P. 153).

Collectively Mintz and Muller (1977) and Caplin (cited in Bong & Clark, 1999) stated that

> Definitions of self-concept vary widely. They range from self-descriptive behaviour to feelings about oneself as a person or social being (Caplin, 1969) (p. 140).

In other studies, self-concept was developed from a uni-dimensional construct (Wylie, 1979) to a multi-dimensional, hierarchical self-concept (Shavelson, Hubner, & Stanton, 1976), Waugh (2001). Green, Nelson, Martin, and Marsh (2006) discussed the interplay between these two concept extensively but for the purpose of this study however, the investigations of the relationship and the causal effects are focused on how each concept impacts on the perception of the learning experience. The nature of the construct of self-concept and the causal effect between the self-concept and academic motivation are assumed to have positive incremental effects on the perception of quality of learning experience.

Zimmerman (2002) explained self-regulation as a self-directive process which can transform mental abilities to task-related academic skills. He stated that self-regulation results in personal initiative, perseverance and adaptive skills to pursue learning. In 1989 Zimmerman (1989) wrote about the importance of a self-regulated learner actively participating in his or her learning processes and this involved using processes, strategies, or responses to improve their academic achievements. It is therefore

important that persons with high self-concept, or the ability for self-regulation, will be able to achieve a higher level of learning.

Bong and Skaalvik (2003) believe

> what attributes *they think* they possess, what roles *they presume* they are expected to play, what *they believe* they are capable of, how *they view* they fare in comparison with others, and how *they judge* they are viewed by other. Without doubt, these are beliefs and perceptions about self that are heavily rooted in one's past achievement and reinforcement history. (p.2)

Bong and Skaalvik affirmed the importance of experiences with the environment and its' influenced on self-concept, especially by environmental reinforcements. Self-concept is assessed against ones' own standards, and own traits and accomplishments, and against social comparisons. "… mastery experiences might be of comparable importance to the formation of self-concept as they are to the formation of self-efficacy…" (p.4)

Bandura (1977), quoted in Bong and Skaalvik (2003), offered a formal theoretical definition of self-efficacy:

> Perceived self-efficacy refers to beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments. . . . Such beliefs influence the course of action people choose to pursue, how much effort they put forth in given endeavors, how long they will persevere in the face of obstacles and failures, their resilience to adversity, whether their thought patterns are self-hindering or self-aiding, how much stress and depression they experience in coping with taxing environmental demands, and the level of accomplishments they realize. (p. 5)

According to Bong and Skaalvik,

> self-concept represents one's general perceptions of the self in given domains of functioning, self-efficacy represents individuals' expectations and convictions of what they can accomplish in given situations (p.5)

> As can be seen, self-concept and self-efficacy share many of the presumed antecedents such as past experience, social comparison, and reinforcements from significant others (p.6)

> *Academic* self-concept and *academic* self-efficacy refer to individuals' self-concept and self-efficacy beliefs that are formed specifically toward academic domains. Assessing one's capability in academic self-concept relies heavily on social comparative information and reflected appraisals from significant others. (p.9)

Ali, McWhirter and Chronister (2005) concluded that, consistent with Social Cognitive Career Theory (SCCT) vocational and educational self-efficacy scores significantly predicted vocational outcome expectations, such that higher

vocational/educational self-efficacy was associated with higher vocational outcome expectations.

Waugh (2001) researched the model of self-concept based on a multifaceted, hierarchical model and used six aspects: (1) capability; (2) perceptions of achievement; (3) confidence in academic life; (4) relationships with peers and family; (5) personal confidence; and (6) physical self-concepts. Each response was tested for "how I would like to be" (easy) and "how I actually am" (harder). Of the 400 students in his study, the data indicated that the errors were small and that the power of the tests of fit was excellent. Waugh (2001) concluded:

> The Index of Person Separability values for the 45-item and 66-item scales were .945 and .946, respectively. This means that the proportion of observed variance considered to be true is 94% in each scale. The item-trait tests of fit indicate that the values of the item difficulties were strongly consistent across the range of person measures. (p. 95).

As the name suggests, it is a concept which is used commonly to explain how an individual will act, and react in various environments. When applied to academic studies, self-concept could play an important role in determining one's success, or has a strong predictive property for the level of achievement. The measure of quality of learning must therefore explore the relationship of self-concept of the individual whose learning is being measured. For the purpose of measuring the quality of VET learning experiences, such relationship will assist to derive the true measures of the learning experiences.

ACADEMIC MOTIVATION

Brown and Cocking (2000) related the behaviorist theory which conceptualized learning as a process of forming connections between stimuli and responses. According to the authors, motivation to learn was assumed to be driven primarily by drives, such as hunger, and the availability of external forces, such as rewards and punishments. In quoting the study done by Thorndike (1913) the author reiterated rewards (e.g.,food)

increased the strength of connections between stimuli and responses. Brown and Cocking (2000) believe that

> Learners of all ages are more motivated when they can see the usefulness of what they are learning and when they can use that information to do something that has an impact on others (p.61)

Krapp, (1999) discussed at length the construct of interest of the individual and the interestingness of the learning context. As explained by Krapp, students' interest in the course will impact their motivation and such personality trait or interest can be impacted by the degree of engagement with the objects and activities, Krapp cited the need to sustain such enduring interest. In relating interestingness, Krapp elaborated the physical environment and content of the resource as two of the key components of the interest in Context. This is of interest to the current study because in the opinion of the researcher of the present study, such aspects are squarely in focus among the challenges faced by the Registered Training Organizations. Based on the working experiences of the researcher in this present study with the private RTOs, the student's interest and the extent of engagement are far from satisfactory.

Volet and Jarvela (2001) discussed the conceptual perspectives of motivation as the understanding of how learning activities are constructed which influence a learner's commitment to engage and learn. They described the socio-cognitive perspective which influences motivation including factors such as schools, classrooms, family, peer groups, community, country, culture, ethnicity and history. In the same book, Volet cited the international students' experiences in their familiar home learning environment versus the less familiar foreign campuses, and argued that motivation in context through its' multi-dimensional perspective will influence student learning in such foreign environments. Järvelä and Volet (2004) continued the discussion on motivation in context with specific consideration to the environment factors and this is particularly relevant to the international students within the private Registered Training Organizations.

Waugh (2002), and Waugh and Njiru (2005) discussed motivation factors with reference to first year university students and high school students, and many of these factors were included in the present research. In the present research, the academic motivation variable includes the sub-groups Standards, Goals, Tasks, Effort and Desire to Learn. The items for motivation are aimed at understanding the motivation in the

context of the student's study environment (quality of learning, characteristics of the VET course, and personal characteristics). Jarvela and Volet (2004), and Jarvela (2011) also explained the importance of motivation in learning contexts, and their research supported the view that some characteristics of the VET courses and Personal characteristics do indeed have significant impact on the learning experience.

In the report "Doing an apprenticeship: What do young people think", Misko, Nguyen, and Saunders (2007) state:

> Having an intrinsic interest in a trade is the main motivation for taking up or wanting to take up an apprenticeship…" (p. 8) and those part way through their apprenticeships were found to be "…very positive about the experience, pointing especially to the enjoyment and challenge obtained from working and learning new skills (p.8).

Apprentices also indicated that they have always had a keen interest in the trade. These are clearly in line with the motivation factors of having goal in the trade and the interest to learn, and become a qualified trade person in their field of interest.

In 2002, Waugh studied the creation of a scale to measure motivation involving Striving for Excellence (Standards, Goals, Tasks, Effort, Values and Ability), Desire to Learn (Interest, Learning from Others and Responsibility for Learning), and Rewards (Extrinsic, Intrinsic and Social). The study concluded that except for ability and extrinsic rewards the rest of the elements fitted the measurement model and

> …the Rasch model and the RUMM computing program were very useful in creating a unidimensional, interval level scale of Motivation to Achieve Academically, with good psychometric properties. (p.66)

In this study, the items to measure Standards, Goals, Tasks, Effort and Interest were in difficulty order from easy to hard, with each item answered in two perspectives; "What I expect before the course" and "What actually happened during the course". "What I expect before the course" was expected to be easier to agree with than "What actually happened during the course". Since the item difficulty order was predicted before the data were collected and because the Rasch Model calculated the item difficulties on the same linear scale, the predicted item difficulties and the actual item difficulties were

compared as a test of the construct validity of the variable. It is noted that this model has not been applied in a similar VET study using West Australian data.

VET Course Characteristics

Value

Post-secondary education in Australia is broadly divided into Vocational Education and Training (VET) and Tertiary education. The My Skills web site (My Skills, 2014) Frequently Asked Questions described VET education as:

> Vocational Education and Training (VET) is training in job-related and technical skills and enables students to gain qualifications for all types of employment and specific skills to help them in the workplace… (Frequently Asked Question, 10/8/2013, para 1)

The job-related technical skill and employment are two distinctive characteristics of VET and differentiate the VET courses from traditional tertiary qualifications. The other unique aspect of VET is the award of qualification for each certification level under the Australian Qualification Framework or AQF (2014); each level of qualification from Certificate I, Certificate II, Certificate III, Certificate IV, Diploma, Advanced Diploma, Vocational Graduate Certificate or Vocational Graduate Diploma typically cost less and takes a shorter timeframe to complete than tertiary qualifications. Arguably, the lower cost job-related training and technical skills gained from these VET courses represent better "value" than gaining a tertiary qualification; similarly, taking into account of the "advance standing" of a VET qualification granted by tertiary institutions, VET qualifications can be a lower cost alternative pathways to gain a tertiary qualifications.

As mentioned, the Australian Skills Quality Authority or ASQA is the national regulator for Australia's vocational education and training (VET) sector. The National Skills Standards Council or NSSC was established from 1 July 2011 and commenced as a committee of the Standing Council on Tertiary Education, Skills and Employment or SCOTESE. The NSSC provides advice to SCOTESE on national standards for

regulation of vocational education and training. The NSSC ("Functions" 2014) web site listed the following functions:-

1. Developing and maintaining national standards - The NSSC is responsible for developing and maintaining the national standards that regulate the vocational education and training sector for approval by SCOTESE, and for advising SCOTESE of any issues relating to the standards and their implementation.

2. Informing regulators - The NSSC provides information to the regulators of vocational education and training, through SCOTESE, on interpreting and implementing the national standards. This supports effective operation and regulation by regulators.

3. Informing the VET sector - The NSSC is responsible for providing information to the vocational education and training sector on the national standards and any changes to these standards.

4. Operation of regulators - The NSSC is responsible for advising SCOTESE on the operation of the regulators of vocational education and training, to ensure the consistency and quality of the implementation of the national standards.

5. Training Packages - The NSSC endorses Training Packages, develops related policy and oversees quality assurance activities.

6. Tuition Assurance Schemes - The NSSC is responsible for approving Tuition Assurance Schemes under the standards for the regulation of RTOs.

The NSSC ("VET Standards" 2014) stated in their website that it is guided by the two sets of national standards for the VET sector; (1) The Australian Quality Training Framework (AQTF) and (2) The legislative instruments established under the *National VET Regulator (NVR) Act 2011* to fulfil it's designated functions. These two sets of national standards are sub-divided into four standards: (1) Standards for RTOs; (2) Standards for VET regulators; (3) Standards for Training Packages; and (4) Standards for accredited courses. It is standards (3) and (4) which define the characteristics of the VET Courses. The NSSC which developed the Standards for Training Packages stated that:-

> Standards for Training Packages ensure Training Packages are of high quality and meet the workforce development needs of industry, enterprises and individuals. The Standards apply to the design and development of

Training Packages by Industry Skills Councils (ISCs), which are then endorsed by the National Skills Standards Council (NSSC). The Standards are developed by the NSSC, for endorsement by Commonwealth and State and Territory Ministers. ("New Training Package Standards and Policies" 2014)

Access, Equity and Reasonable Adjustment

At the 2009 World Conference on Higher Education: The New Dynamics of Higher Education and Research For Societal Change and Development (UNESCO, 2009), the communique released on the 8 July 2009, one of the emphases was "Access, Equity and Quality", and in discussing Access, the communique stated:

> In expanding access, higher education must pursue the goals of equity, relevance and quality simultaneously. Equity is not simply a matter of access – the objective must be successful participation and completion while at the same time assuring student welfare. This must include appropriate financial and educational support to those from poor and marginalized communities. (p.2)

Labaree (1997) explored three goals for American education:

> democratic equality (schools should focus on preparing citizens), social efficiency (they should focus on training workers), and social mobility (they should prepare individuals to compete for social positions (p. 2)

While these may be conflicting goals to some extent, it is clear that unless equitable access to education is provided, achievement of any of the goals will result in further marginalisation of the less educated or other disadvantaged groups within society. These three goals, if accomplished, have the power to enrich those who benefit from the system by being prepared, trained and competitive in their post-education life. For so long as education will provide an edge, equitable access to education will be necessary. In the paper Armstrong and Cairnduff (2012) discussed the social and policy level of inclusivity and also the institutional level of inclusivity. The Australian private Registered Training Organizations within the VET sector deliver the institutional level access to overseas students who might otherwise not have access to skills training in their home country. Armstrong and Cairnduff (2012) highlighted the lower representation of students from lower social economic background in higher education and said that this was of particular concern. Many overseas students came from lower social economic backgrounds (See personal characteristics in discussion section) and

are working part-time to support themselves. VET provides the opportunity for these students to upgrade their skills and enhance their opportunities to be gainfully employed. Access to higher education through the Australian VET sector should aim therefore to achieve the three goals mentioned by Labaree (1997), namely democratic equality, social efficiency and social mobility.

When considering the balance of equity against quality in the international student market place, it is necessary to consider reasonable adjustment and equity to cater to the needs of a diverse student population. This adjustment creates a delicate balance between equity and quality which many Registered Training Organizations have to make (Lingard, Rizvi, & Taylor, 2001). Henry, Lingard, Rizvi, and Taylor (2001) stated:

> Identifying the ends and means for offering high quality education and training for all is to emphasize the equity concerns so prominently, but instead of 'quality' and 'equality' being sharply contrasted, the aim should now be to bring these two broad aims into full harmony (p. 63).

Further in the OECD paper, what was meant by full harmony was that educationally disadvantaged and under-represented students should not be such that their exclusion entailed economic, social and individual costs to these students.

In Australia, the Training Package Products Policy ("Training Package Products Policy" 2014) explicitly included in the important policy statement, the Access and Equity policy which stated:-

1. Training Package developers, and the National Skills Standards Council (NSSC) in endorsing Training Packages, must meet their obligations under Commonwealth anti-discrimination legislation and associated standards and regulations.
2. Training Package developers must ensure that Training Packages are flexible and that they provide guidance and recommendations to enable reasonable adjustments in implementation.

This policy statement is unique to the VET characteristics in that, it is prescriptive that training packages developers take into consideration of access and equity and reasonable adjustment in the design of training packages. This provides for flexibility for individuals with wide ranging capability, capacity, cultural background and various

impairments or disability to participate in education and training to gain a nationally recognised qualifications or skill sets.

As specified in Standards of the Standards for Training Packages ("Standards for Training Packages", 2014), Standard 1 listed - Training Packages consist of the following:

1. NSSC endorsed components:

    o   units of competency;

    o   assessment requirements (associated with each unit of competency);

    o   qualifications; and

    o   credit arrangements.

2. One or more quality assured companion volumes.

Standard 4 ("Unit of Competency", 2014) also states that Units of competency specify the standards of performance required in the workplace. The superseded Training Package Development Handbook provided a succinct explanation of the Unit of competencies, where it was stated that the Unit of Competency gained from these VET courses enable graduate to gain specified skills, knowledge and attitudes relevant to effective participation in an industry, industry sector or enterprise. It covers all aspects of workplace performance and involves performing individual tasks; managing a range of different tasks; responding to contingencies or breakdowns; and, dealing with the responsibilities of the workplace, including working with others. Competency requires the ability to apply relevant skills, knowledge and attitudes consistently over time, and in the required workplace situations and environments.

Typically, each of the VET courses are developed by packaging a series of units of competency which conformed to the National Skills Standard Council requirements as define in the Standards for Training Packages. Each package of units of competency when successfully completed or in other words, when the student is assessed to be competent for all the required units of Competency, a relevant certificate will be awarded under the Australian Qualification Framework (AQF). AQF is described as:

> …The AQF is the national policy for regulated qualifications in Australian education and training. It incorporates the qualifications from each education and training sector into a single comprehensive national qualifications framework. The AQF was first introduced in 1995 to underpin the national system of qualifications in Australia encompassing higher

education, vocational education and training and schools. (Australian Qualifications Framework, 2014)

In summary, some of the key characteristics of VET courses include access and equity within the new standard. Training Package developers must ensure inclusivity for a diverse range of learners and enterprises, ensure range statements take into consideration differing work environments and provide advice on reasonable adjustments for people with disabilities. These specific characteristics of VET courses were selected in consideration of their relevance to the international students.

Employability

The recent report by the Productivity Commission (2011) stated that: "…For most VET students, an employment-related outcome is the main motivation for undertaking training. (p. 87). This report emphasises that employment opportunities motivate the students in their preference for a VET qualification. The recent report by Misko (2012), concluded that Higher-level non-school qualifications, among them Certificate III and Diploma Level qualifications led to better job outcomes. The same report highlighted employers' preference to use local labour, but may include migrant and temporary workers who are already in Australia (temporary workers include international students). However, the same author found that some international students who acquire qualifications with training providers not well known to employers, or to recruiters, might have paid a great deal of money to get a qualification which is not highly regarded by employers. This, in part, might be due to a perceived lower quality of learning and is a major issue for the private Registered Training Organizations that cater mainly to international students. However, Sheldon and Thornthwaite (2005), question the responsibility of employers in their push for the structuring of VET courses to include employer's aspiration of employability skills.

Curtis and McKenzie (2001) cited basic skills which are defined as skills in literacy and numeracy, and the use of information technologies; intellectual abilities which include critical and creative thinking and planning and organisation; and personal attributes like motivation, as important skills to teach for employment. Education and Training has always focused heavily on the employability of students undertaking VET courses, and the issue of employment motivation is an important determinant of quality. Curtis and McKenzie (2001) argued that high level job-specific technical skills and

generic employability skills are essential to competitive advantage to employers. With the slowdown in economic activities across the manufacturing and services industries, some employment opportunities have shrunk (see Figure 2.2), thereby having a direct effect on international students who are dependent on jobs from these industries. The present research includes the employment prospect as part of the VET Characteristics.

Figure 2.2 Australian Unemployment Rate Jan 2014

Source: Australian Bureau of Statistics (2014-02-02)

PERSONAL CHARACTERISTICS AND SOCIAL ECONOMIC ISSUES

In the current economic environment, international students are exposed to many challenging issues, and some of these issues will influence their perceptions of VET education. Marginson, Nyland, Sawir and Forbes-Mewett (2010) concluded that studies of international student security expose opportunities, difficulties, danger and courage on a large scale in the global student market. There are many unresolved issues confronting students and their families, including personal safety, language proficiency, finances, possible abuses at work, sub-standard housing, dealings with immigration authorities, student networks and personal support, and issues of loneliness, racism and segregation. Marginson (2011) highlighted the need for a wider investigation of the needs of international students and specifically considers a system-wide approach that is

designed to attract participation from state and federal governments, as well as the wider community. Marginson in his paper (2011) said:

> It can be argued that the ESOS Act provides insufficiently for the security and rights of international students. The Act is relatively strong in two areas: immigration compliance and consumer protection (p. 21).

On the one hand these students are welcomed as consumers and given the protection of consumer rights, but due to their alien nationality status, some of their human rights may be ignored. Marginson (2010) emphasised:

> …international students are temporary migrants. Nations have the option of treating them as quasi-residents, or as outsiders. Everywhere they are treated as outsiders. Nowhere do they enjoy comprehensive human rights in local law… (p. 6).

The issue of security, or as suggested above as part of the human rights, is one example of many issues affecting international students that will affect their perception of quality of learning experiences. Academics have long understood that student achievement, as measured by outcomes, has much to do with the student demographics and/or social economic background, and that international students are particularly exposed to challenges outside their school environment. Ross and Mahlck (1990) said:

> Since the mid-1970s, governments have placed more and more emphasis on the quality of education outcomes – particularly in the acquisition by students of higher level of knowledge and skills. This change in focus has brought with it an increasing demand for more information about education outcomes … and about the factors associated with home, the neighborhood, the school, and the teaching learning process that affect student achievement (p. 157).

The study by Mantz Yorke and Liz Thomas (2003) in United Kingdom found:

> …success in retaining students from lower socio-economic groups required a strong policy commitment to access and retention, backed up by practical action. (p. 63)

From the perspectives of the RTOs, the kind of practical actions needed include creating a learning environment that is friendly and secure; emphasis on student support services for students, particularly in their first year of study; emphasis on formative assessment; recognition of the importance of the social dimensions of learning; and responding positively to student changes in engagement. Looking at the private Registered Training Organizations within the VET sector, these factors will pose some challenges due to the

physical environments that are typically compact with limited open space for socialisation, and the limited resources which are available to respond to student engagement.

SUMMARY

Looking at the VET system's quality assurance system as a whole, be it the input, process or the output system, there remains a gap where the direct measure of the perceived quality of learning experiences using an effective measuring method like Rasch measurement has not been done in recent times. While the quality assurance system in VET continues to be tightened through new compliance regulations and adding on costs and through the introduction of new standards and legislative changes putting more pressure on demands for resources and increasing costs, an effective measurement tool that can provide a reliable and effective measure for the key performance indicators is needed. In constructing and applying a modern measurement tool like Rasch measurement in the current research with a set of valid construct of variables as defined for the present study, it is hoped it is possible to add to our understanding of the perception of quality of learning experiences of the overseas students in Western Australia.

Given that there are gaps in the VET literature in regard to research in Western Australia, for international student perceptions of quality in VET and specifically in the measurement of variables related to quality, such as student motivation and self-concept together with personal and VET context variables, the present study will attempt to 'plug those gaps', at least partially, through the present research study.

The next chapter explains the theoretical framework of the study.

This chapter discusses the theoretical framework for the present study. The theoretical model and the predicted relationships between the independent and dependent variables are discussed in detail. The chapter concludes with the explanations of the predictive structure of the dependent variable perceived quality of learning experience, and independent variables Self-concept and Motivations; in the context of the differences of the situation variables VET Course Characteristics and Personal Characteristics of Students.

THE THEORETICAL MODEL

The theoretical model to be tested in the present study is depicted in Figure 3.1. The relationships depicted in this model and the explanation below will be tested in this study.
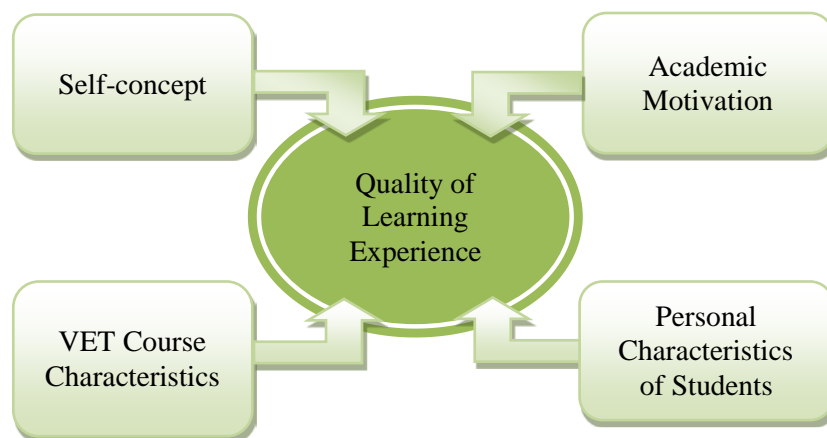
Figure 3.1: The Theoretical Model Showing Relationship between Variables
Source: Designed by author for the study

PREDICTED RELATIONSHIP BETWEEN QUALITY OF LEARNING EXPERIENCE AND INDEPENDENT VARIABLES

The dependent variable is Students' Perceptions of the Quality of Learning Experiences. It is expected that the dependent variables will be related to two other

variables: (1) Self-Concept of Academic Achievement and (2) Motivation to Achieve Academically. It is expected that the higher the self-concept of academic achievement, the higher the expected quality of learning experiences, and <u>vice versa</u>. As discussed in the literature review section, previous studies provided empirical evidence that self-concept of individual students manifested through the students' confidence in their capabilities, and in their sense of achievement and personal drive to engage with academic studies. In this study, questions are designed to establish student's self-assessment of capability through the responses by students to the questions of their capacity to cope with the course and to successfully complete the course. Students were also asked about their sense of achievement by responding to questions on the effort they put into their study to improve their academic standing. As for the students' engagement, it is determined by the assessment of their interaction with fellow students and teachers, and their participation in social activities. It is expected that a higher self-assessment of capacity to achieve a successful outcome will deliver a better learning experience. Likewise, if more effort is applied to improve academic standing, there will be a higher learning experience achieved. Furthermore, students who engage academically and socially will certainly gain better and more overall learning experiences. For these reasons, self-concept is expected to be positively co-related to perception of quality of learning experiences.

Similarly, the expectation is that, the higher a student's motivation to achieve, the higher will be the expected quality of learning experiences, and <u>vice versa</u>. As discussed in the literature review, Motivation can be exhibited by individuals who set high standards, establish goals, are task focused, make concrete efforts and demonstrate the desire to learn. To study this relationship, the questionnaires asked the students if they try to achieve good results and if they set themselves academic goals. They were also asked whether they complete all the tasks assigned, did their best to achieve good results in their studies and showed a strong interest in the course they were studying. It is expected that, the higher the scores they provided in response to these questions the higher will be their learning experiences. The expectation is Motivation has a positive co-relation with the quality of learning experiences.

PREDICTED RELATIONSHIP BETWEEN QUALITY OF LEARNING EXPERIENCE AND VET COURSE CHARACTERISTICS

There are five aspects of VET courses which are expected to relate to Perception of Quality of Learning experiences. The characteristics of VET Courses selected for this study are: (1) is the VET course value for money; (2) does the VET course provides reasonable adjustment; (3) does the VET course lead to good career opportunities; (4) does the VET course utilise the latest technology; and (5) does the VET course has a high reputation in their home country. Each of the VET Course Characteristics is investigated using a question where the students are asked if each of the characteristics is true (yes) or false (no). In each of these characteristics, it is expected that a positive response would relate to higher perception of quality of learning experiences and vice versa.

Value for Money (VET Course Characteristics)

VET courses for overseas students typically last six months for each certificate level (example, Certificate IV in Business), on completion of each certificate level, the students are awarded a certificate if they successfully obtained competencies for all the requirements of the course. These six monthly certificate courses may not be of the equivalent level with the university courses, as defined under the Australian Qualifications Framework (AQF), nevertheless, it is a nationally recognised qualification. Six months is equivalent to a semester in the tertiary education sector and typically it cost more per semester for the university course compared to a six month course (example, Certificate IV in Business) in the VET sector.

In some cases, some overseas students may not have achieved the necessary entry qualification needed to enrol into a university course and the VET sector can provide an alternative pathway to enter a university course. By taking the VET courses with accredited Registered Training Organisations, overseas students can gain credits for the university courses, and be eligible to be enrolled into relevant university courses. This can reduce the amount of time they spend at the university and also reduce the costs of gaining the university qualification.

It is this cost advantage of VET courses and gaining additional paper qualifications by studying VET courses which add value to the VET courses. It is therefore expected that students studying these VET courses will understand this value advantage, and will have higher perception of learning experiences. The Value for money question expects a yes or no answer from the respondent, and it is expected that students who indicate a yes response will have a higher learning experiences, and <u>vice versa</u>.

Reasonable Adjustment

As discussed in the literature review, Reasonable Adjustment in VET courses takes into consideration the relevance, equity and access to learning opportunities. VET courses have the unique characteristic in their design that can take into account the learner's circumstances in the delivery and assessment of VET courses. This characteristic of providing Reasonable Adjustment can be implemented in consideration of learner's physical disability, language, literacy and numeracy abilities. Beside these, the VET courses allow for contextualisation of the course content. Contextualization refers to adjustments to course contents to align with the industry and the nature of the job which the learners came from. This contextualization adjustment is to assist the learners to better comprehend their learning journey and allow the course to be more relevant to the learners' requirements of their workplace. This study asked the students if the VET courses they are enrolled into made reasonable adjustment to their personal circumstances and if they think the VET course is suitable to their education background. It is expected that students who answer yes to these questions perceived positively that there has been Reasonable Adjustments made to suit their personal circumstances will also rate higher their quality of learning experience than those students who have a negative response to these questions.

Leads to Good Career Opportunities

As discussed in the Literature Review, practical trade skills and employment are two of the strong features in the design of the VET courses and these are also features

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commonly promoted as positive characteristics of the VET sector. Anecdotal evidence also suggested that students are attracted to VET courses because of the employment opportunities created by the skills acquired through the VET courses. In this study, students are asked if they perceived that the VET courses in which they are enrolled lead to good job prospects. It is expected that a 'yes' answer to this question should result in students experiencing higher quality of learning experiences and a 'no' answer relating to a lower quality of learning experience.

Utilise the Latest Technology

In a technologically driven digital society of today, the learning environment and the application of technology in a work environment are important to students. As the target population of this study is international students, and many of these students came from the developing world or countries with limited exposure to the latest technologies, it is advantageous to the VET industry, if one of the differentiating factors of the VET sector, is the provision of the latest technology within the learning and application environments. For this study, the question asked of these students is, does the course in which they are enrolled utilise the latest technologies. It is expected that a 'yes' answer to this question should relate positively to the perception of higher quality of learning experiences, and a 'no' answer should indicate a lower perception.

Has a High Reputation in Their Home Country

As seen in figure 1.1 (Chapter One), Australia ranks 3rd in the world in terms of market share of tertiary international students from around the globe. It is possible that Australia ranks highly in all the source markets of our international students because of our high reputation in their home country. If students are attracted to the VET courses because of the high home reputation of the VET course, then it is expected that their perception of the quality of learning experiences will be higher. If, however, the reverse is true, then their perception of their learning experiences will be lower. To explore if this relationship is true, the students were asked if they think that the VET course in which they are enrolled has a high reputation in their home country.

PREDICTED RELATIONSHIP BETWEEN QUALITY OF LEARNING EXPERIENCE AND PERSONAL CHARACTERISTICS

There are six personal characteristics that are expected to be related to quality of learning experiences: (1) Gender; (2) Age; (3) Personal safety; (4) Country of Origin; (5) Financial Background; and (6) Level of Prior Education. In this study, questions were designed for students to provide personal details using a choice of four nominated answers except for gender. Each of these six Personal Characteristics expects a nominal response using labels from 1 to 4. The details of the classifications are available in the Section IV of Appendix A. The expected relationships between each or combination of the personal characteristics and quality of learning experience is explained below.

Gender, Age and Country of Origin

The above personal characteristics on their own or collectively are expected to impact on the quality of learning experience. It is expected that males from Asian countries are expected to rate the quality of learning experiences higher than females because they often have to provide for their families more than Asian females. Students from Asian countries are expected to rate the quality of learning experiences higher than students from other countries because Asian students often have to provide for their families back home. If the male student and Asian students carry this sense of responsibility, they will be more driven to achieve better qualification and hence perceiving a higher quality of learning experiences. It is also expected that these male students or Asian students, being more driven will better apply themselves in their effort to achieve better qualification and will result in higher quality of learning experiences. It is intended that this study will uncover the relationships between Gender, Country of Origin and perception of quality of learning experience.

Similar to Asian male students, older students are expected to rate the quality of learning experiences higher than younger students because they know that they have to go back home and provide for their families and hence will be more driven to achieve better academic qualification and enjoying better quality of learning experience.

Financial Status and Prior Level of Education

Financially-poorer students are expected to rate the quality of learning experiences higher than financially-richer students because they know that they have to go back home and provide for their families. Poorer students are expected to maximise their efforts to gain qualifications which can improve their financial status and they are expected to therefore gain better quality of learning experiences. Students with a higher level of prior education from their home country are expected to rate their quality of learning experiences higher than those students with a lower level of prior education. Students who pursued high levels of education are expected to have acquired better learning skills and hence are more likely to experience higher quality of learning experiences.

The Dependent Variable "Perceptions of QUALITY of Learning Experiences"	The Independent Variables "Self-Concept of academic achievement" & "Motivation to achieve academically"	The Situation Variables "VET Course Characteristics" and "Personal Characteristics"
❖ Quality Sub-groups (1) My course (2) Learning resource (3) My teacher (4) Social and the art	❖ Self-Concept sub-groups (1) Capability (2) Perception of achievement (3) Confidence in academic life	❖ Vet Course Characteristics (1) Value for money (2) Reasonable adjustment (3) Lead to good career opportunities (4) Application of technology (5) High reputation in home country
	❖ Motivation sub-group (1) Standard (2) Goal (3) Task (4) Effort (5) Desire to learn -interest	❖ Personal Characteristics (1) Gender (2) Age (3) Personal safety (4) Country of origin (5) Financial background (6) Level of prior education

Figure 3.2: Structure of the Variables and their Relationships with the Situation Variables

Source: Designed by author of the present study

The general structure of the dependent variables, Quality, Self-Concept and Motivation, are given in Figure 3.2 above. They are explained in more detail below and their structure, otherwise called their construct validity, is tested in later chapters using Rasch Measurement.

PREDICTIVE STRUCTURE OF THE VARIABLE QUALITY

The dependent variable Perception of Quality of Learning Experience is formulated using four aspects, namely: (1) My Course; (2) Learning Resource; (3) My Teacher; and (4) Social and the Art. These four aspects are considered to be the best indicators to collectively represent the Quality of learning experiences. The above four aspects are supported by previous studies on quality of learning experience as discussed in the Literature Review section. Cheng and Yin (1997), Bateman, Keating, and Vickers (2009) discussed the resources input model, and the Front-end systems and the conclusion is that such systems enhanced the quality and authenticity of VET programs. Bate et al. (2009) also commented that the output mechanisms deliver quality training products. Nightingale and O'Neil (1994) listed improved quality of learning, focus on the courses, and focus on facilities, as keys to ensuring quality of learning, and Hill, Lomas, and MacGregor (2003) recommend quality of the lecturers, student engagement, and social and emotional support systems as essential ingredients for providing quality learning.

These four traits for quality of learning collectively provide the necessary structure to determine the perception of quality of learning experience of the students. Each of these traits is tested using a series of questions in a Guttman style pattern, ordered by difficulty from easy to hard; For example, under My Course, the question for doing research for assignments on your own is easier than discussing in groups and preparing for group discussion. Similarly in assessing quality under My Teacher, asking for help from the teacher is easier than talking to the teacher after class for help. The horizontal item order by difficulty of perspective is created by asking the respondents to answer each question in two ways; (1) one answer is their expectation before the start of the course, and the other answer (2) is what actually happened after the start of the course. In reality, it is easier to have the attitude of wanting to do research for assignments on your own (before the start of course,) but the actual behaviour to do so (after the start of course) is harder because behaviours are harder than just thinking.

This multi-dimensional order of item difficulties vertically and horizontally from easy to hard has robust predictive power and, if proven, should enhance reliability and validity of the scale data. The structure can be tested by creating a linear scale using

Rasch Measurement facilitated with the RUMM2030 computer program and comparing predicted with the actual item difficulties.

PREDICTIVE STRUCTURE OF THE VARIABLE SELF-CONCEPT

The variable Self-concept is formulated using three aspects, namely (1) Capability; (2) Perception of Achievement; and (3) Confidence in Academic Life. These three aspects are considered to be the best indicators to collectively represent the variable Self-concept. The above three aspects are supported by previous studies on Self-Concept as discussed in the Literature Review section. From Descartes (1596-1650), recognition of the body and the mind, Song and Hattie (1984), definition of the three sub-groups achievement, ability and the uni-dimensional construct (Wylie, 1979) to multi-dimensional, hierarchical self-concept (Shavelson, Hubner, & Stanton, 1976), Self-concept and it's relationship with qaulity has been established in research. Ali, McWhirter and Chronister (2005) concluded that there is positive relationship between Self-Efficacy and Vocational Outcome Expectations for adolescents in vocational education and Training. Waugh (2001) tested the aspects of Self-Concept and listed capability, perceptions of achievement, confidence in academic life, relationships with peers and family, personal confidence, and physical self-concepts as key indicators of Self-Concept.

The three aspects of Self-Concept collectively provide the necessary structure to determine the Self-Concept for the students. Each aspect is examined through a series of items in a Guttman ordered pattern by difficulty, from easy to hard. For example under Capability, the items asked were: "Do you think you are smart enough to cope with your course", which is easier than, "do you feel confident of your ability to complete the course". Similarly, under the Perception of Achievement aspect, the item: "Do you like doing assignments" is easier than "Do you try hard to get high marks to gain any kind of rewards".

The other dimension of the structure is created by asking the respondents to answer each item in two ways; one answer is for their Self-Concept before the start of the course, and the other answer is for Self-Concept after the start of the course. In reality, it is easier to have the attitude of thinking you are smart enough (before the start of course,) but the reality of it (after the start of course) can be harder. The order of difficulties from easy to hard vertically down the list of questionnaires for each aspect

of Self-Concept and the horizontal order from easy to hard (left to right) can be tested by comparing the predicted item difficulty order with the actual measured item difficulty order on the same Rasch scale.

PREDICTIVE STRUCTURE OF THE VARIABLE MOTIVATION

The variable 'Motivation to achieve academically' is structured using five aspects, namely (1) Standards; (2) Goals; (3) Tasks; (4) Effort and (5) Desire to Learn. These five aspects are considered to be the best indicators to collectively represent the variable Motivation. The above five aspects are supported by previous studies on Motivation as discussed in the Literature Review section especially the studies by Waugh (2002), and Waugh and Njiru (2005) which guided the selection of these indicators. Misko, Nguyen, and Saunders (2007) concluded that a student having an intrinsic interest in a trade is the main motivation for studying in the VET sector. These four aspects of motivation collectively provide the necessary structure to determine Motivation to achieve academically. Each aspect is examined through a series of items in a Guttman ordered pattern by difficulty, from easy to hard. In designing the items for these aspects from easy to hard, the questions are structure with increasing difficulties; for example under Standards, the item "Do you feel that you are studying as hard you can" is easier than "Do you try to achieve better results than what you have achieved so far". Similarly in assessing motivation under the Goal aspect, "Do you set academic goals" is easier than "Do you try to find better ways to achieve your academic goals".

The other dimension of the structure is created by asking the respondents to answer each item in two ways, one answer is for their Motivation before the start of the course, and the other answer is for Motivation after the start of the course. In reality, it is easier to have the attitude of wanting to study as hard as you can (Before the start of course,) but the actual behaviour to do so (after the start of course) is harder. The order of difficulties from easy to hard vertically for each aspect of Motivation and the horizontal order from easy to hard (left to right) can be tested by creating a linear scale using the Rasch Measurement.

The next Chapter discusses the measurement theory and the Rasch Measurement Methodology.

CHAPTER FOUR – MEASURING THE VARIABLES

Chapter Four discusses applicable measurement theories including True Score Theory (Chapman, 2007; Keats, 1997) and Rasch Measurement (Rasch, 1960, 2010, Andrich, 1988a, 1988b). The advantages of Rasch Measurement over the True Score Theory of measurement are explained. The detail description of the variables, some aspects of the design of the study and the data collection process are also discussed. This is followed by discussion of the administration of data collection, the trial of the questionnaires and any changes and modifications to the measurement instruments.

TRUE SCORE THEORY

Measurement of psychological constructs with True Score Theory (sometimes called Classical Test Theory) are known to be problematic. Crocker and Algina (1986) identified five measurement issues with true score theory psychological assessment: (1) measurement of psychological constructs are always indirect and typically based on perception of behaviour of the construct under study, different measurement procedures will likely lead to different results; (2) the limitation of taking finite number of measurements which may not measure the true skills; (3) due to the limitation of the sample and the specific point in time the samples were taken, it is likely the measurement is subject to error, as it is likely no two samples will produce the same measurements due to different errors which may occur at the point in times; (4) there is no defined units of measurement or a predefined scale with equal distance like the inches on a ruler therefore interpreting the value derived is complex; (5) measurement of observable responses on its own has little meaning unless interpreted in light of relationships to other variables within the theoretical construct of the study. Crocker and Algina (1986) attributed the development of the Classical True Score Model to the work of Spearman (1907, 1913), Guilford (1936), Guilliksen (1950), Magnusson (1967) and Lord and Novick (1968). Spearman's model defined the mathematical equation to express the observed scored into $X = T + E$, where X is the observed test score, T the

true score and E a random error component. This is considered the foundation for the Classical True Score model of measurement.

Keats (1997) discussed two forms of True Score Theory; (1) Weak True Score Theory and (2) Strong True Score Theory. In its weak form, Keats argued that to estimate a true score range from a raw score range, the assumptions are that the error variance is constant over raw score and regression of true score on raw score is linear. For both of these assumptions, he expressed his doubts. Keats went on to state that the more consistent a test beyond a certain point, the lower the correlation between raw and true score. Keats commented that weak true score theory leads to 'standard score' which is one standard deviation above the mean and in a normal distribution will represent 84th percentile of the population, but, test scores are not always normally distributed, and therefore the measurement may not be valid. To overcome the weakness of the assumptions of consistency of error variance and linearity of regression of true score on raw score, Keats proposed the binomial error model, or so called Strong True Score Theory.

In Strong True Score Theory, Error Variance $= x(n-x)/(n-1)$, where x represents the raw score and n the number of items in the test (Keats, 1997). Thus, the error variance is equal to the estimated variance of a binomial distribution. Keats proposed that the bivariate distribution of raw scores and relative true score can be generated numerically (see Keats, 1964a, and Keats and Lord, 1962) and thus the two criticisms of weak true score theory can be overcome. Nevertheless, they would still be non-linear scores and recent Rasch measurement researchers have pointed this out.

Bond and Fox (2001) asserted that:

> ... psycho metricians, behavioural statisticians, and their like conduct research as if the mere assignment of numerical values to objects suffices as scientific measurement (p. 2).

In the same book, they argued that

> …Abstractions of equal units must be created and calibrated over sufficiently large samples so we are confident in their utility. Then these abstractions can be used to measure attributes of our human subjects (p. 3).

Waugh and Chapman (2005) investigated an example of data which used the typical True Score Model with factor analysis to develop an internal sub-scale within an overall scale of a list of all inter-related items within the defined theoretical construct. Waugh

and Chapman argued that the problems of a True Score Model using such an approach are: (1) it provides a non-linear scale and it is not necessarily unidimensional; (2) the items are not ordered by difficulty from easy to hard; and (3) the item difficulties are not calibrated on the same scale as the measures. In another approach where true score theory is applied using a Likert (1932) style of response categories, the typical responses 'strongly disagree', 'disagree', 'neutral', 'agree' and 'strongly agree' are not considered to be ordered from low to high. The 'neutral' and 'Undecided' responses do not necessarily reflect a higher value than 'disagree' and may subsume answers from respondents who 'don't know' or 'can't decide', 'don't want to answer', or are ambivalent. Edwards and Kenney (1946) noted:

> …What has been demonstrated, as we pointed out earlier, is that Likert-selected items do not necessarily fall at equally-spaced intervals along the theoretical continuum posited by Thurstone and Chave. (p. 79).

Comparing the above approaches, Waugh and Chapman (2005) proposed that researchers needing to construct unidimensional measures can achieve a better measurement scale using the Rasch Measurement model.

In exploring the various types of measurement techniques, and the development of the scales for measurement, Thurstone, Likert, Guttman and Semantic Differential scales were investigated. In constructing the Attitude scales, Thurstone advocated the method of equal appearing intervals (Thurstone, 1929) and Likert proposed the method of summated ratings (Likert, 1974). While both produced comparable measurements in some aspects of the attitude scale constructed, Likert scales produced reliability coefficients that are higher than those for Thurstone scales. Thurstone's scale construction is laborious and Likert Scales do not suggest equal interval between units of measures (Edward & Kenney, 1946). Kaplan discussed the Semantic Differential scale and highlighted the bipolarity of the so call "favourable", "unfavourable" response and the implied midpoint ambivalence; and recommended improvements to the scale (Kaplan, 1972). The main problem remains that all the above scales are not linear even though they are acknowledged as less arduous to construct than both Likert and Thurstone scales. Guttman scaling was developed by Louis Guttman in 1944 and it applies to a set of items ordered by difficulty from easy to hard. Guttman scaling is usually applied to dichotomous data but may be applied to polytomous data as well.

Through the clever ordering of dichotomous data (e.g. Yes or no, agreed or disagreed), ordered by difficulty, it is possible to create a linear unidimensional scale, this concept contributed to added importance of the development of such attitude scales.

RASCH MEASUREMENT

The use of the Rasch Measurement Model is currently the only known way to measure variables in the human social sciences that satisfy the requirements for linear measurement. In 1960, George Rasch developed the mathematics of this model for a set of ordered-by-difficulty items scored zero or one (Rasch, 1960, 2010; Andrich, 1988a). Andrich extended this model and generalised it for a set of ordered-by-difficulty items scored in more than two responses (Andrich, 1988b). There are five basic requirements for making linear measures of variables in the human social sciences (Wright, 1999). Firstly, measures must be linear, so that they can be added and subtracted. Raw scores or counts are not measures and should not be treated as though they are measures. Waugh and Cavanagh (2002a) stated that most data from the instruments used in schools have rarely been scrutinised using Rasch measurment. Cavanagh and Romanoski (2006) asserted that ordinality itself is not sufficient as a measure and the categories across the ordinal data cannot assumed to be interval because it says nothing of the distance between them. The scale should represent a measure of a single variable or trait and, for the measurements to be meaningful, it must be possible to calibrate a scale which conveys the same unit of measure along the same continuum. That is, equal distances between the numbers on the scale must represent equal amounts of the variable being measured.

The second requirement is that the item calibrations along the scale (like the item difficulties) should not depend on whose responses the item difficulties are calculated. That is, the item difficulties must be sample-free. This scale therefore can be used to measure any item regardless of the varying degree of difficulty, like the ruler which can be used to measure distances it does not matter who is measuring.
The third requirement is that the location of the measures along the continuum must be consistent and they should not depend on which items they were calibrated. That is, the person measures must be test-free (for example, people's heights do not depend on which ruler is used).

The fourth requirement is that missing data must not matter. Measurements should be able to be made without all the data being known; and the fifth requirement is that the measurement method should be relatively easy to apply. This means that the unit of measurement must be the same all along the scale and the difficulties of the items from easy to hard (like the ruler starting from low value to high value) must be on the same scale as the person measure (e.g. capability, attitude, behaviour) from low to high. This is necessary so that measures related to different items, as reflected by equal distances between units along the scale, can be added. For the measurement to meet this test, it has to be able to provide consistency when differences between items and persons are analysed statistically. It will therefore be possible for the measurement model to reflect inconsistencies when data are fed through the measurement model and for invalid data to be discarded. This also means that the measurement scale should hold true regardless of the items to be measured or the individuals who answered the items. The scale must therefore be independent of the opinions or the attitudes of the designer. The data must fit the measurement model, not the other way around. Based on these requirements it is thus clear that percentage scores and the total scores based on a test cannot be linear measures.

Rasch measurement has become the measurement of choice for human sciences. It became increasingly prominent with the introduction of computer programs in the 1970s. The robustness, effectiveness and efficiency made it the best measurement tools in social sciences to create linear scale for attitude and behaviour and it is the measurement technique for the current study. The Rasch Measurement Model (Rasch, 1960, 2010; Andrich, 1988a, 1988b) is considerably better than True Score Theory Measurement, or percentage scores, to make a linear measure in the human sciences. The strength of Rasch Measurement is the ability to create scale-free and sample-free linear measures with standard units called logits (Waugh, 2007) using a mathematical formulae. Wright (1977) in the article Solving Measurement Problems with the Rasch Model explained:

> … Of all latent trait models proposed for person measurement, the Rasch model has the fewest ingredients, just one ability parameter βv for each person v and one difficulty parameter δi for each item i. These parameters represent the positions of persons and items on the latent variable they share. They are used in the model to determine the probability of person v succeeding on item i. (Rasch 1960, pp. 62-125; 1966a; 1966b; Wright, 1968). (p.97)

He went on:

> … The way βv and δi are combined is by forming their difference $(\beta v - \delta i)$. This difference governs the probability of what is supposed to happen when person v pits his ability against the difficulty of item i. Since either parameter can vary from minus infinity to plus infinity, so can their difference. But probability must stay between zero and one. To deal with this, the difference $(\beta v - \delta i)$ is applied as the exponent of a base, $e^{(\beta v - \delta i)}$ and this term is used in the ratio $e^{(\beta v - \delta i)}/[1 + e^{(\beta v - \delta i)}]$ which is the Rasch probability for a right answer. (p.97)

This simple model is then represented as $\mathbf{P_{vi}} = e^{(\beta v - \delta i)} / [1 + e^{(\beta v - \delta i)}]$

THE SIMPLE LOGISTIC MODEL (SLM) OF RASCH

The Simple Logistic Model of Rasch as developed by Rasch (1960, 1980, 2010) specified that the items for the measures of the variable have to be designed conceptually from easy to hard. Similarly the person measure is ordered from low to high achievers. This concept then expects that the person with a low measure will have a high probability of answering the easy questions but a low probability of answering the harder and most difficult questions. It is required that the difficulty of the items are in general agreement among the persons answering them, otherwise such items will have to be excluded from being used to calibrate the scale. It is also possible that the person measures do reflect consistently their position along the measuring scale which is consistent with their ability to answer the types of questions (from easy to hard). In each of the scenarios above it is necessary that the items have to be reviewed for their fit along the order of difficulties and discarded when they don't. It is entirely possible also that a person has no ability or much too high an ability, to be tested on these items and therefore he or she should be omitted from the scale. Table 4.1 shows the equations of the Simple Logistic Model of Rasch.

Table 4.1 Equation for the Simple Logistic Model of Rasch

Probability of answering Positively (i.e. score 1) for person v	$= \dfrac{e^{(\beta_v - \delta_i)}}{1 + e^{(\beta_v - \delta_i)}}$
Probability of answering negatively (i.e. score 0) for person v	$= \dfrac{1}{1 + e^{(\beta_v - \delta_i)}}$
Where e = natural logarithm base (e=2.7318) β_v = parameter representing the measure (ability, attitude, performance) for person v δ_i = parameter representing the difficulty for the item i Source: Rasch, 1960/1980	

These equations are then applied to the responses collected from the set of questionnaires designed and based on the conceptual model of the current study. The RUMM 2030 computer program is used to help solve the equations and to produce a set of graphical presentations which are easy to read and attractively exhibited in colours. This program is designed to test the various aspects of the data in terms of their consistency to the construct of the variables and theoretical framework. It is also capable of identifying the validity and consistency of the items and persons fit to the measurement model. The output from the RUMM 2030 program can be generated by feeding the response data in a text format and it is quick and efficient in reducing data analysis turnaround time.

The SLM of Rasch provides a Person Reliability Index which indicates the extend to which the order of location of the person along the linear continuum which is replicable across a parallel set of items when the individuals' abilities are well targeted to the items. Similarly the Item Reliability Index from the SLM of Rasch indicates the repeatability of the order of the item location along the linear continuum reflecting the difficulty level of each item. The item person test of fit can be applied to the actual responses to examine if the data fit the measurement model.

EXTENDED LOGISTIC MODEL OF RASCH

Andrich (1988b) explained that the word "Extended Logistic Model" was used because the model extends Rasch (1960/1980) Simple Logistic Model. The Extended Logistic Model can take the form as shown in Table 4.2.

Table 4.2 Equations for the Extended Logistic Model (ELM) (Masters & Wright, 1997), (Andrich, 1988b), (Masters, 1997)

Probability of person n scoring in outcome category x of item I (For x = 1,2,3,4…Mi)	$\pi_{nix} = \dfrac{\exp \sum\limits_{j=0}^{x} (\beta_n - \sum\limits_{j=1}^{x} \delta_{ij})}{\sum\limits_{k=0}^{m} \exp \sum\limits_{j=0}^{x} (\beta_n - \sum\limits_{j=1}^{x} \delta_{ij})}$

Where

e = natural logarithm base (e=2.7318)

$\sum (\beta_n - \sum \delta_{ij})$ is the sum of $\beta_n - \sum \delta_{ij}$

β_n = a parameter representing the measure (ability, attitude, performance) for person n

$\delta i1, \delta i2, \delta i3 … \delta iMi$ = are a set of parameters for the item i which jointly locate the model probability curves for item i. There are Mi item parameters for an item with Mi + 1 outcome categories.

The ELM with extended number of categories:

Two categories (dichotomous response)	π_{ni0}	=	$\exp[0(\beta - \delta)]/\psi$
	π_{ni1}	=	$\exp[1(\beta - \delta)]/\psi$

Three categories (trichotomous response)	π_{ni0}	=	$\exp[0 + 0(\beta_n - \delta s_i)]/\psi$
	π_{ni1}	=	$\exp[-\tau_{i1} + 1(\beta_n - \delta)]/\psi$
	π_{ni2}	=	$\exp[-\tau_{i1} - \tau_{i2} + 2(\beta_n - \delta_i)]\psi$

m categories (polytomous response)	π_{ni0}	=	$\exp[0 + 0(\beta_n - \delta_i)]/\psi$
	π_{ni1}	=	$\exp[-\tau_{1i} + 1(\beta_n - \delta_i)]/\psi$
	π_{ni2}	=	$\exp[-\tau_{1i} - \tau_{2i} + 2(\beta_n - \delta_i)]/\psi$
	π_{nix}	=	$\exp[-\tau_{1i} - \tau_{2i} - \ldots - \tau_{xi} + x(\beta_n - \delta)]/\psi$
	π_{nim}	=	$\exp[(-\tau_{i1} - \tau_{i2} - \ldots - \tau_{im} + m(\beta_n - \delta_i)]/\psi$
	ψ	=	$\sum\limits_{k=0}^{m} \exp[(-\sum\limits_{k=0}^{k} \tau_{ij} + k(\beta_n - \delta_i)]$

Source: Masters, 1997; Andrich, 1988b

Essentially the Extended Logistic Model allows for an increasing number of response categories being measured for the purpose of developing the linear measurement scale. In the current study, there are four response categories for each item, 'Not at all' (scored 0), 'Not often' (scored 1), 'Often' (scored 2) and 'Very often' (scored 3). The Extended Logistic Model is similar to the Simple Logistic Model except in the current study there are three thresholds for the four item response categories as mentioned above, rather than one threshold for the two response categories. The thresholds are expected to be incrementally higher between the response categories from 'Not at all' to 'Very Often'. In calibrating the scale, the interval measurement starts from the easiest item with negative logit values to the most difficult item, that is those with positive logit values. Technically there is no absolute zero on this measurement scale, as there is no absolute certainty of zero measures for each of the items for the current study. Zero along this scale is set as the mean of the item difficulties. In applying the Extended Logistic Model, θn is the item measure for the person trait level and b_{ig} specifies the average item difficulty or the category boundary along the measurement scale.

THE RUMM2030 COMPUTER PROGRAM

The present study uses Rasch measurements to make linear measures of the dependent variables with the Rasch Unidimensional Measurement Model computer program (RUMM2030) (Andrich, Sheridan & Luo, 2013). This program is arguably one of the two best Rasch measurement programs currently available, the other being WINSTEPS. The RUMM program calibrates the item difficulties and the person measures on the same linear scale with the production of various statistics and graphs to support the measure. The RUMM2030 computer program performs the functions as follow:

1. Consistency and logical order of response categories – The program calculates the thresholds between response categories for each item and produces a response category curve showing the relationship the measure and the probability of each response category;

2. Item-trait test-of-fit (dimensionality) – The program tests the interaction between the responses to the items and the person measures along the linear scale of the variable. The program presents the collective agreement (or otherwise) for all items for persons of different measures along the same scale;

3. Test of global Item-Person fit – The program examines the response patterns of items across all persons and the response patterns of persons across all items using residuals. The differences between the actual responses and the expected responses as estimated using the parameters of the measurement models are called the residuals. If the data fit the Rasch measurement model, when these residuals are standardised, the mean of these residuals is near zero and the standard deviation is near 1;

4. Person Separation Index - Based on the estimated true variance among the person measures and the estimated observed variance of the person measures, the RUMM2030 program calculates the ratio of the two as the separation index. A low index value reflects a narrow range of person measures which may not sufficiently cover all persons from low to high abilities. Improved targeting of persons across a wider range of abilities can improve this separation index;

5. Test of fit person and item to measurement model – Examining the residuals (differences of observed value against estimated value of the Rasch measures) should reveal if the person is answering the items consistently (based on order of difficulty) in line with the person measure.

6. Item Characteristic Curve – Item Characteristic Curves demonstrate how well the item discriminates the person ability by plotting the expected value against the person measures. A steeper gradient of the "S" curve indicates better item discrimination characteristics as the probability difference is higher.

7. Person Measure and Item Difficulty Map – The program produces two maps, one for the distributions of person measures along the variable (measured in logits) and the other is for the distribution of item difficulties for the same variable. The map shows which are the easy and which are the hard items, and how are they targeted at the person measures. They show whether the items are too easy or too hard for the persons being measured and if new items are needed or if too many items of similar difficulties are included.

8. Construct Validity – Structurally and conceptually, the items for the current study are designed in the order of difficulty increasing vertically downwards, and across to the right. Using the RUMM2030 program this conceptual design of order item difficulties can be tested and, if proved to be true, it provides strong support for the validity of the structure of the variables, as postulated by the theoretical framework.

QUESTIONNAIRE FOR THE DEPENDENT VARIABLE

A questionnaire devised by Waugh (2003) to measure student quality of learning experiences at a university has been modified and used in the present study (see Appendix A). The study by Waugh is modelled in the current study for the following reasons:

1. The present study focuses on adult students with similar age profiles and expected to have similar academic goals as the students attending university courses in Waugh's' study.

2. The quality traits in the Waugh's study resembled those expected to have significant impacts for the current study. In particular the selected six traits in the current study (activities and assignment, discussion, practical, learning resource, teacher, and social and the arts) are issues of special relevance to the VET environment. VET courses involve competency based training where activities and assignment, discussion and practical are key delivery mechanism it is therefore necessary to focus on these issues. The learning resources, teacher and social and the arts are common constraints in private registered training organizations due to their typical small campus and fewer students' population; gaining an understanding in these issues is key to this study.

The modified Quality of Learning Experiences questionnaire consists of 15 items (questions) conceptually ordered by difficulty under four sub-groups namely Activities & Assignments, Discussions, Practical, Learning Resource, Teacher, and Social and the Arts. Each sub-group is made up of two to three questions with increasing item difficulties; for example, in the teacher's sub-group the questions start with "Asking

teacher how to do well in assignments" to "seeking guidance, discussing interest, ambitions and career goals". This order in difficulty from easy to hard is extended vertically downward to the next sub-group social and the art which includes questions regarding "discussion with students from different countries, culture and religious beliefs" to "attending art and cultural events and discussing cultures and the arts with other students". This vertical order of difficulty from easy to hard is also replicated horizontally where each question is answered from two perspectives - what student expected before the start of the course and what actually happened during the course; it is expected that it is easier before the course start than to actually do them during the course. Each question was scored according to an ordered set of response categories: not at all (score = 1), not often (score = 2), often (score = 3), and very often (score = 4).

QUESTIONNAIRES FOR SELF-CONCEPT AND MOTIVATION

The questionnaire on Self-Concept of Academic Achievement (Waugh, 2001) has been modified to measure this independent variable of the VET students in the current study (see Appendix A). It consists of ten items ordered by difficulty under three sub-headings: Capability, Perception of Achievement, and Confidence in Academic Life. Each item is to be answered in two perspectives - what I expected (easy) and what actually happened (harder) - giving an effective item sample of twenty responses. In adopting research questionnaire, it was considered by Waugh (2001) Capability, Perception of Achievement and Confidence in Academic life as critical to factors impacting on perceptions of quality learning of the overseas student because of the challenges faced by these students as they adapt to the Australian VET system and the social and cultural environment in Australia. The competency base training system, the student visa conditions imposed on the students by the immigration department, and the language and culture are all elements which can impact these international students' self-concept. It is therefore important to study the self-concept of these students and the relationship it has on the quality of learning of these international students. In the light of these challenges these students are requested to assess their capabilities, their achievements and their confidence.

The questionnaire on Academic Motivation to Achieve for Malaysian High School Students (Waugh & Njiru, 2005) was modified to measure the motivation of the VET students in the current study (see Appendix A). The modified questionnaire consisted of seven items ordered by difficulty under five sub-groups; Standards, Goals, Tasks, Effort and Desire to Learn. Each item was answered from two perspectives - what I expected (easy) and what actually happened (harder) - giving an effective fourteen items for the variable academic motivation. Each item was scored according to an ordered set of response categories: not at all (scored 1), not often (scored 2), often (scored 3), and very often (scored 4). Conceptually, these five sub-groups are selected for their relevance and proven structure (Waugh & Njiru, 2005) in relation to the theoretical framework postulated in the current study. In view of the lifestyle and regulatory regime which these international students are adjusting to while residing and studying within Australia, the motivating factors as mentioned above are selected to investigate the impacts they have on the quality of learning.

The design of the order of difficulty from each sub-group from easy to hard for these two variables is extended vertically downward to the next sub-group much the same as the design of the dependent variable. This order of difficulty from easy to hard is also replicated horizontally where each question is answered from two perspectives - what students expected before the start of the course and what actually happened during the courses; It is expected that it is easier before the course start than to actually implement them during the course. Each question was scored according to an ordered set of response categories: not at all (score = 1), not often (score = 2), often (score = 3), and very often (score = 4).

QUALITATIVE QUESTIONS

In addition to the Rasch inspired quantitative data collected, there are qualitative responses for each of the variables. These qualitative open ended responses provide participants with opportunities to state their opinions regarding their learning experiences, academic self-concept and motivation. In the present study, the qualitative approach is intended to extend the data collection channels for student to freely express their opinion in ways that best suit their circumstances. The students were informed that

they have the freedom of expression and any information provided would remain anonymous. The inclusion of qualitative questions is aimed at seeking answers from more dimensions and perspectives for the issues being investigated and in fact Patton's (1999) observation is relevant:

> A consensus has gradually emerged that the important challenge is to match appropriately the methods to empirical questions and issues, and not to universally advocate any single methodological approach for all problems. (p.1)

The qualitative data were analysed using the Miles and Huberman approach (1994, 2002). Miles (1984) argued the case for open-minded approach and pragmatism of applying mixed method in empirical research. Miles advanced the idea of pursuing qualitative analysis as part of the complement to quantitative research.
The current research synthesises written qualitative responses into themes and response categories which assist in deeper understanding of the student's emotional connection to the variables being investigated. Respondents were prompted to respond either positively or negatively to each variable and to the categorical variables. Some of the critical information which emerged is of particular interest, particularly those that relate to learning experiences. The detail messages from each category were then compared to the quantitative findings, anecdotal evidences and investigated when conflicting evidence surfaced.

The structure and quantitative design of the questionnaires means that it is not possible to address all quality issues due to limitations of scope and time to responses. However, the qualitative responses allowed the respondents to express their point of view on issues that matter to them most. The qualitative responses delivered the additional channels to explore other factors that influenced the respondent's judgement for the quality of learning experiences. The qualitative questionnaires have certainly enhanced the understanding of student views of quality in VET.

The next chapter is Research Design and Methodology.

CHAPTER FIVE - RESEARCH DESIGN AND METHODOLOGY

This chapter explains the research design and methodology used in the present study. This present study used quantitative and qualitative approaches and both methods are reviewed followed by the discussion of the rationale for using the mixed method design. The chapter continues with a description of the administrative and ethical approvals required before data collection and the pilot studies were performed. The chapter ends with the outcomes of the pilot testing and the refinement of the questionnaires undertaken as a result of the pilot testing.

RESEARCH DESIGN

Prior to the design of the present study, reviews of empirical research papers have high-lighted the existence of various relationships between the dependent variable, Quality of Learning Experiences, and Self-Concept and Motivation. The main aims of the present study were to create linear scales of Perceptions of Quality of Learning Experience, Self-Concept of Education Achievement and Motivation to Achieve Academically, and then investigate their relationships with two situation variables, VET course characteristics and personal characteristics. It was then decided that the research questions can best be answered using a set of questionnaires which encompass both quantitative and qualitative methods. The design of the quantitative questions was based on Rasch measurement principles and the qualitative questions were open-ended, allowing respondents to freely express their views for these variables.

The next stage of the design involved reviewing the structure of the variables followed by the creation of individual questions for each sub-group within the defined structure of the variables. It was intended that these structures supported by the items form the basis in which the theoretical framework would be tested. The selected items were primarily based on the research done by Waugh and Njiru (2003; 2005a).

Stage three of the design involved creating the format of the questionnaire and formulating the response categories for each item. These were guided by Rasch measurement methodology, refined to suit the VET context and worded in the language familiar to the target overseas students. The questionnaire was then printed and

submitted to the research supervisor, teachers and trainers within the VET sector for comments. The set of questionnaires were then amended and finalised ready for pilot testing. The pilot test results from 50 respondents were found to confirm the excellent psychometric properties for the Rasch measurement scale and were subsequently used with minor amendments.

MIXED METHOD

The reasons for using the quantitative and qualitative approaches in this study are: (1) to expand and (2) to broaden the content of the responses for the current study. This technique according to Sandelowski (2000) and Patton (1999), can collaborates the two approaches, extending and verifying the results. Patton discussed the value of various approaches to triangulation as the means to enhance research. In this present study, the comparison of the findings between qualitative and quantitative data, reviewing the qualitative data against anecdotal evidence, and comparing conflicting evidence for and against particular findings were used.

Sandelowski (2000) advocated mixed method as dynamic and capable of expanding scope and improving analytical power of studies. As it is the case in this current study, the students came from diverse educational and cultural backgrounds. The use of mixed methods not only expanded the source of data collected it also enabled cross verifications of data collected between findings from the quantitative and qualitative data. In the study of application of mixed method in VET research, Cameron (2010) concluded that mixed method research is growing in popularity in VET research. While there was historical rivalry and differences of opinions from both quantitative and qualitative researchers, mixed methods have increasingly become the preferred choice in modern research design (Johnson & Onwuegbuzie, 2004; Tashkkori & Teddlie, 2003). Researchers are implementing various research approaches to leverage on strengths and weaknesses of different methods, and combining quantitative and qualitative approaches in education research have been found to be useful (Bergman, 2008; Clark & Creswell, 2008; Punch, 2009). Among the commonly quoted benefits for combining both quantitative and qualitative methods, Greene, Caracelli and Graham (1989) and Creswell (1999, 1994) listed: (1) strengthening reliability and validity through collaborations of findings across different approaches; (2) emergence of complementary evidence of overlapping or dissimilar facets of phenomenon; (3)

developing subsequent approach based on the first approach in the design of the research method; (4) discovery of paradoxes, contradictions and fresh perspective; and (5) using mixed method to add scope and breadth (Creswell, 1994, p. 175).

Creswell, Plano Clark, Gutmann, and Hanson (2003) discussed the concept of the mixed method design and the approach in the data collection process. The design model adopted in this current research is using qualitative methods to extend the quantitative findings and the approach in the data collection is simultaneous where the students were asked to answer both the quantitative and qualitative questions as part of the same questionnaires. The design model and the approach are as shown in the figure 5.1.
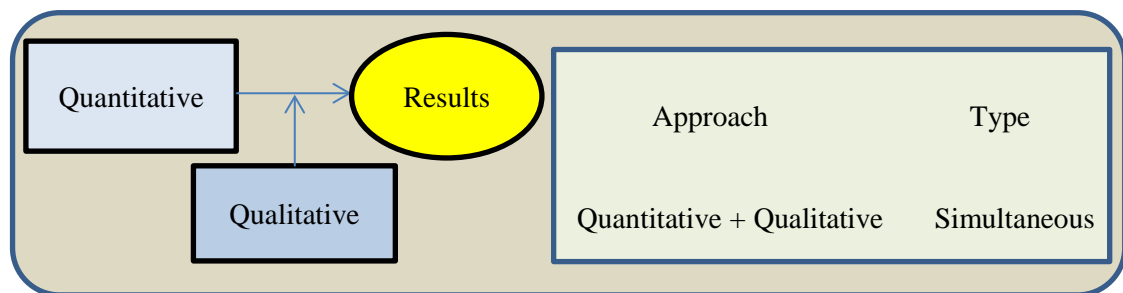
Figure 5.1 Mixed Method Design

As discussed by Creswell et al. (2003), the design type for this current study is concurrent triangulation where the priority in this implementation is quantitative and the extended results are carried out at the analysis phase.

Quantitative

Proponents of the quantitative method believe in the simplicity, precision, broad acceptance by readers and the ease of analysis as keys to its popularity among researchers. Punch (2003) advocated independent interpretation, systematic comparability and objectivity as key arguments for the quantitative method. The choice of using a quantitative approach and designing and analysing the data using Rasch measurement methodology is one of the significant aspects of the present research study. Reliable and accurate measurement techniques is essential for any research, this is made possible by quantitative research especially with the use of Rasch measurement assisted by the advanced computer program like the RUMM2030 software. In this current study, the strength of the quantitative analysis is applied using a set of questionnaire designed on the concept of Rasch measurement (Andrich, 1998; Masters,

1997; Rasch 1960/1980) and Guttman Scaling (Fabrigar & Macgregor, 2006; Guttman1944). As discussed in the previous chapter, linear, objective and unidimensional measures are considered to be an improvement to the ordinal scales that are based on True Score Theory (Waugh & Chapman, 2005). Waugh (2007) advocated that the Rasch measurement model is by far the superior measurement method for human sciences.

Qualitative

The benefits of qualitative research were realised by the inclusion of open-ended questions in the questionnaires. Inclusion of the qualitative approach in the present study provides added flexibility for the respondent to provide input to the study which the respondents may otherwise not be able to do. This qualitative approach is implemented by adding an open ended question for each of the variables in the present study where respondents can freely provide relevant inputs. With the benefit of anonymity, respondents were free and less inhibitive to express their opinions and explain their reasons for their opinions. Miles and Huberman (1989) argued that qualitative data are rich descriptions that provide explanations of processes and contexts Huberman and Miles (2002) vigorously defended the value of the qualitative messages and the validity of such messages. Miles and Huberman (1994) highlighted that qualitative data help in the quantitative analysis by "validating, interpreting, clarifying and illuminating quantitative findings" (p.41). Patton (1999) also advocate "… rigorous techniques and methods for gathering and analyzing qualitative data, including attention to validity, reliability, and triangulation…" (p.1) as key concerns.

For the present study, the added information sourced from the qualitative data has enriched the findings of the present study by collaborating and extending findings from the Rasch-created linear measures highlighting complementary evidence; and producing added perspectives which point to other issues that were not part of the quantitative questionnaires.

DIFFERENCES BETWEEN QUANTITATIVE AND QUALITATIVE RESEARCH

The essential differences between the quantitative and qualitative approaches are in the characteristics of the data and the methods in which the data are analysed. As the name suggests, the quantitative method collects quantifiable data in a numerical format, while the qualitative method gathers data in non-numeric forms (Punch, 1998). Quantitative data are typically analysed using statistical methods and can be efficiently analysed using powerful computer software, while qualitative data are analysed using interpretative or inductive approaches. Objectivity, simplicity, systematic and comparable are characteristics of the quantitative method and are often cited as advantages of quantitative method. Qualitative data on the other hand, leverage on its richness in its messages (Miles and Huberman, 1994) to deliver insight over and above what might not be found from the quantitative data. Qualitative methods emphasise the whole process of interaction with the informant within the real environment under study to generate quality outputs and inferences.

Stenbacka (2001) listed four concepts, validity, reliability, generalizability and carefulness, and these four concepts demonstrate the significant differences between quantitative and qualitative methods. Stenbacka went on to explain that validity is based on the object being measured, or "the intended object of measurement actually is measured", and "Validity is therefore achieved when using the method of non-forcing interviews with strategically well-chosen informants" (p.1). According to Stenbacka, reliability in the context of the quantitative method refers to results which can be reproduced while in qualitative approach "a thorough description of the whole process, enabling conditional intersubjectivity, is what indicates good quality when using a qualitative method…" (p.2) . Stenbacka argued that generalizability "is made possible by strategic choice of informants relevant to the study and not by statistically drawn samples." Stenbacka quoted Yin (1998) "… results in a qualitative study are intended to be general in respect to theory, not to population …". Carefulness in the eyes of Stenbacka "is to be most careful and systematic in making the process conscious for him/herself in order to describe it in the presentation of the study…" (p.3) . Stenbacka cited Walker (1995, p. 3) who stated that: "Analysis of qualitative material is more explicitly interpretative, creative and personal than in quantitative analysis, which is not to say that it should not be equally systematic and careful". Ultimately it must be noted

that it is the focus and purpose of the research which is central to the current research study as was advocated by Shulman (Shulman, 1986) and the use of mixed method has resulted in a better understanding than just using either method alone. This is also supported by Creswell and plano-Clark (2007).

ADMINISTRATIVE APPROVALS

This research proposal was subjected to review to ensure that it was feasible and appropriate for the level of award. The initial proposal for this current research study was discussed in depth with Professor Russell Waugh of Edith Cowan University before being presented to a review committee (University Seminar) with two of the Edith Cowan University lecturers as formal reviewers. After further refinement per the comments from the review committee, the final proposal was presented to the Graduate Research School for endorsement. This current research study was also subjected to the review process handled by the Edith Cowan University Human Research Ethics Committee (HREC). The assigned Project Number - 8489 KHO was approved by the ECU Human Research Ethics Committee (HREC) for the period from 20 September 2012 to 1 May 2014. In granting approval, the HREC has determined that the research project meets the requirements of the *National Statement on Ethical Conduct in Human Research*.

A letter was developed for the students (Appendix 4) explaining the purposes of the research and the voluntary nature for participation in the current research study. Students were informed that they are free to withdraw from the current study at any time or abstain from answering any questions that they choose not to answer.

DATA COLLECTION PROCEDURE

Twelve private Registered Training Organizations around metropolitan Perth were approached to participate in this research, of which six took part in the data collections. The data collection took approximately six months from April 2013 to October 2013. The criteria for students to be included in the current study were: (1) Students must be

enrolled in the Private Registered Training Organization; (2) the Registered Training Organization must cater for international students; (3) Students participating in the current study must be enrolled into either English Language Intensive Courses for Overseas Students (ELICOS) or Vocational Education and Training (VET) Courses; and (4) students must have completed at least one unit of the course in which they are enrolled or have completed at least one relevant course. The rationales for including these types of courses are (1) these are the common types of courses offer by private RTOs, (2) These are the most popular courses among the overseas students and (3) most students proceed to enrol into the VET courses after completing their ELICOS courses. It is expected that the inclusion of both these types of courses provide a more comprehensive measure of quality of learning experiences of the overseas students in the private RTOs.

Table 5.1 Characteristics of Sample

Characteristics	Description	Count	Percentages
Gender	Male	129	46.2%
	Female	150	53.8%
Age	<19	44	15.4%
	20 – 30	174	61.0%
	31 – 40	53	18.6%
	>41	14	4.9%
Country of Origin	Indian Sub-continent	56	19.1%
	South East Asia	59	20.0%
	East Asia	95	32.4%
	Others	83	28.3%
Family Financial Position (Self assessed)	Very Poor	3	1.0%
	Less than Average	27	9.4%
	Average	206	72.0%
	Above Average	50	17.5%
Prior Qualification (Home country)	Less than High School	16	5.6%
	High School	102	35.7%
	College Graduate	131	45.8%
	Post Graduate	37	12.9%

Note: These statistics are from the RUMM2030 analysis and do not include students with extreme scores on the Rasch analysis. Total number of students with full data was N=315.

The table 5.1 shows the overall profiles of the students who participated in the current study. They resemble the source countries from which the Australia education sector sources the students. The statistics also revealed that there were more female than male

students with 61% of them aged between twenty to thirty; 89.5 % of the students rated their family financial background as Average or better than average in their home country; and 58.7% of the students held a college degree or higher from their home countries.

Each participating Registered Training Organization nominated an individual who was briefed about the process of administering the data collection process. The briefing focused on the structure of the design of the questionnaire where participants must be told to answer each question in two perspectives, one answer for before the start of the course and the other for after the start of the course. The expectation and reason for the two perspectives were explained and the estimated time for completion of the questionnaire of 20 minutes were highlighted in the briefing. The nominated numbers of participants were each provided with a printed package consisting of Information Letter to Participants and a Set of Questionnaires. Teachers and Trainers were given a timeframe from two to four weeks in which they could decide the most appropriate time to carry out the data collection process.

QUESTIONNAIRES

The instrument used in this research to collect the quantitative data was a set of questionnaires consisting of thirty (30) items for the dependent variable, Quality of Learning Experiences, fourteen (14) items for the variable Self-Concept, twenty (20) items for variable Motivation, six (6) items for the situation variable VET Characteristics and six (6) items for the situation variable Personal Characteristics. Each of the variables also has an open ended qualitative question included at the end of the section for those items (see appendix A). The questionnaires were distributed by teachers and trainers and the requirement to answer in two perspectives was explained to the participants. Teachers and trainers were required to help with any queries that the students may have. The students answered the questionnaires individually and independently; participation was voluntary, anonymous and students could choose to withdraw from the process at any time; participation was completed by handing in the questionnaires at the end of the administration process.

PILOT TESTING OF QUESTIONNAIRES

The pilot testing of the questionnaires was done by teachers and trainers from one of the Registered Training Organizations included in the current study. The language for some of the items was simplified and number of items reduced for each variable. Subsequently fifty (50) students were selected for trial and the data collected from the trial were analyzed with the Rasch Unidimensional Measurement Model computer program (RUMM2030) (Andrich, Sheridan & Luo, 2013) to create three linear measures: (1) for Student Perceptions of Quality of Learning Experiences; (2) for Self-Concept of Academic Achievement; and (3) for Motivation to Achieve Academically. Forty-eight responses were found to perform as well as expected but two were rejected as unfit for the Rasch Model. The RUMM2030 program provides statistics in relation to the three variables to test their conformity to the Rasch Measurement Model, order of the item difficulty and student measures on the same linear scale. The program also tested the consistency of the test scoring and targeting in terms of the distribution and threshold difficulties against the person location along the same scale in standard units (called logits, the log odds of successfully answering the items). Further amendments were made to some of the wording of the items where they were deemed necessary after the initial Rasch analysis. Items for sub-group Task and effort were simplified to improved clarity.

The open-ended questionnaires were visually analyzed and the responses were considered acceptable. These fifty responses were included in the final sample for the current study. There were no further changes needed for the questionnaire and they were used for data collection in the present study.

The next chapter is the data analysis chapter (chapter six) where the output from the RUMM2030 program is explained and interpreted.

CHAPTER SIX – DATA ANALYSIS (PART I)

RASCH MEASUREMENT OF QUALITY

This chapter explains the Rasch Analysis of the data for Perception of Quality of Learning Experiences in order to create a linear measure of the international students' perception of quality (please refer to Appendix A for the questionnaire). The data collected for the present study were analysed with the RUMM 2030 computer program (Andrich, Sheridan & Luo, 2013). Selected outputs from the computer program are presented and interpreted. These show how a linear scale was created from which valid inferences can be drawn.

RASCH MEASUREMENT OF THE DEPENDENT VARIABLE

The Rasch measurement analysis explains the following outputs from RUMM computer program; global and person item fit to the measurement model, item-person interaction, Person Separation Index, Response Category Curves, Thresholds, Item Characteristic Curves and targeting graphs.

Initial Rasch Analysis

The initial Rasch analysis was performed with data from 30 items where each item was scored in four response categories: not at all (scored zero), not often (scored 1), often (scored 2) and very often (scored 3). Steps were taken to check the outputs from the program to ensure that: (1) the item thresholds were in the correct order from easy to hard as presented in the questionnaire and that those items that do not fit the correct order were discarded from final analysis; (2) The difference between the expected value (as estimated by the measurement model) and the actual value, namely the residuals were calculated; (3) the item-trait interaction test-of-fit was calculated based on a chi square, which indicates the consistency of the item difficulties and the person measures along the Quality of Learning linear scale. This indicates whether there was reasonable agreement among the respondents about the linear progression of the item difficulties along the scale; (4) Person Separation Index, which is the ratio of the true score variance among the respondents and the estimated observed score variance using the estimates of their ability measures and the standard error of these measures. For a good measure, it is desirable that this index should be greater than 0.9 or greater, which indicates that the measures are separated by more than their standard errors

(Andrich & Van Schoubroeck, 1989); (5) whether the items fit the measurement model satisfactorily; and (6) whether there is proper targeting of the item difficulties against the student measures. This is tested by the Person Item Difficulties graph and the Person-Item Threshold graph which indicate whether the items are too easy or too hard for the respondents. There is also a test of the agreement between the predicted (conceptualised) item order difficulty and the actual item order difficulty which tests the construct validity of the variable as intended. Based on the steps mentioned above, the initial Rasch analysis showed that all the thirty items for the Quality of Learning Experiences fit the model, except items 16 and 29. However, removal of these two items did not improve the scale and so they were included in the final analysis. This is acceptable because, in Rasch measurement, it is how well the items 'hang together' that determines the reliability of the linear scale created.

Final Results of Rasch Analysis

The final Rasch analysis with the RUMM 2030 program used data from N=303 respondents and 30 items to produce a good, reliable linear scale. The details of the outputs generated by the RUMM 2030 program are explained in subsequent paragraphs.

Summary of Fit Statistics

The RUMM 2030 computer program estimates the item-person interaction which establishes the overall fit statistics that determine whether the item estimations contribute meaningfully to the measurement of the construct. This calculation thus examines the consistency of the responses from the students and its agreement with the calculated difficulty of each item on the scale. The overall standardised residual statistics (See Table 6.1) have a distribution with a mean near zero and a standard deviation near one when the data fit the measurement model (Andrich, 1985), as is the case with the Perception of Quality of Learning Experiences measure. This means that there is a good arrangement of data for the persons and items according to the Rasch measurement model for this variable.

Dimensionality

There was an item-trait interaction chi-square of 138.39 with 120 degrees of freedom and a probability of 0.120. This means that the scale is constructed with reasonable agreement amongst the students about the linear progressive difficulty of the items all along the scale. This means furthermore that one parameter for each person (the person measure) and one parameter for each item (the item difficulty) can be used to accurately predict each person's response to each item, and this is what it means to be unidimensional.

Person Separation Index

The Person Separation Index is an estimate of the true score variance among the students and the observed score variance using the estimates of their ability measures and the standard error of these measures (Andrich & Van Schoubroeck, 1989) and it is 0.85. It is an indicator that the student measures are separated by more than their standard errors and 0.85 is very satisfactory.

Table 6.1 – Overall Test-of-Fit Statistics (N = 303, Total number of items = 30)

Quality of Learning Experience	Items		Persons	
	Location	Fit Residual	Location	Fit Residual
Mean	0.0000	0.2018	0.4446	-0.426
SD	0.3880	0.7202	0.6365	2.2236
Correlation [location / Std Residual]	-0.1072		0.0127	
Reliability Indices				
Person Separation Index	With Extremes : 0.85228		NO Extremes: 0.85228	
Item-trait Interaction				
Total Item Chi-Square	138.390			
Total Degree of Freedom	120.000			
Total Chi-Square Probability	0.120164			

Comments on Table 6.1:
Fit residuals have a mean near zero and a standard deviation near one when the data fit the measurement model, as it is the case here. This reflects good consistency of items and student scoring patterns.

Individual Item Fit

Items are arranged in the order of their calculated difficulty value with their probability of fit to the measurement model. The position of the item on the linear scale represents its level of difficulty in standard units called logits (log odds of answering successfully). All items fit the model with probabilities greater than $p = 0.10$ (see Table 6.2). The residuals shown in Table 6.2 represent the difference between the observed responses and the expected responses calculated from the Rasch measurement

parameters. Standardised residuals should fall between -2 and +2. Items 16 and 29 have probabilities less than p=0.10 and therefore do not fit the measurement model well and item 16 also has a residual greater than +2. All items, except 16 and 29, have a satisfactory fit to the measurement model but, even with these two items included, all 30 items 'hang together' to produce an acceptable scale with acceptable reliability.

Table 6.2: Individual item Fit Statistics for Quality of Learning Experience

Item	Location	SE	Residual	DegFree	ChiSq	DegFree	Prob
4	-0.545	0.087	0.458	289.93	6.225	4	0.182942
11	-0.482	0.081	0.829	289.93	4.351	4	0.360582
12	-0.470	0.080	-0.023	289.93	2.676	4	0.613495
19	-0.467	0.087	-0.203	289.93	3.523	4	0.474457
1	-0.419	0.087	0.492	289.93	1.545	4	0.818719
20	-0.414	0.080	0.364	289.93	2.391	4	0.664335
2	-0.315	0.083	0.788	289.93	4.964	4	0.290976
3	-0.275	0.086	0.493	289.93	2.175	4	0.703657
5	-0.271	0.081	-0.510	289.93	6.494	4	0.165164
6	-0.235	0.082	-0.262	289.93	3.335	4	0.503405
13	-0.191	0.078	0.332	289.93	1.376	4	0.848359
27	-0.190	0.079	-0.487	289.93	4.337	4	0.362351
10	-0.180	0.076	-0.542	289.93	4.542	4	0.337540
9	-0.155	0.080	-0.105	289.93	1.320	4	0.858026
28	-0.145	0.074	0.379	289.93	1.058	4	0.900889
16	-0.049	0.066	2.661	289.93	19.833	4	0.000539
14	-0.039	0.076	0.787	289.93	8.239	4	0.083216
7	0.025	0.079	0.870	289.93	3.661	4	0.453792
15	0.025	0.072	0.369	289.93	2.287	4	0.683137
8	0.054	0.080	0.348	289.93	6.098	4	0.191965
22	0.236	0.073	-0.362	289.93	5.544	4	0.235860
21	0.239	0.078	-0.520	289.93	4.617	4	0.328929
25	0.346	0.075	-0.255	289.93	2.616	4	0.624014
24	0.393	0.073	-0.799	289.93	3.501	4	0.477801
23	0.407	0.081	-1.172	289.93	8.568	4	0.072862
26	0.418	0.069	0.161	289.93	3.129	4	0.536433
29	0.560	0.071	1.017	289.93	12.286	4	0.015346
17	0.617	0.066	-0.024	289.93	0.803	4	0.938094
30	0.715	0.069	0.826	289.93	5.729	4	0.220303
18	0.809	0.064	0.142	289.93	1.169	4	0.883107

Notes on Table 6.2:
1. Location indicates the degree of difficulty of the item on the linear scale.
2. SE means standard error, and refer to the degree of uncertainty in a value
3. Residual is the difference between the expected value as calculated according to the Rasch measurement model and the observed value.
4. DeFree stands for degrees of freedom, and refers to the number of scores in a distribution that are free to change without changing the mean distribution.
5. ChSq stands for Chi-square
6. Prob refers to the probability based on Chi-square and indicates the level of certainty to which the item fits the measurement model.

Targeting

A Person-Item Threshold Distribution graph shows the item thresholds in standard unit called logits plotted along the same scale as the person measures. This graph shows how well the item difficulties are targeted to the student measures (see Figure 6.1). The graph demonstrates reasonable targeting of item thresholds (-2.8 logits to +2.2 logits) against the student measures (-1.2 logits to +3.2 logits). This graph shows the vast majority of the students were targeted by the items at appropriate difficulty. However, for future studies, perhaps a few more difficult items could be included to cover students of higher abilities (students with measures + 2.2 to +3.2 logits).
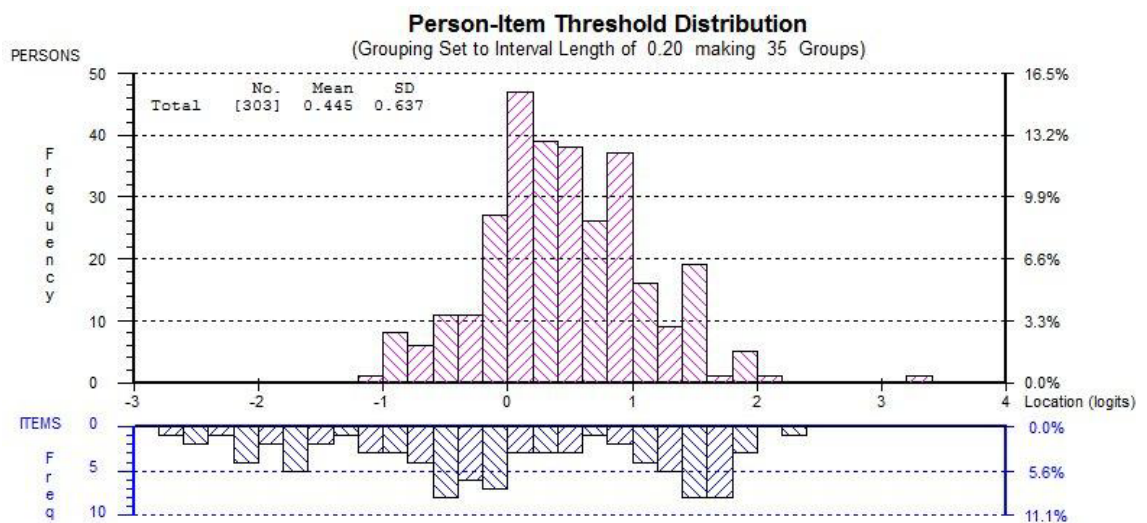
Figure 6.1 Targeting Graph for Quality of Learning Experience
Note: Person measures are on the top of the graph and Item thresholds are on the bottom section of the same scale in Logits.

Discrimination

Item Characteristic Curves examine the relationship between the expected response and the mean group student measures. These graphs display how well the item discriminates between groups of person with different abilities (see Figure 6.2). The Characteristic Curve for item 1 shows that the item discriminates well for students with different measures. The Item Characteristic Curve for all items were checked and found to be satisfactory, but are not shown here to avoid unnecessary repetition.
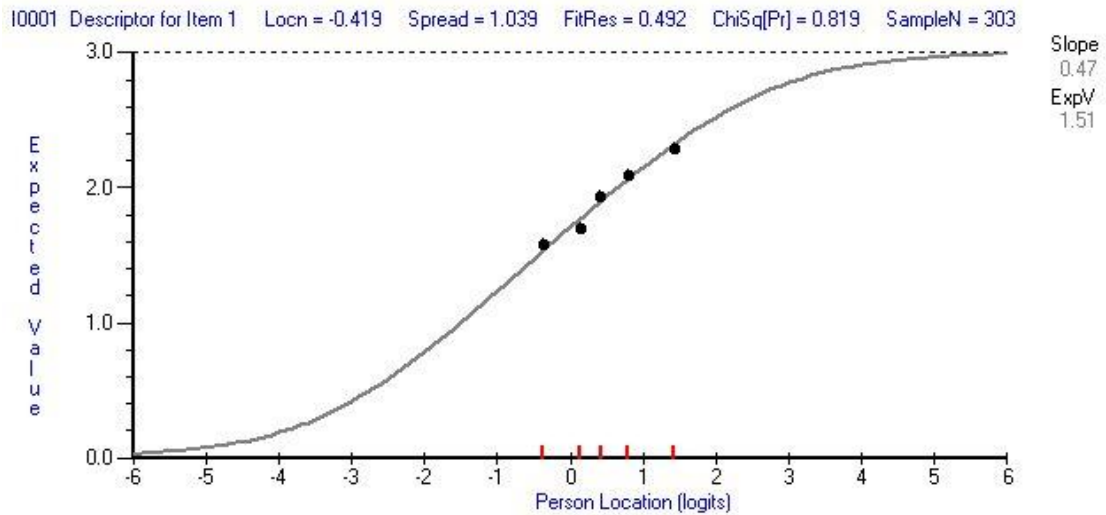
Figure 6.2 Item Characteristics Curve: Item 1 – Quality of Learning Experience
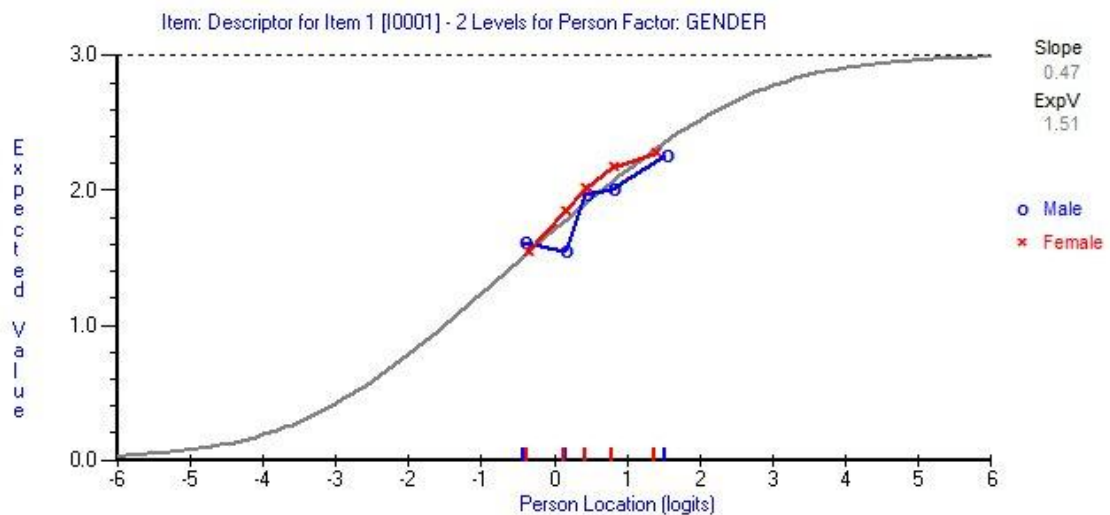
Figure 6.3 Item Characteristics Curve: Item 1 – by Gender

Figure 6.3, Item Characteristic Curve for Item 1 by gender, shows that there is no statistical significant item bias by gender (F=1.23, df=1,278, p=0.27). All the other Item Characteristic Curves by gender were checked and no significant gender bias was found. The graphs for these items are not presented here to avoid unnecessary repetition.

Consistency of Item Responses

Figure 6.4 shows the Response Category Curve for item 1 whose difficulty measure is -0.419. The graph shows that a student with a measure of -6 logits has a probability of about 1 in answering this item 'not at all' (score of 0). As the person

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measures increase the probability of answering the next category increases, as in the case of the red line showing the person with a measure close to -1 logit. The probability of answering the next category, 'not often' (score of 1), increases to almost 0.6. As the person measure reaches the highest level of +6 logits, the probability of answering the highest category 'very often' (score of 3) reaches 1. This means that the students have answered the response categories for item 1 consistently and logically.

The Response Category Curves for the other items were checked and they were found to be satisfactory meaning that the students used the response categories consistently and logically.
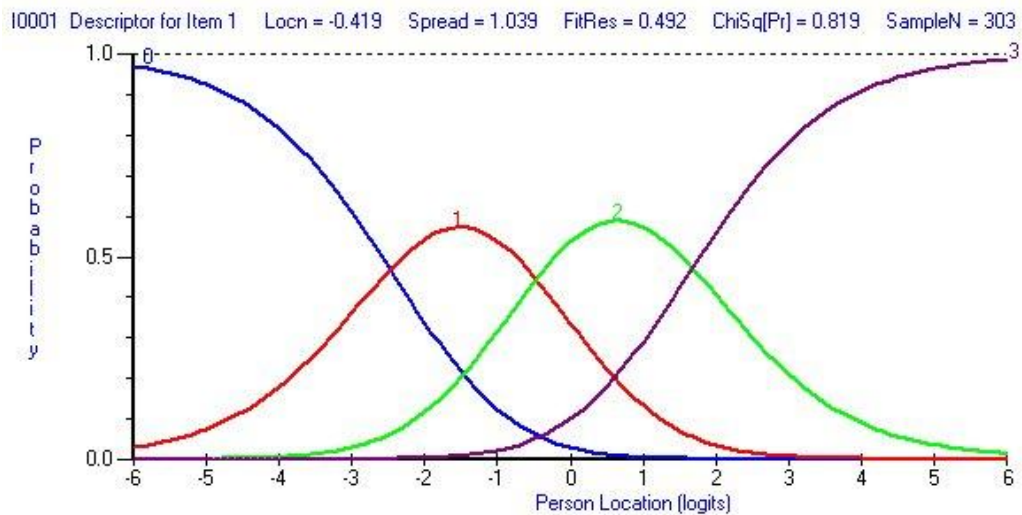
Figure 6.4 Response Category Curve (Item 1)

Item Difficulties for the Linear Scale

Table 6.3 shows the 30 items that 'hang together' sufficiently well to form a reliable scale for the measure of Perceptions of Quality of Learning Experiences. It lists the item difficulties on the same scale as the student measures of quality. The easiest item is number 4 (I seek more help from the teacher and do my own independent research to complete my assignments after the start of the course – difficulty -0.545 Logits). The hardest item is number 18 (I use library facilities in the college or any other libraries around for my study and assignments – difficulty +0.809 Logits).

Table 6.3 Items and their difficulties (I=30)

Items Description	Before start of course	After start of course
Activities & assignments		
1 - 2 Do you combine ideas from text book, internet and other sources to complete your assignments?	-0.419	-0.315
3 - 4 Do you seek more help from teacher, and do your own independent research to complete your assignments?	-0.275	-0.545
Discussion		
5 - 6 Do you ask questions in class, lecture or group activities?	-0.271	-0.235
7 - 8 Do you do independent research to prepare for group discussion or for class activities?	0.025	0.054
Practical		
9 – 10 Do you use any of the skills you have learnt from your course in your place of work or work experience?	-0.155	-0.18
11 – 12 Do you think of how to use the skills you learnt from the course in your current job or in your future job?	-0.482	-0.47
Sub-Group: Learning Resources		
13 - 14 Do you feel that the college provides you with enough facilities to study and research?	-0.191	-0.039
15 – 16 Do you use the college computer to do research for your study and assignments?	0.025	-0.049
17 - 18 Do you use the library facilities in the college or any other libraries around you for your study and assignments?	0.617	0.809
Sub-Group: My Teacher		
19 - 20 Do you ask your teacher about how to do well in assignments and course work?	-0.467	-0.414
21 - 22 Do you talk to your teacher after class about your assignments and course progress?	0.239	0.236

Note Table 6.3 continues on the next page

Table 6.3 (continues)

Items Description	Before start of course	After start of course
23 - 24 Do you seek guidance or discuss about your interest, ambition and career goals with your teacher?	0.407	0.393
Sub-Group: Social and the arts		
25 - 26 Do you meet fellow students from different classes or courses in and out of the college?	0.346	0.418
27 - 28 Do you have discussion with students who came from a different country, culture or religious beliefs?	-0.19	-0.145
29 - 30 Do you attend arts and cultural events and enjoy discussions about the culture and the arts with others?	0.560	0.715

CONSTRUCT VALIDITY- QUALITY OF LEARNING

The data for the Quality of Learning Experiences 'hang together' well enough to produce a reliable linear scale. The horizontal item difficulty order is reasonable, although not in perfect agreement with the theoretical order, thus providing some support for the construct validity of the variable. Quality of Learning Experiences was expected to be easier before the course started than after the course started and this was mostly supported by the data. While difficulties of items 16 and 29 are a little out of place, overall the construct is reasonably solid and the inclusion of these two items did produce a better scale than 28 items.

The vertical order of the item difficulties revealed a few problems in the design of the items in the order of difficulties. (1) The sub-group practical seems to be rated easier by the students. This may be due to the nature of the VET courses being practice focussed and, hence, the application of the skills learnt from their course is already part of the course (e.g. Hospitality or English Language courses). Future study could move these items up the vertical order or increase the order of difficulty (e.g. checking if student need to re-learn a skill in practice or finding skills learnt not practical at all). (2) The sub-group learning resource could be enhance to focus on environment, equipment, tools (software and hardware) rather than libraries as VET courses are practice oriented, those resources are more relevant than the libraries. It is also more common for private

Registered Training Organisations not to have libraries and rely more on online resources. (3) Sub-group social and the art can also be improved by focusing on the social activities which the private Registered Organisations could provide. This could reveal more of the overall quality the training organisation delivered to the students. A majority of the horizontal ordering of the item difficulties fit the measurement model except for items 15 and 16, and 23 and 24. Items 15 and 16 which are about the usage of computers, it is possible that due to the heavy usage of computer within the VET courses, the actual use of computers is more than what was initially expected by the students. Perhaps improvement to the computer skill of the students could be the focus rather than the usage of the computer itself. Items 23 and 24 relate to guidance from teacher, as most international students may find the Australian VET system different and more complex than education in their home countries. This may also alter substantially the student's attitude towards seeking help. This is an area warranting further investigation for training colleges to provide better information before students arrived at the colleges.

SUMMARY

A reliable linear scale measuring International Students Perception of Quality of Learning Experiences was created using the RUMM2030 computer program with N=303 students and 30 items from six Registered Training Organizations in Western Australia. The following six aspects support this conclusion and, while the scale is not perfect and can be improved, valid inferences can still be drawn from its use.

1. The data from the 30 items ' hang together' well enough to produce a linear scale with a Person Separation Index of 0.85, meaning that the measures are sufficiently separated by more than their standard errors;

2. The scale is constructed with reasonable agreement amongst the students about the linear progressive difficulty of all the items along the scale;

3. All items fit the model with probabilities greater than $p = 0.10$, except for items 16 and 29 ; But their deletion did not improve the reliability of the scale, so they were retained;

4. Targeting of item difficulties against the student measures was satisfactory but some improvement in this targeting should be done in any future use of this scale;

5. The scale shows that all the items discriminate satisfactorily and that there is no significant gender bias in any of the items;

6. The scale shows the students have answered the response categories consistently and logically;

Valid inferences can now be drawn from the scale and these are reported through Chapter Seven. The next chapter, Chapter Seven, explains the relationships between the dependent variable, Perceptions of Quality of Learning Experiences and some VET characteristics, and between Perceptions of Quality of Learning Experiences and some student Personal Characteristics using the reliable measure created in the present chapter.

CHAPTER SEVEN – DATA ANALYSIS (PART II)

RELATIONSHIPS BETWEEN QUALITY OF LEARNING EXPERIENCES AND VET CHARACTERISTICS AND PERSONAL CHARACTERISTICS

This chapter explains the Rasch Analysis of the relationships between the Perception of Quality of Learning Experiences and the context variables VET Characteristics and Personal Characteristics. The data collected for the present study is processed by the RUMM 2030 computer program and the outputs from the program are interpreted to show the relationships between the various characteristics.

For the context variable VET characteristics, the Rasch measurement analysis focuses on the relationships between Quality of Learning Experiences and the following six characteristics: (1)Value for Money; (2) Suitability for the Education Background; (3) Reasonable Adjustment; (4) Leads to Good Career Opportunities; (5) Utilises the Latest Technology; and (6) High Reputation in Home Country. For the context variable Personal Characteristics, the Rasch measurement analysis focuses on the relationship between Quality of Learning Experiences and the following six characteristics: (1) Gender; (2) Age; (3) Personal Safety; (4) Country of Origin; (5) Family's Financial Position; and (6) Prior Academic Qualification.

RELATIONSHIPS BETWEEN QUALITY OF LEARNING EXPERIENCES AND VET CHARACTERISTICS

Data for each of the VET course characteristics were collected using questions (see Appendix A) where the students were asked if each of the characteristics were true (yes) or false (no). In each of these characteristics, it is expected that a positive response, in other word a yes answer to the question, would relate to higher perception of quality of learning experiences and vice versa. The details of the outputs generated by the RUMM 2030 are explained in subsequent paragraphs.

Value for Money

As shown in Figure 7.1, a majority of the 303 students responded positively (213 said yes versus 90 who said no) that there was value for money for the VET courses in which they were enrolled. The mean score for the student who gave a 'yes' response to the Value for Money question is 0.501 which is higher than the 'no' mean score of 0.345, and this is approaching statistical significance (F=3.789, df=1,301, p=0.05). More students with higher quality measures tended to respond positively that there was value for money for the VET course in which they were enrolled. This is as predicted in the conceptual model where it was expected that students who believe there is value for money will also experience higher quality of learning experiences.

Figure 7.1 Relationship between Quality of Learning Experiences and Value for Money
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
        2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Suitable for the Education Background

As shown in Figure 7.2, a majority of the 287 students responded positively (235 said 'yes' 52 said 'no') that the course in which they were enrolled was suitable for their education background. The mean score for a positive response is 0.501 and this is higher than the no mean score of 0.328. It is approaching statistical significance (F=3.35, df-1,285, p=0.07). Thus there is a tendency for students with higher quality measures to respond positively supporting the view that the VET courses were suitable for their education backgrounds. This is as predicted in the conceptual model where it is

expected that students who believe the course is suitable for their qualifications will also experience higher quality of learning experiences.

Person-Item Threshold Distribution
(Grouping Set to Interval Length of 0.25 making 28 Groups)

Level	No.	Mean	SD
No	[52]	0.328	0.65
Yes	[235]	0.501	0.64

Figure 7.2 Relationship between Quality of Learning Experiences and Educational Background
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
           2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Reasonable Adjustment

As shown in Figure 7.3, a majority of the 287 students responded positively with a mean score of 0.474 (195 said 'yes' 92 said 'no') that the course in which they were enrolled provided reasonable adjustment to cater to their education background. The positive response mean score is 0.474 and the negative response mean score is 0.461. This is not statistical significantly different (F=0.24, df-1,285, p=0.62). Thus it cannot be claimed that students who have more reasonable adjustment to suit their circumstances in their VET course will have a higher perception of quality in their VET course. This is not as predicted in the conceptual model.

Person-Item Threshold Distribution
(Grouping Set to Interval Length of 0.25 making 28 Groups)

Figure 7.3 Relationship between Quality of Learning Experiences and Reasonable Adjustment
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
        2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Good Career Opportunities

As shown in Figure 7.4, a majority of the 304 students responded positively with a mean score of 0.472 (223 said 'yes' 81 said 'no') that the course in which they were enrolled would lead to good career opportunities. While the positive mean score of 0.472 is higher than the negative mean score of 0.387, this is not statistically significantly different (F=1.05, df=1,302, p=0.31). Thus it cannot be said that students who believe that VET courses lead to better career opportunities will have higher quality of learning experiences and this is contrary to what was predicted.

Person-Item Threshold Distribution
(Grouping Set to Interval Length of 0.25 making 28 Groups)
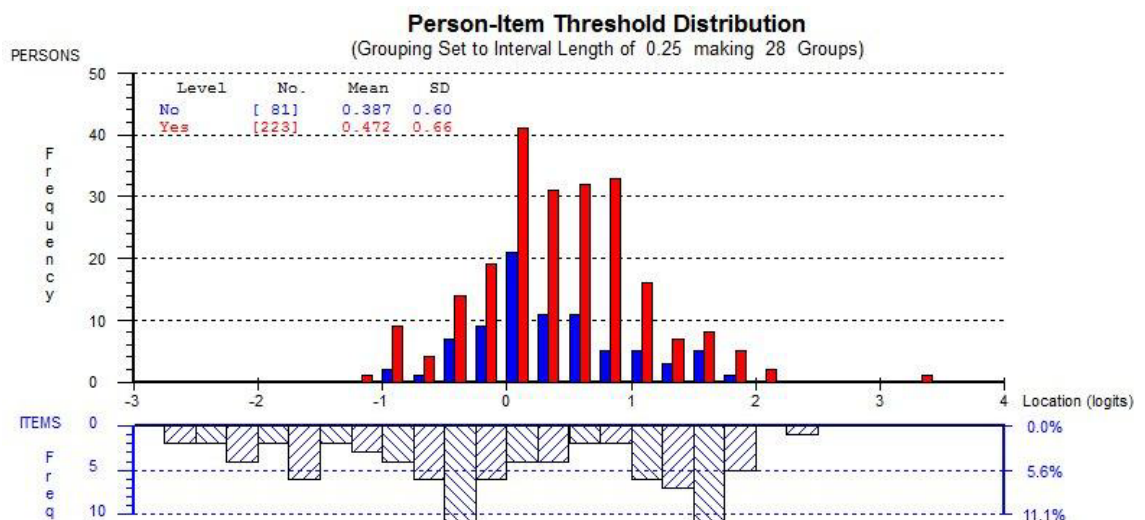
Figure 7.4 Relationship between Quality of Learning Experiences and Good Career Opportunities
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
        2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Utilising the Latest Technologies

As shown in Figure 7.5, a majority of the 304 students responded positively with a mean score of 0.549 (191 said 'yes' 113 said 'no') that the course in which they were enrolled utilised the latest technologies. The positive mean score of 0.549 is higher than the negative mean score of 0.294 and this is statistically significant (F=11.68, df=1,302, p=0.0007). Thus it can be claimed that students enrolled in courses that use the latest technologies are more likely to have higher perceptions of quality in their VET courses. This is as predicted.
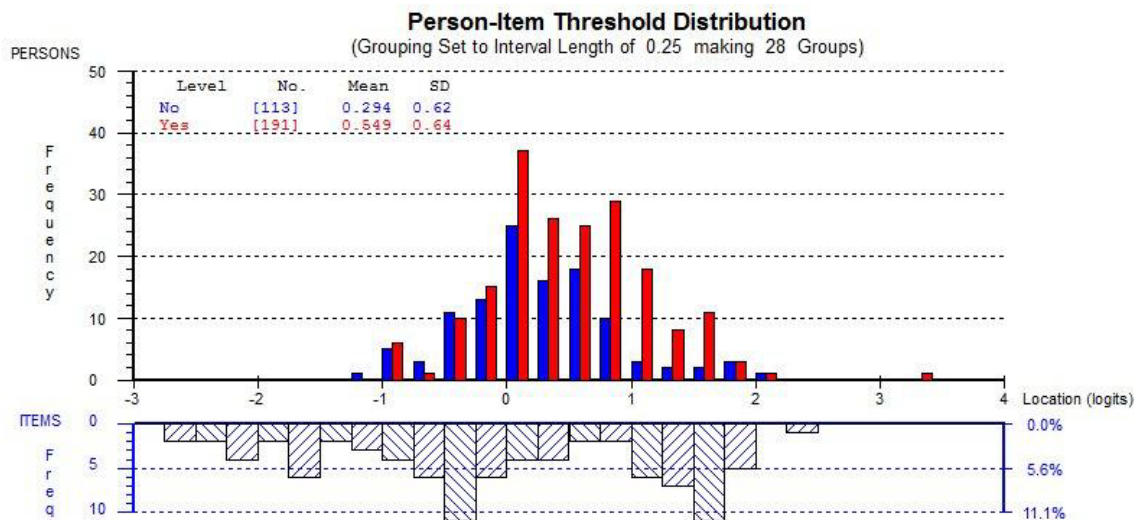
Figure 7.5 Relationship between Quality of Learning Experiences and Utilising the Latest Technologies
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
           2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

High Reputation in Home Country

As shown in Figure 7.6, a majority of the 304 students responded positively with a mean score of 0.507 (200 said 'yes' 102 said 'no') that the course in which they were enrolled has a high reputation in their home country. The positive mean score of 0.507 is higher than the negative mean score of 0.361 and this is approaching statistical significance (F=3.59, df=1,300, p=0.06). So there is a tendency for students studying in a VET course that has a high reputation in their home country to say that the quality of their VET course is high, as predicted.

Person-Item Threshold Distribution
(Grouping Set to Interval Length of 0.25 making 28 Groups)

Figure 7.6 Relationship between Quality of Learning Experiences and High Reputation at Home Country.
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
            2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

RELATIONSHIPS BETWEEN QUALITY OF LEARNING EXPERIENCES AND PERSONAL CHARACTERISTICS

There are six personal characteristics that are expected to be related to quality of learning experiences: (1) Gender; (2) Age; (3) Personal safety; (4) Country of Origin; (5) Financial Background; and (6) Level of Prior Education. In this study, questions were designed for students to provide personal characteristics using a choice of up to four nominated answers. Each of these six personal characteristics except gender requires a nominal response using labels from 1 to 4.

Gender

As shown in Figure 7.7, a total of 279 students were included in this Rasch analysis of which 150 were females and 129 were males. The recorded mean score for Quality of Learning Experiences for male students is 0.503 and is higher than the recorded female score of 0.390. However, this is not statistically significant (F=2.19, df=1,278, p=0.14) and so it cannot be claimed, as was predicted, that male students would rate their quality of learning experiences in their VET course as higher than females do.

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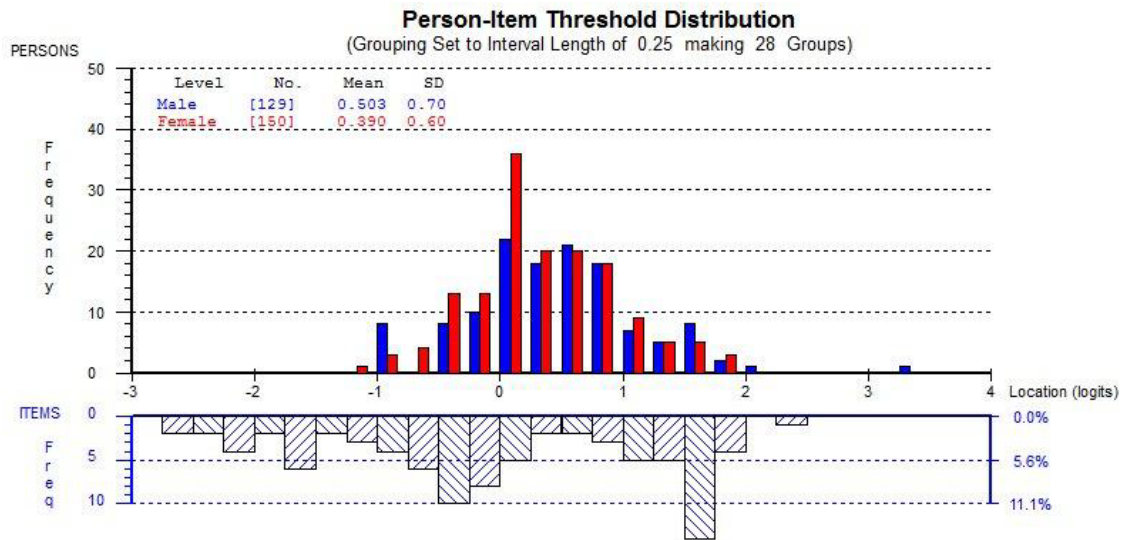
Figure 7.7 Relationship between Quality of Learning Experiences and Gender
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
         2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Age

As shown in Figure 7.8, a total of 285 students were included in this Rasch analysis of which 44 were less than 19 years of age, 174 were between the age of 20 and 30 years old (inclusive), 53 were between the age of 31 and 40 years old (inclusive) and 14 were over the age of 41. The recorded mean scores for Perceived Quality of Learning Experiences for each age group were 0.451, 0.491, 0.346 and 0.111 respectively. However, this is not statistically significantly different ($F=2.04$, $df=3,284$, $p=0.11$) and thus does not support the predicted relationship that older students were expected to have higher quality of learning experiences.
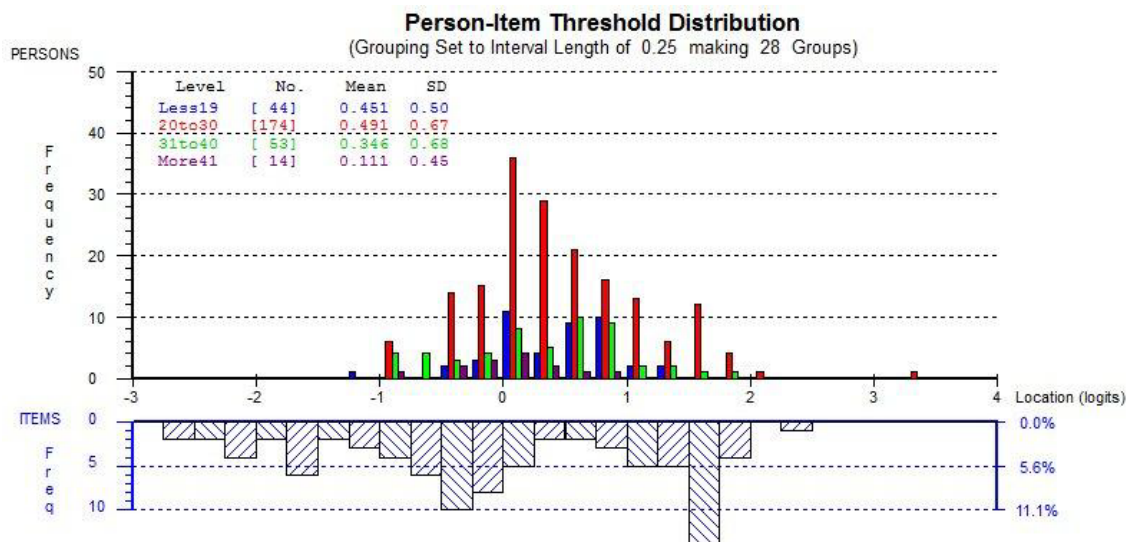
Figure 7.8 Relationship between Quality of Learning Experiences and Age
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
         2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Personal Safety

As shown in Figure 7.9, a total of 286 students were included in this Rasch analysis of which 3 felt unsafe, 113 felt not very safe, 127 felt safe and 43 felt very safe. The recorded mean scores for Quality of Learning Experience for each group were 0.220, 0.279, 0.530 and 0.598 respectively. This is statistically significant ($F=4.42$, $df=2,285$, $p=0.005$), but the differences are due to the extremes. If one just takes the unsafe versus the safe (that is, just dichotomises the data), then there is no statistical difference and this is not as predicted. Views of safety do not make any difference to perceptions of quality in VET courses.
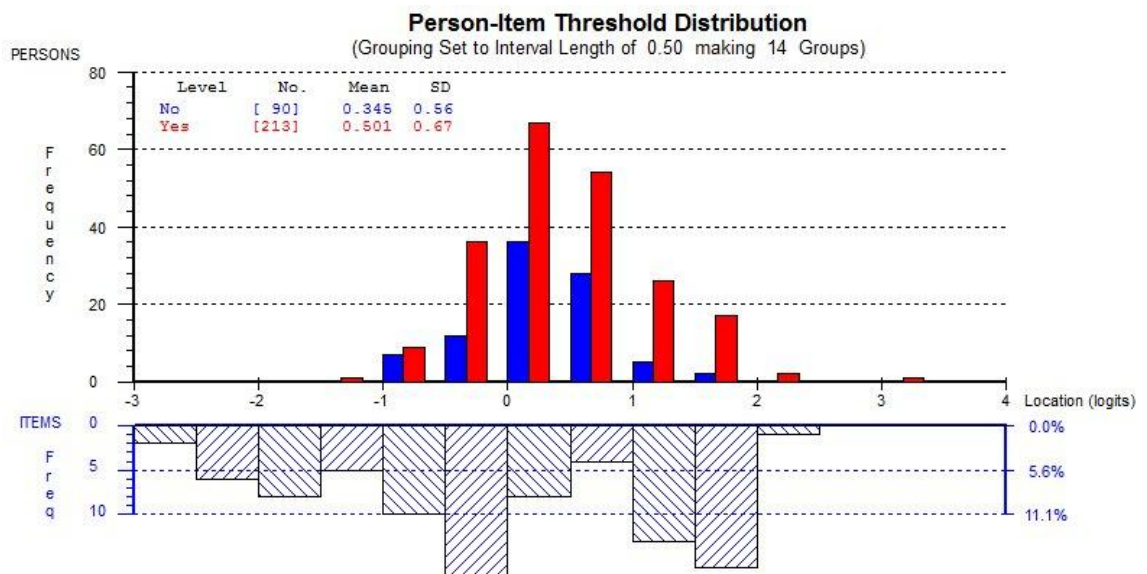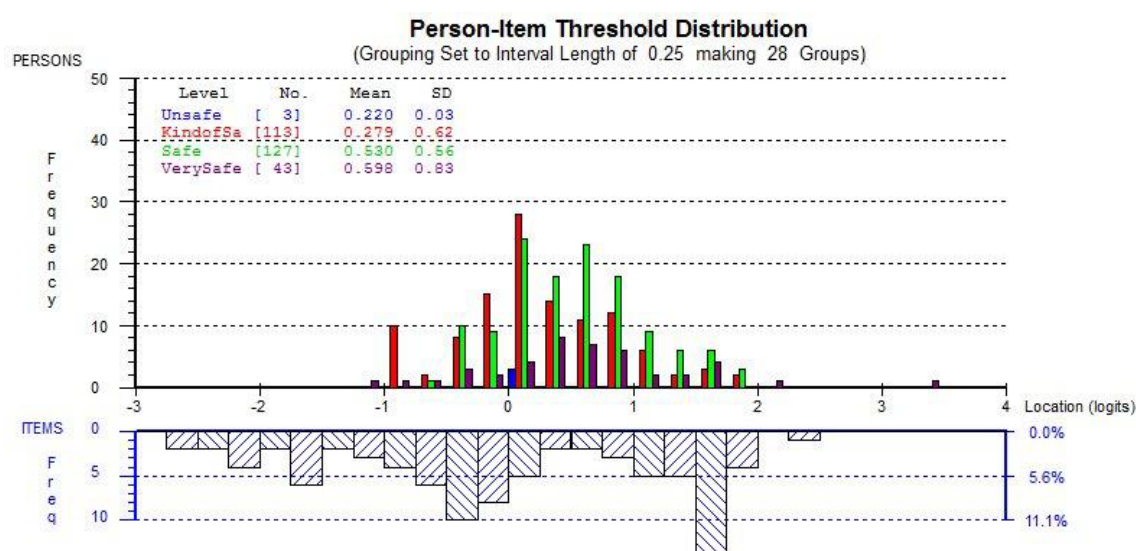

Figure 7.9 Relationship between Quality of Learning Experiences and Personal Safety
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
        2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Country of Origin

As shown in Figure 7.10, a total of 284 students were included in this Rasch analysis of which 56 from the Indian-subcontinent (India, Pakistan, Bangladesh, Nepal, Bhutan, Sri Lanka, Afghanistan and Maldives), 59 from South East Asia (Cambodia, Laos, Burma (Myanmar), Thailand, Vietnam, Malaysia, Indonesia, Philippines and Singapore), 86 from East Asia (People's Republic of China, Hong Kong, Macau, Taiwan, Japan, North Korea, South Korea, and Japan) and 83 from other countries. The recorded mean scores for Quality of Learning Experience for each country of origin

group were 0.673, 0.424, 0.361 and 0.366 respectively. This is statistically significantly different (F=3.41, df=3,285, p=0.005). This is as predicted by the conceptual model. The model predicted that students from Asia were expected to have higher quality of learning experiences because Asian students often have to provide for their families back home. If the Asian students carry this sense of responsibility, they will be more driven to achieve better qualification and hence perceiving a higher quality of learning experiences. It was also expected that these Asian students, being more driven, will better apply themselves in their effort to achieve better qualifications and will result in higher quality of learning experiences. The Rasch analysis shows that the Asian students (Indian-subcontinent, and South East Asia, but not East Asia) all have higher mean scores than the 'other' group.
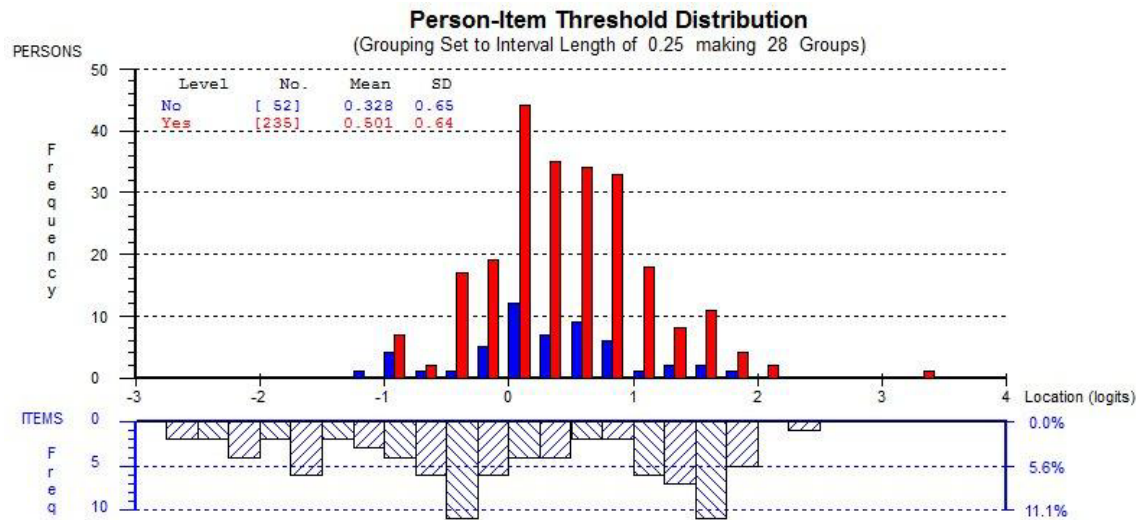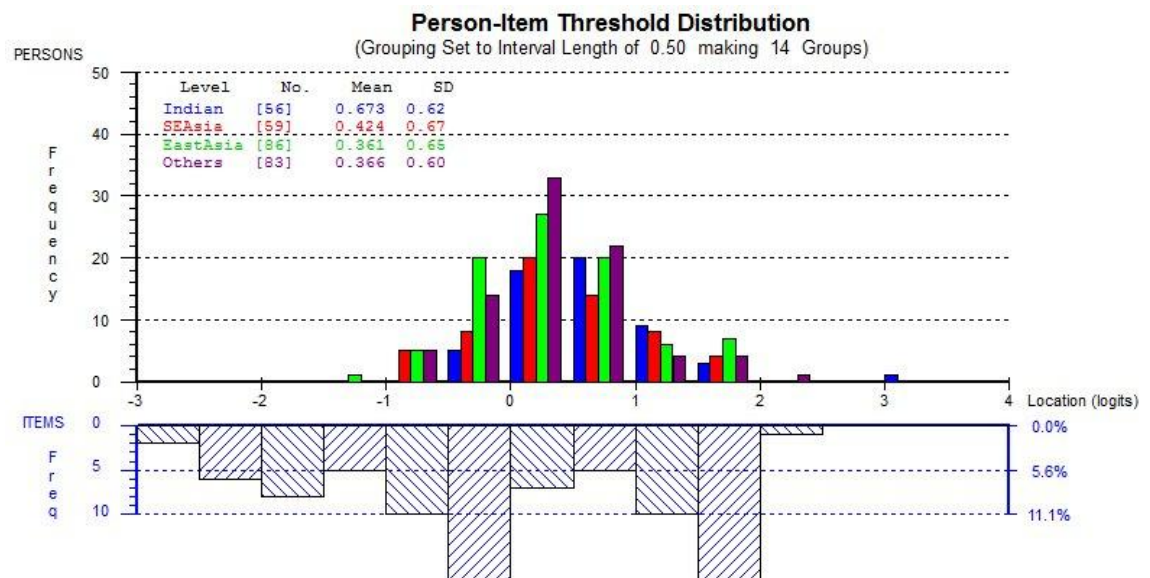

Figure 7.10 Relationship between Quality of Learning Experiences and Country of Origin
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
          2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Family Financial Position

As shown in Figure 7.11, a total of 286 students were included in this Rasch analysis of family financial positions, of which 3 were from very poor family, 27 were from less than average family, 206 were from average family and 50 were from above average family. The recorded mean scores for Perceived Quality of Learning Experience for each of these groups were 0.632, 0.521, 0.408 and 0.505 respectively, but these are not statistically significantly different (F=0.59, df=3,285, p=0.62). Thus

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there is no difference in Perceived Quality of Learning Experience by family finance, and this is contrary to what was predicted in the conceptual model.
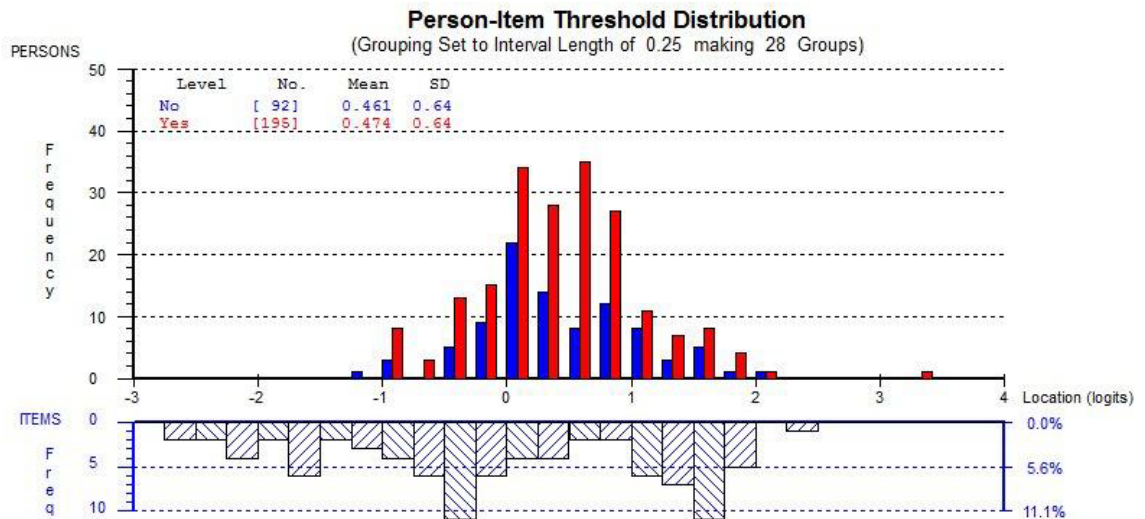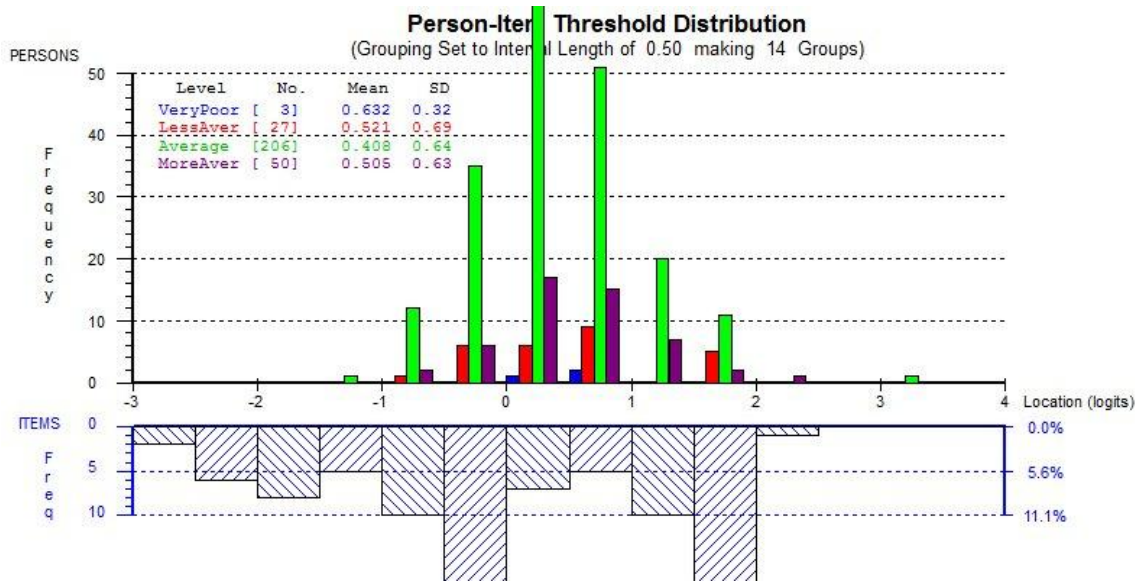

Figure 7.11 Relationship between Quality of Learning Experiences and Family Financial Background
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
            2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Prior Qualification

As shown in Figure 7.12, a total of 286 students were included in this Rasch analysis of which 16 had not completed high school, 102 had completed high school, 131 had a college degree and 37 had a post graduate degree.
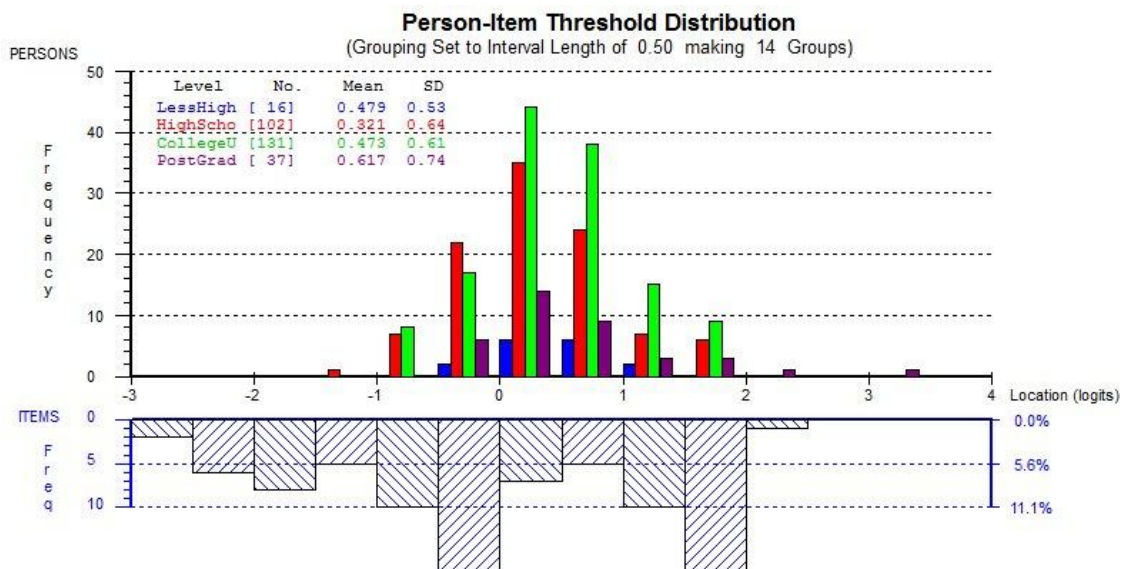
Figure 7.12 Relationship between Quality of Learning Experiences and Highest Prior Academic Qualification
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
            2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

The recorded mean scores for Quality of Learning Experience for each of these groups were 0.479, 0.321, 0.473 and 0.617 respectively. This was approaching statistical significance (F=2.31, df=3,285, p=0.08) and there is a tendency for students with higher prior qualifications to say that the VET course quality is higher and <u>vice versa</u>. The model predicted that students who had higher prior education would have higher Perceived Quality of Learning Experiences than those students with a lower level of prior education, but there is only a tendency for this to occur.

SUMMARY

The RUMM 2030 computer program was used to analyse responses from N=304 students to investigate the relationships between the Perceptions of Quality of Learning Experiences and the two context variables VET Course Characteristics and Personal Characteristics. The VET Course Characteristics included are Value for Money, Suitable for the Education Background, Reasonable Adjustment, Lead to Good Career Opportunities, Utilised the Latest Technology, and High Reputation in Home Country. The Personal Characteristics include Gender, Age, Personal Safety, Country of Origin, Family's Financial Position, and Prior Academic Qualification. The outputs from the RUMM 2030 program are interpreted and the relationships between the various characteristics are as follows.

Relationships between Quality of Learning Experience and VET Characteristics

1. Value for Money – More students with higher quality measures tended to respond positively that there was value for money for the VET course in which they were enrolled. This is as predicted in the conceptual model where it was expected that students who believe there is value for money will also experience higher quality of learning experiences.

2. Suitable for the Education Background – There is a tendency for students with higher quality measures to respond positively supporting the view that the VET courses were suitable for their education backgrounds, but this only approaches

statistical significance. This is close to what was predicted in the conceptual model where it is expected that students who believe the course is suitable for their qualifications will also experience higher quality of learning experiences.

3. Reasonable Adjustment – It cannot be claimed that students who have more reasonable adjustment to suit their circumstances in their VET course will have a higher perception of quality in their VET course. This is not as predicted in the conceptual model.

4. Good Career Opportunities – It cannot be said that students with better career opportunities will have higher quality of learning experiences and this is contrary to what was predicted.

5. Utilised Latest Technologies – It can be claimed that students enrolled in courses that use the latest technologies are more likely to have higher perceptions of quality in their VET courses. This is as predicted.

6. High Reputation at Home Country - There is a tendency for students studying in a VET course that has a high reputation in their home country to say that the quality of their VET course is high, as predicted.
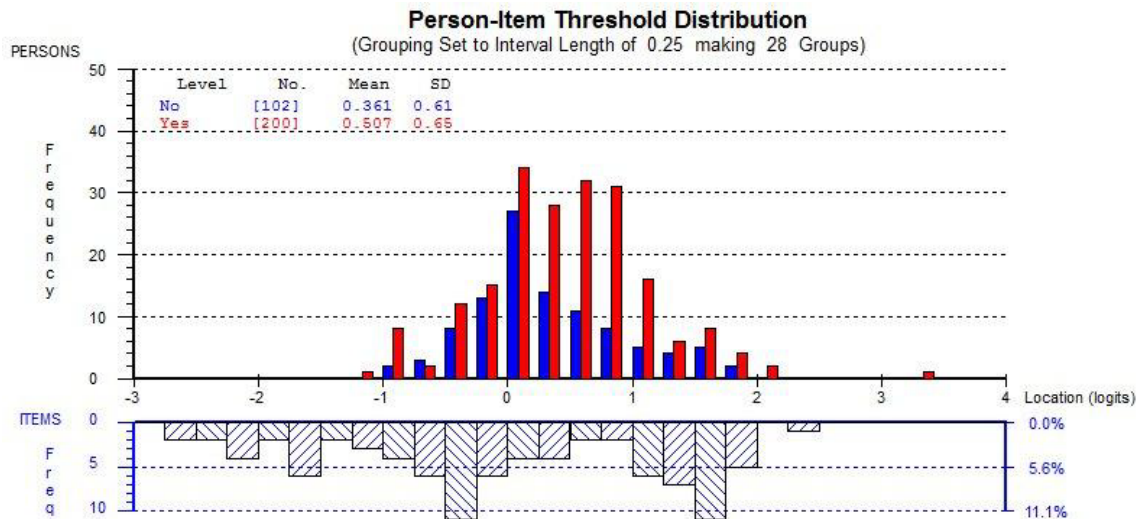
Relationships between Quality of Learning Experience and Personal Characteristics

1. Gender – It cannot be claimed, as was predicted, that male students would rate their quality of learning experiences in their VET course as higher than females do and this is contrary to predictions.

2. Age – It cannot be claimed the older students will have significantly higher quality perceptions than younger students in VET courses and this is contrary to predictions.

3. Personal Safety – It cannot be claimed that different student views on safety will lead to significantly different views on VET quality.

4. Country of Origin – Asian students (Indian-subcontinent, and South East Asia, but not East Asia) all have significantly higher perceptions of VET quality than the other groups.

5. Family Financial Position – There is no difference in VET quality perceptions by differences in family finance, and this is contrary to what was predicted in the conceptual model.

6.   Prior Qualification - There is a tendency for students with higher prior qualifications to say that the VET course quality is higher and <u>vice versa</u>. The model predicted that students who had higher prior education would have higher quality of learning experiences than those students with a lower level of prior education, but there is only a tendency for this to occur.

The next chapter explains the Rasch measurement for the variable Self-Concept of Educational Achievement.

CHAPTER EIGHT – DATA ANALYSIS (PART III)

RASCH MEASUREMENT OF SELF-CONCEPT

This chapter explains the Rasch Analysis of the data for the variable Self-Concept (please refer to Appendix A for the questionnaire). The data collected for the present study were analysed with the RUMM 2030 computer program (Andrich, Sheridan & Luo, 2013). Selected outputs from the computer program are presented and interpreted. These outputs show how a linear scale was created from which valid inferences can be drawn.

RASCH MEASUREMENT OF THE INDEPENDENT VARIABLE SELF-CONCEPT

For the dependent variable Self-Concept, the Rasch measurement analysis explains the following outputs from RUMM; global and person item fit to the measurement model, item-person interaction, Person Separation Index, Response Category Curves, Thresholds, Item Characteristic Curves and targeting graphs.

INITIAL RASCH ANALYSIS

The initial Rasch analysis was performed with data from 14 items where each item was scored in four response categories: not at all (scored zero), not often (scored 1), often (scored 2) and very often (scored 3). Steps were taken to check the outputs from the program to ensure that: (1) the item thresholds were in the correct order from easy to hard as presented in the questionnaire and that those items that do not fit the correct order were discarded from final analysis; (2) The difference between the expected value (as estimated by the measurement model) and the actual value, namely the residuals, were calculated; (3) the item-trait interaction test-of-fit was calculated based on a chi square, which indicates the consistency of the item difficulties and the person measures along the Self-Concept linear scale. This indicates whether there was reasonable agreement among the respondents about the linear progression of the item difficulties along the scale; (4) Person Separation Index, which is the ratio of the true score variance among the respondents and the estimated observed score variance using the estimates of their ability measures and the standard error of these measures. For a good measure, it is desirable that this index value should be 0.9 or greater, which

indicates that the measures are separated by more than their standard errors (Andrich & Van Schoubroeck, 1989); (5) whether the items fit the measurement model satisfactorily; and (6) whether there is proper targeting of the item difficulties against the student measures. This is tested by the Person Item Difficulties graph and the Person-Item Threshold graph which indicate whether the items are too easy or too hard for the respondents. There is also a test of the agreement between the predicted (conceptualised) item order difficulty and the actual item order difficulty which tests the construct validity of the variable as intended. Based on the steps mentioned above the initial Rasch analysis show all the 14 items for the Quality of Learning Experience fit the model.

FINAL RESULTS OF RASCH ANALYSIS

The final Rasch measurement with the RUMM 2030 program uses data from N=313 respondents and 14 items to produce a good, reliable linear scale. The details of the outputs generated by the RUMM 2030 program are explained in subsequent paragraphs.

Summary of Fit Statistics

The RUMM 2030 computer program estimates the item-person interaction which establishes the overall fit statistics that determine whether the item estimations contribute meaningfully to the measurement of the construct. This calculation thus examines the consistency of the responses from the students and its agreement with the calculated difficulty of each item on the scale. The overall standardised residual statistics (see Table 8.1) have a distribution with a mean near zero and a standard deviation near one when the data fit the measurement model (Andrich, 1985), as is the case with the Self-Concept measure. This means that there is a good arrangement of data for the persons and items according to the Rasch measurement model for this variable.

Dimensionality

There was an item-trait interaction chi-square of 60.849 with 56 degrees of freedom and a probability of 0.30. This means that the scale is constructed with good agreement amongst the students about the linear progressive difficulty of the items all along the scale. This further means that one parameter for each person (the person measure) and one parameter for each item (the item difficulty) can be used to accurately predict each person's response to each item, and this is what it means to be unidimensional in Rasch terms.

Person Separation Index

The Person Separation Index is an estimate of the true score variance among the students and the observed score variance using the estimates of their ability measures and the standard error of these measures (Andrich & Van Schoubroeck, 1989) and it is 0.85. It is an indicator that the student measures are separated by more than their standard errors and 0.85 is very satisfactory.

Table 8.1 – Self-Concept Overall Test-of-Fit Statistics (N = 313, Total number of items = 14)

Self-Concept	Items		Persons	
	Location	Fit Residual	Location	Fit Residual
Mean	0.0000	-0.0868	1.0777	-0.7488
SD	0.3920	1.2349	1.2036	2.2787
Correlation [location / Std Residual]	0.4407		0.2396	
Reliability Indices				
Person Separation Index	With Extremes : 0.8582		NO Extremes: 0.8507	
Item-trait Interaction				
Total Item Chi-Square	60.8490			
Total Degree of Freedom	56.0000			
Total Chi-Square Probability	0.30564			

Comments on Table 8.1:
Fit residuals have a mean near zero and a standard deviation near one when the data fit the measurement model, as it is the case here. This reflects good consistency of items and student scoring patterns. Power of analysis of fit is also excellent based on separation index of: 0.85822.

Individual Item Fit

Items are arranged in the order of their calculated difficulty value with their probability of fit to the measurement model. The position of the item on the linear scale represents its level of difficulty in standard units called Logits (log odds of answering

successfully). All items fit the model with probabilities greater than p = 0.10 (see Table 8.2). The residuals shown in Table 8.2 represent the difference between the observed responses and the expected responses calculated from the Rasch measurement parameters. Standardised residuals should fall between -1.894 and +2.797. Item 12 has probability less than p=0.10 and therefore do not fit the measurement model well and item 12 also has the highest residual of +2.797. All items, except 12, have a satisfactory fit to the measurement model but, even with item 12 included, all 14 items 'hang together' well to produce an acceptable scale.

Table 8.2: Self-Concept Individual item Fit Statistics

Item	Location	SE	Residual	DF	ChiSq	DF	Prob
10	-0.612	0.098	-0.663	285.64	2.664	4	0.615476
13	-0.422	0.098	-1.389	283.81	4.483	4	0.344619
4	-0.355	0.09	-1.894	285.64	6.044	4	0.195888
14	-0.307	0.093	-1	286.56	5.326	4	0.255483
9	-0.187	0.094	0.12	283.81	2.879	4	0.578341
3	-0.145	0.091	-1.666	283.81	6.166	4	0.187070
7	-0.134	0.09	0.735	282.89	5.868	4	0.209250
11	0.005	0.09	0.51	284.73	2.273	4	0.685705
8	0.028	0.088	1.146	285.64	5.153	4	0.271974
12	0.189	0.082	2.797	286.56	9.839	4	0.043224
2	0.19	0.089	0.121	285.64	0.121	4	0.998233
1	0.389	0.089	-0.402	284.73	3.255	4	0.516115
5	0.679	0.087	0.185	282.89	4.458	4	0.347508
6	0.682	0.084	0.184	285.64	2.321	4	0.677011

Notes on Table 8.2:
1. Location indicates the degree of difficulty of the item on the linear scale.
2. SE means standard error, and refer to the degree of uncertainty in a value
3. Residual is the difference between the expected value as calculated according to the Rasch measurement model and the observed value.
4. DF stands for degrees of freedom, and refers to the number of scores in a distribution that are free to change without changing the mean distribution.
5. ChiSq stands for Chi-square
6. Prob refers to the probability based on Chi-square and indicates the level of certainty to which the item fits the measurement model.

Targeting

A Person-Item Threshold Distribution graph shows the item thresholds in standard units called logits plotted along the same scale as the person measures in logits. This graph shows how well the item difficulties are targeted to the student measures (see Figure 8.1). The graph demonstrates reasonable targeting of item thresholds (-3.0 logits to +2.8 logits) against the student measures (-2.2 logits to +5.4 logits). This graph shows the vast majority of the students were targeted by the items at appropriate difficulty. However, for future studies perhaps a few more of the difficult items could be included to cover students of higher abilities (students with measures + 2.8 to +5.4 logits). There is also a gap for items difficulties between +0.4 to +1.6 which can be added to improve the targeting.
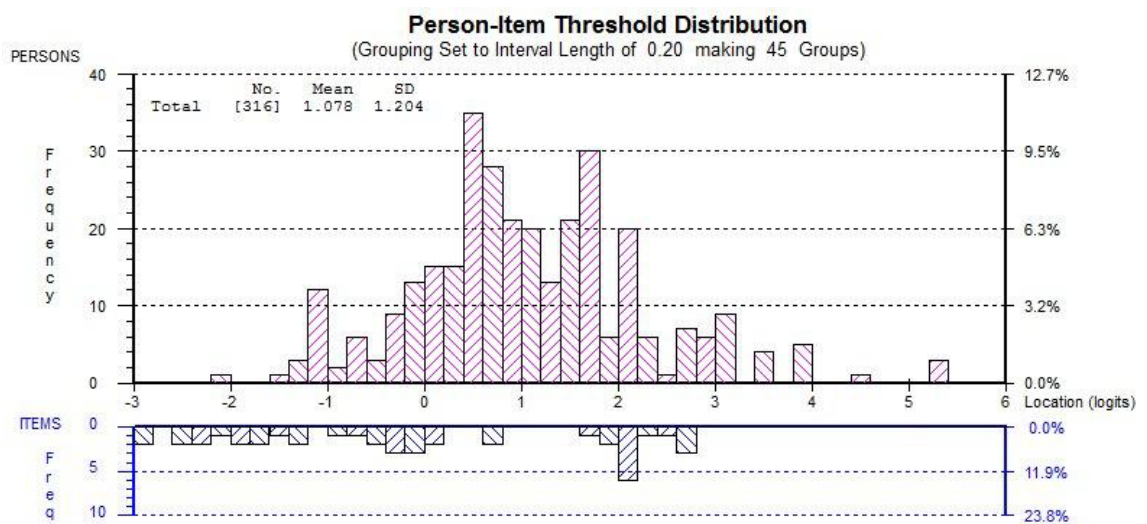
Figure 8.1 Self-Concept Targeting Graph
Note: Person measures are on the top of the graph and Item thresholds are on the bottom section of the same scale in logits.

Discrimination

Item Characteristic Curves examine the relationship between the expected response and the mean group student measures. These graphs display how well the item discriminates between groups of person with different abilities (see Figure 8.2). Item 1 Characteristic Curve shows that the item discriminates well for student with different measures. The Item Characteristic Curve for all items were checked and found to be satisfactory but are not shown here to avoid unnecessary repetition.
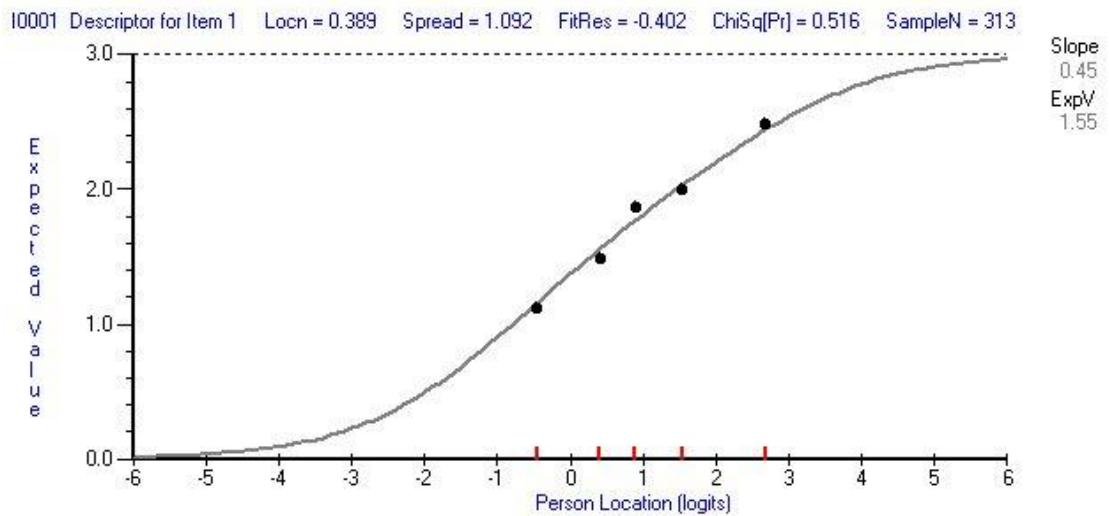
Figure 8.2 Self-Concept Item Characteristics Curve: Item 1

Consistency of Item Responses
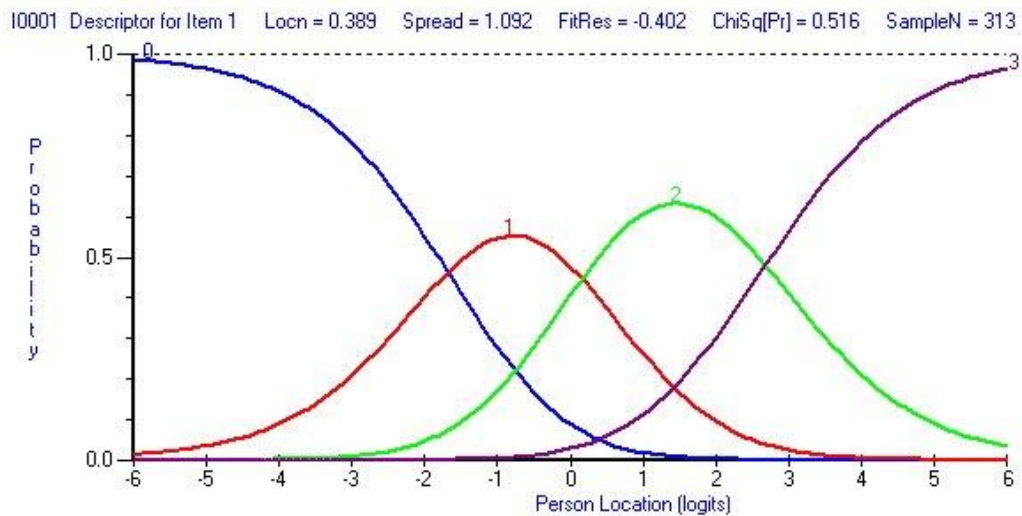
Figure 8.3 Self-Concept Response Category Curve: Item 1

Figure 8.3 shows the Response Category Curve for item 1 whose difficulty measure is 0.389. The graph shows that a student with a measure of -6 logits has a probability of about 1 in answering this item 'not at all' (score of 0). As the person measure increases the probability of answering the next category increases, as in the case of the red line showing the person with measure of close to -1 logit. The person measure of -1 logit has the probability of answering the next category 'not often' (score

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of 1) increases to almost 0.6. As the person measure reach the highest level of +6 logits, the probability of answering the highest category 'very often' (score of 3) reached 1. This means that the students have answered the response categories for item 1 consistently and logically.

The Response Category Curves for the other items were checked and they were found to be satisfactory, meaning that the students used the response categories consistently and logically.

Item Difficulties for the Linear Scale

Table 8.3 Self-Concept Items and their difficulties (I=14)

Items Description	Before start of course	After start of course
Capability		
1 - 2 Do you think you are smart enough to cope with your course?	0.389	0.190
3 - 4 Do you feel confident of your ability to complete your course?	-0.145	-0.355
Perception of achievement		
5 - 6 Do you like doing assignments for your course?	0.679	0.682
7 - 8 Do you try hard to get high marks to gain any kind of reward?	-0.134	0.028
Confidence in academic life		
9 – 10 Do you get along well with your teacher and fellow students at the college?	-0.187	-0.612
11 – 12 Do you enjoy the college life whether it is study or social activities?	0.005	0.189
13 - 14 Do you feel confident of yourself whether it is study or social activities or your career future?	-0.422	-0.307

Table 8.3 shows the 14 items that 'hang together' sufficiently well to form a reliable scale for the measure of Self-Concept. It lists the item difficulties on the same scale as the student measures of Self-Concept. The easiest item is number 10 (Do you get along well with your teacher and fellow students at the college? (After the start of the course)) with a difficulty of -0.612 logits. The hardest item is number 18 (Do you like doing assignments for your course? (After the start of course)) with a difficulty of +0.682 logits.

CONSTRUCT VALIDITY - SELF-CONCEPT

The item data for Self-Concept 'hang together' well enough to produce a linear scale from which valid inferences can be made. The difficulty orders of items vertically and horizontally display a reasonable fit for the model. While item 12 doesn't fit as well as one would like, overall the construct is reasonably 'solid', and the inclusion of this item did produce a better scale than 13 items.

The vertical order of the item difficulties revealed a few problems: (1) The sub-group Confidence in Academic Life seems to be rated easier than expected by the students. This may be due to the focus of this sub-group being on social rather than academic aspect. Evidence from the qualitative part of the present study (see Chapter 12) supports the view that the international students value the Australian social and lifestyle aspects while studying in Australia. Future studies could move these items up the vertical order. (2) The sub-group Capability shows that students are more confident of completing the course than coping with the course. This may be due to the stress level of the students during the course being high, but, the students know they will eventually be able to complete the course because the VET system does allow the students to be re-assessed on each unit and even repeat the whole course if necessary. One improvement that can be made is to include a question at the start of this sub-group "Have you had to be re-assessed in any of the units of the course?" as this should provide some context for the student before responding to the question on their ability to cope. (3) Sub-group Perception of Achievement has similar problem as Capability, students are finding doing assignment harder than achieving high mark. This can be due to the fact that the VET system is based on competency – assignment is not graded. This

can be improved by asking the intention to pursue higher level qualifications followed by "Do the students need help in completing their course work?".

A majority of the horizontal part of the item difficulty order fit the measurement model as predicted, except for items 1 and 2, and 3 and 4. Items 1 and 2 are about being smart enough to cope with the course. It is possible that students find it easier after the start of the course as they became more familiar with the VET system. Items 3 and 4 relate to confidence in their ability to complete the course, as students gain more practice in their studies they grow in confidence. It would appear that these two pairs of questions can be improved by just reversing the questions, where it should be expected these aspects of Self-Concept will improve after the students have started their course. This should be considered for any future study.

SUMMARY

A reliable linear scale measuring International Students Self-Concept was created using the RUMM2030 computer program (Andrich, Sheridan & Luo, 2013) from data using 14 items and N=313 students at six Registered Training Organizations in Western Australia. The following six aspects support this conclusion and, while the scale is not perfect and can be improved, valid inferences can still be drawn from its use.

1. The data from the 14 items ' hang together' well enough to produce a reliable linear scale with a Person Separation Index of 0.85, meaning that the measures are sufficiently separated by more than their standard errors;

2. The scale is constructed with reasonable agreement amongst the students about the linear progressive item difficulty of the items all along the scale;

3. All items fit the model with probabilities greater than $p = 0.10$, except for item 12; but its deletion did not improve the reliability of the scale, so it was retained;

4. Targeting of item difficulties against the student measures was satisfactory but some improvement in this targeting should be done in any future use of this scale;

5. The scale shows that all the items discriminate satisfactorily and that there is no significant gender bias in any of the items;

6. The scale shows the students have answered the response categories consistently and logically;

Valid inferences can now be drawn from the scale and these are reported in Chapter Nine. The next chapter, Chapter Nine, explains the relationships between the independent variable, self-Concept and some VET characteristics, and between Self-Concept and some student Personal Characteristics using the reliable measure created in the present chapter.

The next chapter explains the Relationships between Self-Concept and VET Characteristics and Personal Characteristics

CHAPTER NINE – DATA ANALYSIS (PART IV)

RELATIONSHIPS BETWEEN SELF-CONCEPT AND VET CHARACTERISTICS AND PERSONAL CHARACTERISTICS

This chapter explains the Rasch Analysis of the relationships between the Self-Concept and the context variables VET Course Characteristics and Personal Characteristics. The data collected for the present study is processed by the RUMM 2030 computer program and the outputs from the program are interpreted to show the relationships between the various characteristics.

For the context variable VET Course Characteristics, the Rasch measurement analysis focuses on the relationships between Self-Concept and the following characteristics; Value for Money, Suitability for the Education Background, Reasonable Adjustment, Leads to Good Career Opportunities, Utilises the Latest Technology, and High Reputation in Home Country. For the context variable Personal Characteristics, the Rasch measurement analysis focuses on the relationship between Self-Concept and the following characteristics; Gender, Age, Personal Safety, Country of Origin, Family's Financial Position, and Prior Academic Qualification.

RELATIONSHIPS BETWEEN SELF-CONCEPT AND VET COURSE CHARACTERISTICS

Data for each of the VET course characteristics were collected using questions (see Appendix A questionnaire) where the students were asked if each of the characteristics was true (yes) or false (no). In each of these characteristics, it is expected that a positive response, in other words a yes answer to the questions, would relate to higher perception of Self-Concept and vice versa. The details of the outputs generated by the RUMM 2030 are explained in subsequent paragraphs.

Value for Money

As shown in Figure 9.1, a majority of the 303 students responded positively (213 said 'yes' 90 said 'no') that there was value for money for the VET courses in which they were enrolled. The mean score for the 'yes' response is 1.109 which is higher than the 'no' mean score of 1.007, however this is not statistically significant (F=0.46, df=1,301, p=0.50). This is contrary to the prediction in the conceptual model where it

was expected that students who believe there is value for money will also have higher Self-Concept.

Figure 9.1 Relationship between Self-Concept and Value for Money
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
        2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Suitable for the Education Background

As shown in Figure 9.2, a majority of the 287 students responded positively (235 said 'yes' 52 said 'no') that the course they were enrolled was suitable for their education background. The mean score for a 'yes' response is 1.091 and this is higher than the mean score for 'no' responses of 0.976, however it is not statistically significant (F=0.39, df=1,285, p=0.53). This is contrary to the prediction in the conceptual model where it is expected that students who believe the course is suitable for their education background will also have higher Self-Concept.

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Figure 9.2 Relationship between Self-Concept and Educational Background
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
        2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Reasonable Adjustment

As shown in Figure 9.3, a majority of the 287 students responded positively with a mean score of 0.474 (195 said 'yes' 92 said 'no') that the course they were enrolled in provided reasonable adjustment to cater to their education background. The positive response mean score is 0.474 and the negative response mean score is 0.461. This is not statistically significant (F=1.25, df=1,285, p=0.53). Thus it cannot be claimed that students who have more reasonable adjustment to suit their circumstances in their VET course will have a higher Self-Concept. This is not as predicted in the conceptual model.
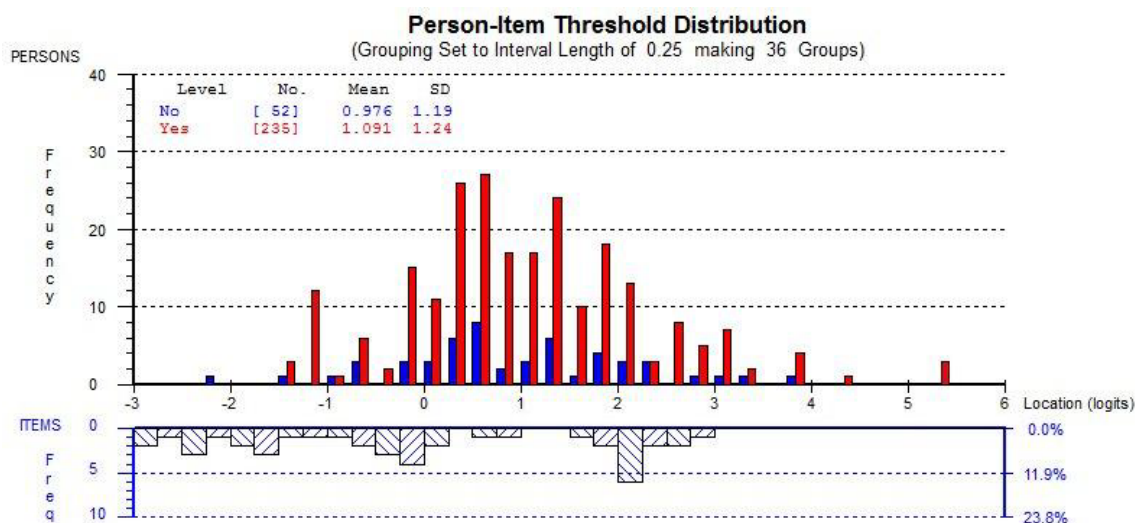
Figure 9.3 Relationship between Self-Concept and Reasonable Adjustment
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
        2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

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Good Career Opportunities

As shown in Figure 9.4, a majority of the 304 students responded positively with a mean score of 1.090 (223 said 'yes' 81 said 'no') that the course in which they were enrolled would lead to good career opportunities. The positive mean score of 1.090 is higher than the negative mean score of 1.041, but this is not statistically significant ($F=0.10$, df=1,302, $p=0.75$). Thus it cannot be said that students who believe that VET courses lead to better career opportunities will have higher Self-Concept and this is contrary to what was predicted.
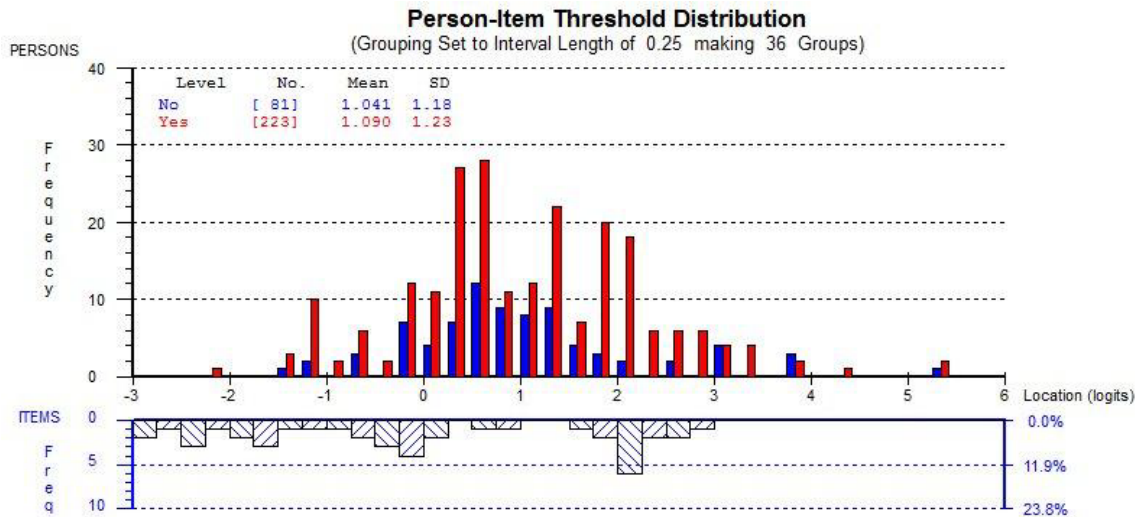
Figure 9.4 Relationship between Self-Concept and Good Career Opportunities
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
           2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Utilising the Latest Technologies

As shown in Figure 9.5, a majority of the 304 students responded positively with a mean score of 1.071 (191 said 'yes' 113 said 'no') that the course in which they were enrolled utilised the latest technologies. However the positive mean score of 1.071 is lower than the negative mean score of 1.102, but this is not statistically significant ($F=0.05$, df=1,302, $p=0.82$). Thus it cannot be claimed that students who enrolled in courses that use the latest technologies are more likely to have higher Self-Concept. This is not as predicted.
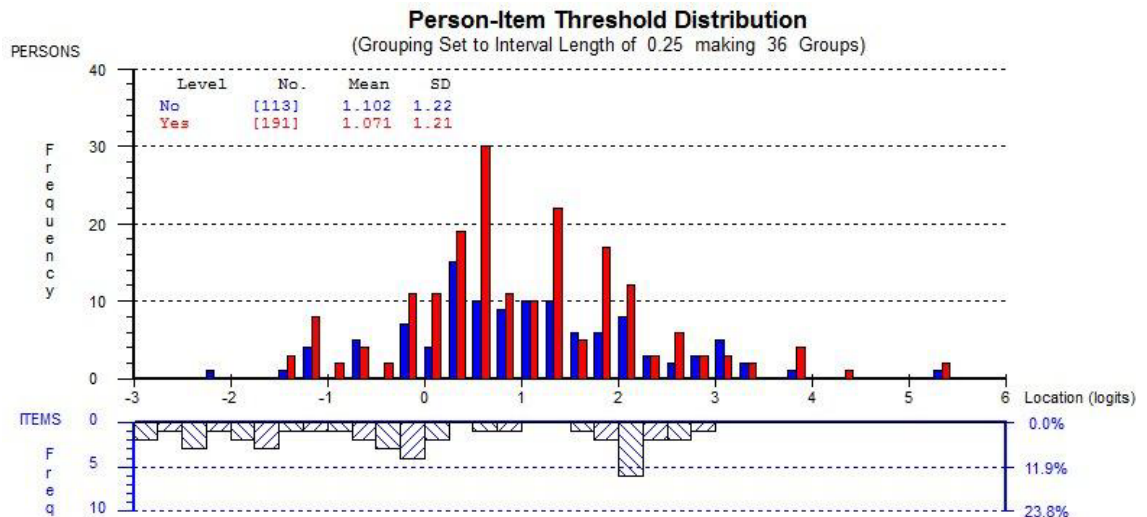
Figure 9.5 Relationship between Self Concept and Utilising the Latest Technologies
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
         2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

High Reputation at Home Country

As shown in Figure 9.6, a majority of the 302 students responded positively with a mean score of 1.08 (200 said 'yes' 102 said 'no') that the course in which they were enrolled has a high reputation in their home country. The positive mean score of 1.08 is higher than the negative mean score of 1.056 but this is not statistically significance (F=0.03, df=1,300, p=0.85). So it cannot be claimed that students studying in a VET course that has a high reputation in their home country will have high Self-Concept. This is not as predicted.

Figure 9.6 Relationship between Self-Concept and High Reputation at Home Country
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
         2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

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RELATIONSHIPS BETWEEN SELF-CONCEPT AND PERSONAL CHARACTERISTICS

There are six personal characteristics that are expected to be related to Self-Concept: (1) Gender; (2) Age; (3) Personal safety; (4) Country of Origin; (5) Financial Background; and (6) Level of Prior Education. In this study, questions were designed for students to provide personal characteristics using a choice of up to four nominated answers. Each of these six personal Characteristics expects a nominal response using labels from 1 to 4.

Gender

As shown in Figure 9.7, a total of 286 students were included in this Rasch analysis of which 131 were females and 155 were males. The recorded mean score for Self-Concept for male students is 1.253 and is higher than the recorded female score of 0.856. This is statistically significant (F=8.26, df=1,284, p=0.004), as was predicted, and the male students rate their Self-Concept higher than females students do.
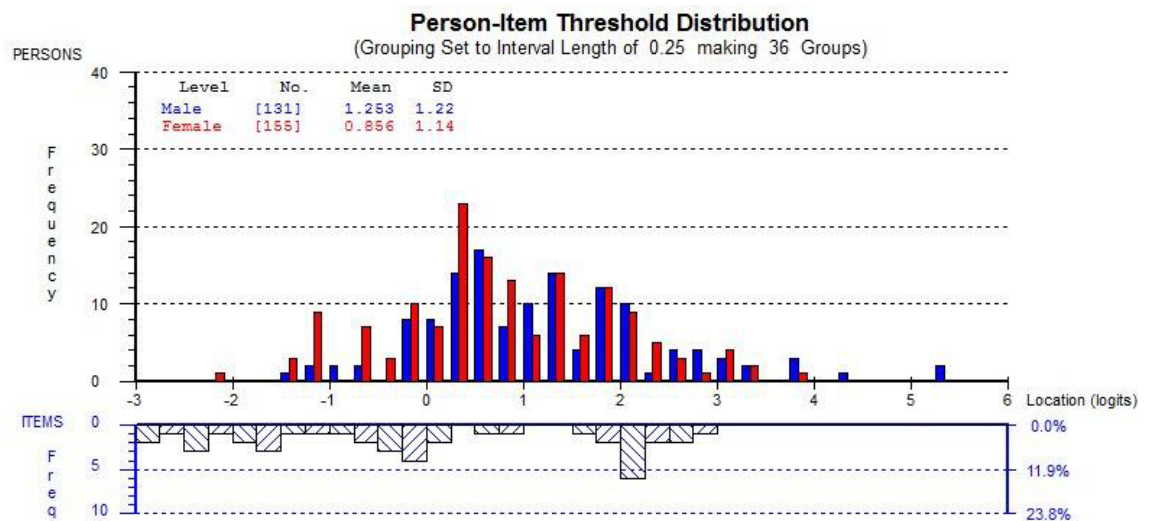
Figure 9.7 Relationship between Self-Concept and Gender
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
            2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Age

As shown in Figure 9.8, a total of 293 students were included in this Rasch analysis of which 45 were less than 19 years of age, 178 were between the age of 20 and 30 years old (inclusive), 54 were between the age of 31 and 40 years old (inclusive) and 16 were over the age of 41. The recorded mean scores for Self-Concept for each age group were 1.01, 1.096, 0.989 and 0.689 respectively. However, this is not statistically significant

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(F=0.714, df=3,289, p=0.54) and thus does not support the predicted relationship that older students were expected to have higher Self-Concepts.
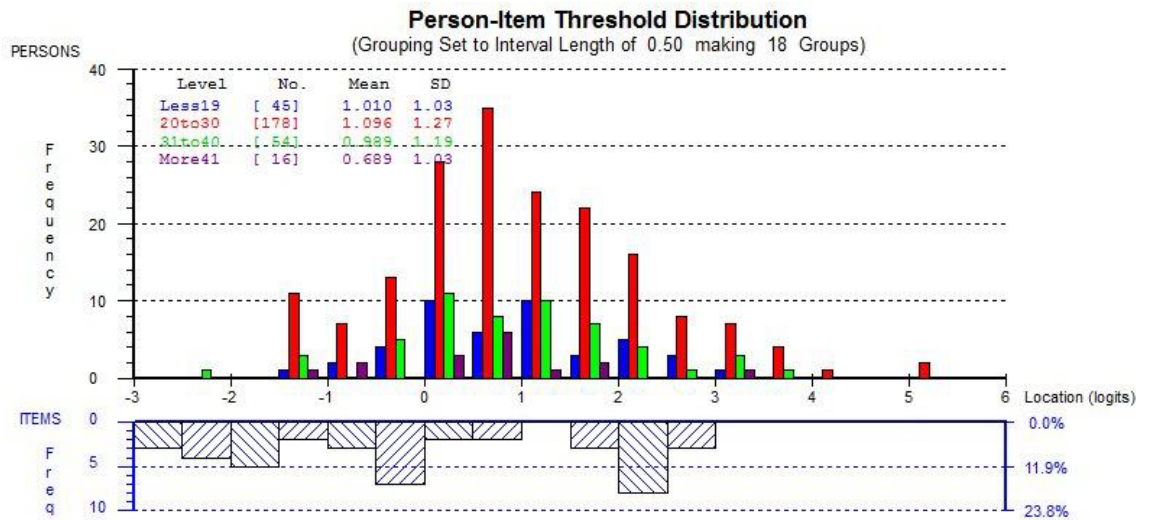
Figure 9.8 Relationship between Self-Concept and Age
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
         2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)
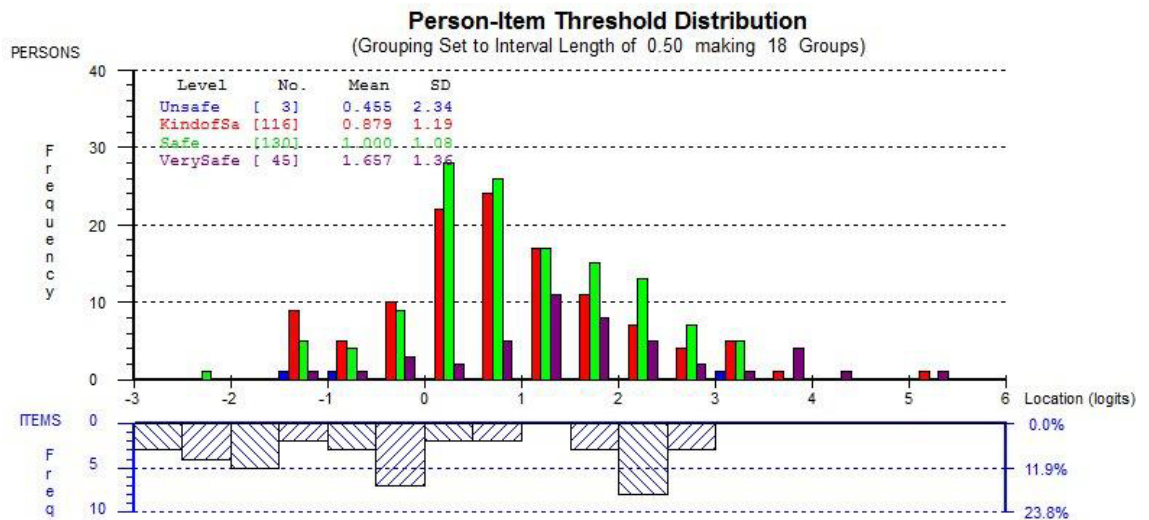
Personal Safety

Figure 9.9 Relationship between Self-Concept and Personal Safety
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
         2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

As shown in Figure 9.9, a total of 294 students were included in this Rasch analysis of which 3 felt unsafe, 113 felt not very safe, 130 felt safe and 45 felt very safe. The recorded mean scores for Self-Concept for each group were 0.455, 0.879,

1.000 and 1.657 respectively. This is statistically significant (F=5.19, df=3,290, p=0.002). Views of safety do make a difference to Self-Concept.

Country of Origin

As shown in Figure 9.10, a total of 292 students were included in this Rasch analysis of which 57 from the Indian-subcontinent (India, Pakistan, Bangladesh, Nepal, Bhutan, Sri Lanka, Afghanistan and Maldives), 62 from South East Asia (Cambodia, Laos, Burma (Myanmar), Thailand, Vietnam, Malaysia, Indonesia, Philippines and Singapore), 88 from East Asia (People's Republic of China, Hong Kong, Macau, Taiwan, Japan, North Korea, South Korea, and Japan) and 85 from other countries. The recorded mean scores for Self-Concept for each country of origin group were 1.565, 0.619, 0.701 and 1.342 respectively. This is statistically significant (F=11.48, df=3,288, p=0.0000). The Indian sub-continent students and other students have higher Self-Concepts than the others. The model predicted that students from Asia were expected to have higher Self-Concept because Asian students often have to provide for their families back home. The Rasch analysis shows the Asian from Indian-subcontinent students (but not South East Asia, and East Asia) and other students have higher Self-Concept than the other groups. This is not as predicted by the conceptual model.
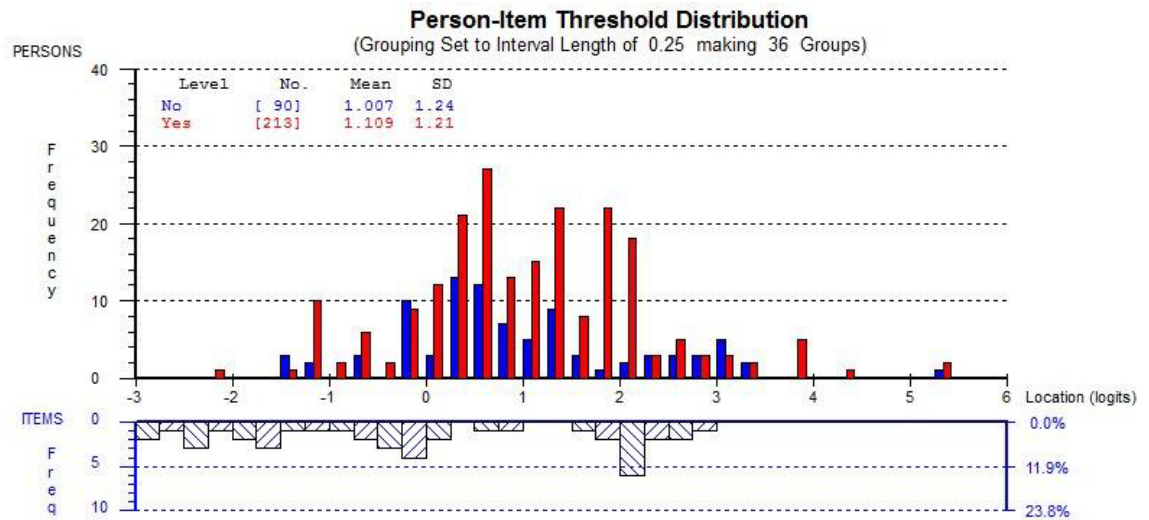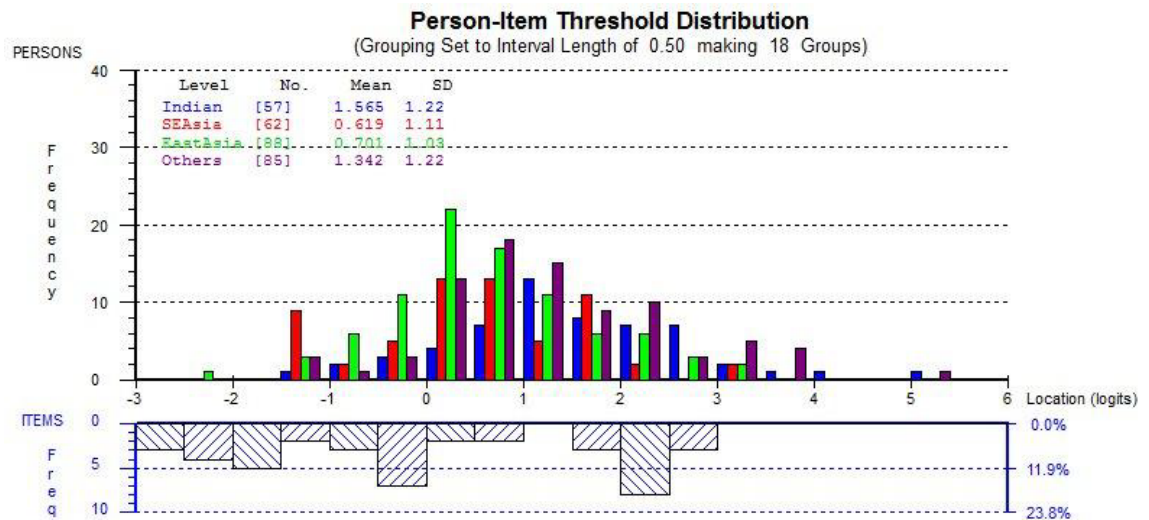

Figure 9.10 Relationship between Self-Concept and Country of Origin
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
         2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

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Family Financial Position

As shown in Figure 9.11, a total of 294 students were included in this Rasch analysis of family financial positions, of which 3 were from very poor families, 27 were from less than average families financially, 214 were from average families and 50 were from more than average families financially. The recorded mean scores for Self-Concept for each of these groups were 2.066, 0.691, 0.996 and 1.453 respectively, and this is statistically significant (F=4.23, df=3,290, p=0.006). However, the students from very poor and more than average families have higher Self-Concept, and this is contrary to what was predicted in the conceptual model which predicted that poorer students were expected to have higher Self-Concepts.
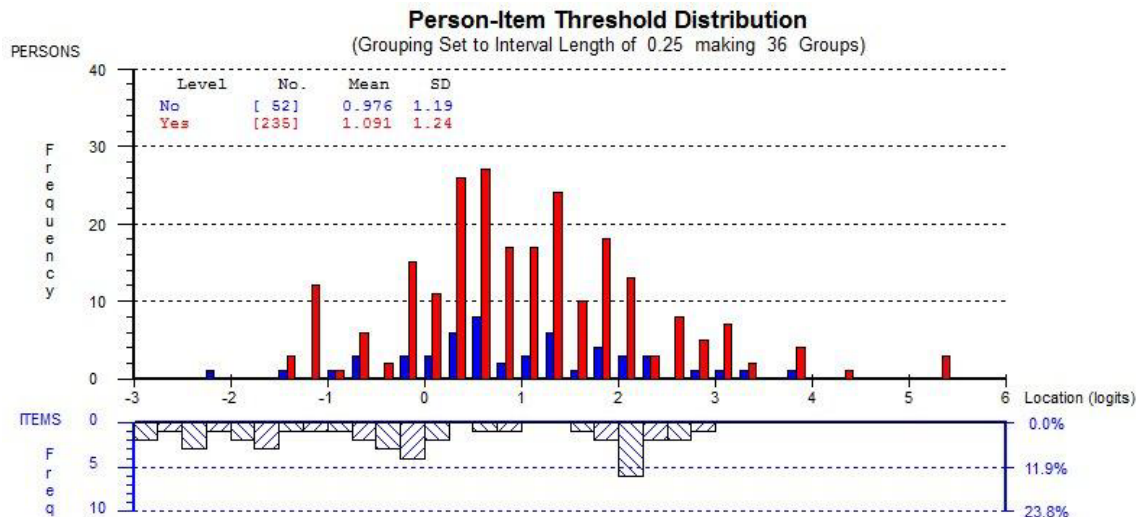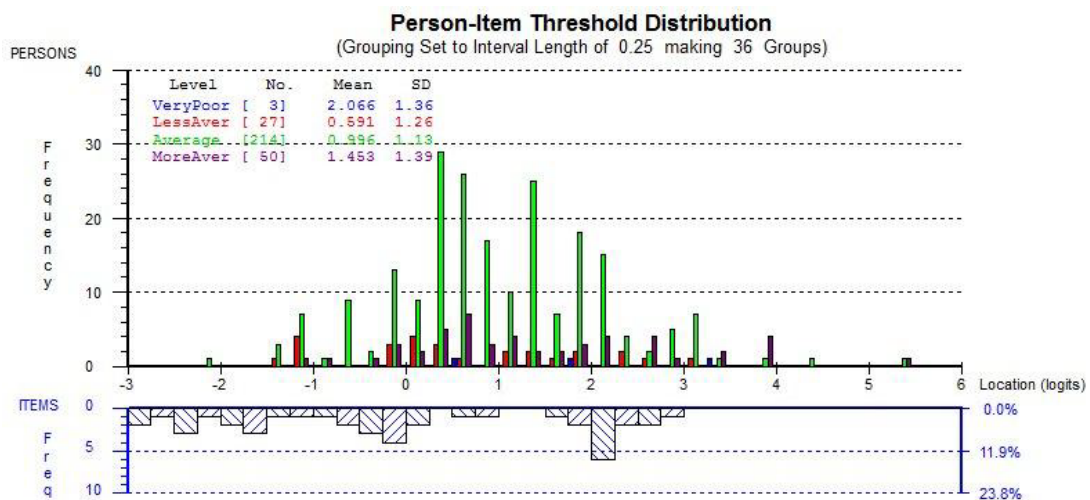

Figure 9.11 Relationship Between Self-Concept and Family Financial Background
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
          2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Prior Qualifications

As shown in Figure 9.12, a total of 294 students were included in this Rasch analysis of which 17 had not completed high school, 105 had completed high school, 134 had a college degree and 38 had a post graduate degree. The recorded mean scores for self-Concept for each of these groups were 1.030, 0.794, 1.201 and 1.211 respectively. This is not statistically significance (F=2.62, df=3,290, p=0.05) and there is no tendency for students with higher prior qualifications to have higher Self-Concept and vice versa. The model predicted that students who had higher prior education would

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have higher Self-Concept than those students with a lower level of prior education, but this is not necessarily the case.
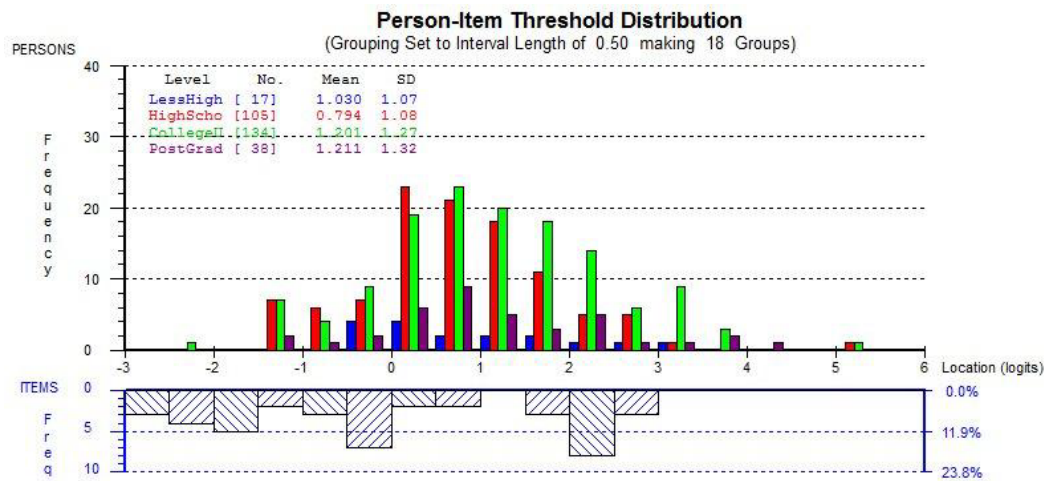
Figure 9.12 Relationship Between Self-Concept and Highest Prior Academic Qualification

SUMMARY

The RUMM 2030 computer program was used to analyse responses from N=304 students to investigate the relationships between the Self-Concept and the two context variables VET Characteristics and Personal Characteristics. The VET Characteristics included are Value for Money, Suitable for the Education Background, Reasonable Adjustment, Lead to Good Career Opportunities, Utilised the Latest Technology, and High Reputation in Home Country. The Personal Characteristics include Gender, Age, Personal Safety, Country of Origin, Family's Financial Position, and Prior Academic Qualification. The outputs from the RUMM 2030 program are interpreted and the relationships between the various characteristics are as follow.

Relationships between Self-Concept and VET Course Characteristics

1. Value for Money – It was not statistically significant that students with higher self-Concepts tended to respond positively that there was value for money for the VET course in which they were enrolled. This is contrary to the prediction in the conceptual model.

2. Suitable for the Education Background – There is no strong statistical evidence to suggest that the VET courses were suitable for their education backgrounds for those students with higher Self-Concepts. This is contrary to what was predicted

in the conceptual model where it is expected that students who believe the course is suitable for their qualifications will also have higher Self-Concept.

3. Reasonable Adjustment – It cannot be claimed that students who have more reasonable adjustment to suit their circumstances in their VET course will have a higher Self-Concept. This is not as predicted in the conceptual model.

4. Good Career Opportunities – It cannot be said that students with better career opportunities will have higher Self-Concept and this is contrary to what was predicted.

5. Utilised Latest Technologies – It cannot be claimed that students enrolled in courses that use the latest technologies are more likely to have higher Self-Concept. This is not as predicted.

6. High Reputation at Home Country – It cannot be claimed that there is a tendency for students studying in a VET course that has a high reputation in their home country to have higher Self-Concept, this is not as predicted.

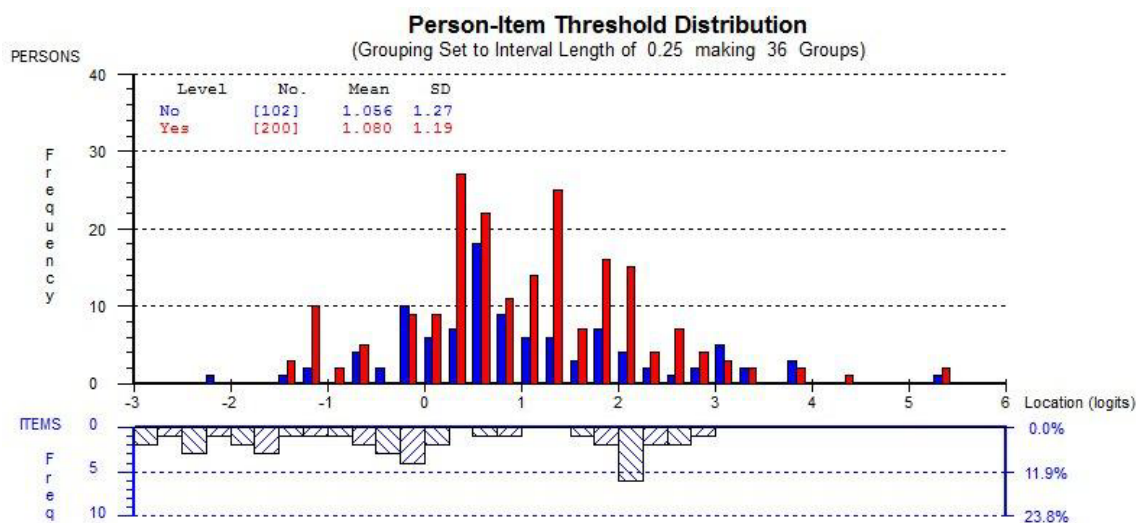### *Relationships between Self-Concept and Personal Characteristics*

1. Gender –Male students rated their Self-Concept higher than females and this was as predicted.

2. Age – It cannot be claimed the older students will have significantly higher Self-Concept than the younger students in VET courses and this is contrary to predictions.

3. Personal Safety – Safety does make a different to Self-Concept. Those of the view that it is not safe have a significantly lower Self-Concept than those with the view that it is very safe.

4. Country of Origin – Students from the Indian sub-continent and students from other than Asian regions (Others) have significantly higher self-Concepts.

5. Family Financial Position – Only students from very poor family and students from above average family financial background have higher Self-Concepts, and this is contrary to what was predicted in the conceptual model.

6. Prior Qualifications - There is no significant difference in the Self-Concept between students with higher prior qualifications than those with lower prior qualifications. This is contrary to the prediction of the conceptual model.

The next chapter explains the Rasch measurement for the independent variable Motivation.

CHAPTER TEN – DATA ANALYSIS (PART V)

RASCH MEASUREMENT OF MOTIVATION TO ACHIEVE ACADEMICALLY

This chapter explains the Rasch Analysis of the data for the variable Motivation (please refer to Appendix A for the questionnaire). The data collected for the present study were analysed with the RUMM 2030 computer program (Andrich, Sheridan & Luo, 2013). Selected outputs from the computer program are presented and interpreted. These outputs show how a linear scale was created from which valid inferences can be drawn. For the independent variable Motivation, the Rasch measurement analysis explains the following outputs from RUMM 2030; global and person item fit to the measurement model, item-person interaction, Person Separation Index, Response Category Curves, Thresholds, Item Characteristic Curves, differential item functioning by gender and targeting graphs.

INITIAL RASCH ANALYSIS

The initial Rasch analysis was performed with data from 20 items where each item was scored in four response categories: not at all (scored zero), not often (scored 1), often (scored 2) and very often (scored 3). Steps were taken to check the outputs from the program to ensure that: (1) the item thresholds were in the correct order from easy to hard as presented in the questionnaire and that those items that do not fit the correct order were discarded from the final analysis; (2) The difference between the expected value (as estimated by the measurement model) and the actual value, namely the residuals were calculated; (3) the item-trait interaction test-of-fit was calculated based on a chi-square, which indicates the consistency of the item difficulties and the person measures along the Self-Concept linear scale. This indicates whether there was reasonable agreement among the respondents about the linear progression of the item difficulties along the scale; (4) Person Separation Index, which is the ratio of the true score variance among the respondents and the estimated observed score variance using the estimates of their ability measures and the standard errors of these measures. For a good measure, it is desirable that this index value should be 0.9 or greater, which indicates that the measures are separated by more than their standard errors (Andrich &

Van Schoubroeck, 1989); (5) whether the items fit the measurement model satisfactorily; and (6) whether there is proper targeting of the item difficulties against the student measures. This is tested by the Person Item Difficulties graph and the Person-Item Threshold graph which indicate whether the items are too easy or too hard for the respondents. There is also a test of the agreement between the predicted (conceptualised) item order difficulty and the actual item order difficulty which tests the construct validity of the variable as intended. Based on the steps mentioned above the initial Rasch analysis show seven items (4, 5, 7, 11, 12, 13, and 20) do not fit the model and were deleted. The remaining 13 items form a linear Motivation scale from which valid inferences can be made. All the 13 items retained fit the model with $p>0.07$.

FINAL RESULTS OF RASCH ANALYSIS

The final Rasch with the RUMM 2030 program uses data from N=316 respondents and 13 items to produce a good, reliable linear scale. The details of the outputs generated by the RUMM 2030 program are explained in subsequent paragraphs.

Summary of Fit Statistics

The RUMM 2030 computer program estimates the item-person interaction which establishes the overall fit statistics that determine whether the item estimations contribute meaningfully to the measurement of the construct. This calculation thus examines the consistency of the responses from the students and its agreement with the calculated difficulty of each item on the scale. The overall standardised residual statistics (See Table 10.1) have a distribution with a mean near zero and a standard deviation near one when the data fit the measurement model (Andrich, 1985), as is the case with the Motivation measure. This means that there is a good arrangement of data for the persons and items according to the Rasch measurement model for this variable.

Dimensionality

There was an item-trait interaction chi-square of 60.441 with 52 degrees of freedom and a probability of 0.197. This means that the scale is constructed with reasonable agreement amongst the students about the linear progressive difficulty of the items all along the scale. It also supports the creation of a unidimensional scale in Rasch

terms – that is one parameter for each person and one parameter for each item can accurately predict each person's response to each item.

Person Separation Index

The Person Separation Index is an estimate of the true score variance among the students and the observed score variance using the estimates of their ability measures and the standard error of these measures (Andrich & Van Schoubroeck, 1989) and it is 0.81. It is an indicator that the student measures are separated by more than their standard errors and 0.81 is very satisfactory.

Table 10.1 – Overall Test-of-Fit Statistics (N = 316, Total number of items = 13)

Motivation	Items		Persons	
	Location	Fit Residual	Location	Fit Residual
Mean	0.0000	0.0376	0.9822	-0.6343
SD	0.2908	0.7688	1.0496	2.1075
Correlation [location / Std Residual]	0.5076		0.1217	
Reliability Indices				
Person Separation Index	With Extremes : 0.8143		NO Extremes: 0.8055	
Item-trait Interaction				
Total Item Chi-Square	60.4410			
Total Degree of Freedom	52.0000			
Total Chi-Square Probability	0.19728			

Comments on Table 10.1:
Fit residuals have a mean near zero and a standard deviation near one when the data fit the measurement model, as it is the case here. This reflects good consistency of items and student scoring patterns. Power of analysis of fit is also excellent based on separation index of: 0.8143.

Individual Item Fit

Items are arranged in the order of their calculated difficulty value with their probability of fit to the measurement model. The position of the item on the linear scale represents its level of difficulty in standard units called logits (log odds of answering successfully). All items fit the model with probabilities greater than p = 0.10 (see Table 10.2). The residuals shown in Table 10.2 represent the difference between the observed responses and the expected responses calculated from the Rasch measurement parameters. Standardised residuals should fall between -1.606 and +1.08. All items have a satisfactory fit to the measurement model and all 13 items 'hang together' to produce an acceptable scale.

Table 10.2: Individual item Fit Statistics for Motivation

Item	Location	SE	Residual	DF	ChiSq	DF	Prob
14	-0.467	0.092	-1.606	284.80	8.590	4	0.072213
3	-0.430	0.091	-0.999	282.06	6.968	4	0.137574
17	-0.262	0.087	0.144	283.89	10.964	4	0.026969
8	-0.210	0.086	0.423	280.24	3.633	4	0.457898
18	-0.113	0.084	0.717	284.80	3.982	4	0.408384
10	-0.003	0.082	1.080	283.89	2.151	4	0.707990
15	0.055	0.084	0.222	282.98	4.445	4	0.349155
6	0.062	0.086	-0.713	284.80	5.492	4	0.240438
9	0.073	0.082	-0.049	283.89	4.167	4	0.383912
1	0.171	0.086	-0.176	282.98	1.697	4	0.791344
16	0.248	0.083	0.914	283.89	1.567	4	0.814746
2	0.434	0.086	0.057	284.80	0.936	4	0.919364
19	0.442	0.084	0.474	282.98	5.849	4	0.210679

Notes on Table 10.2:
1.   Location indicates the degree of difficulty of the item on the linear scale.
2.   SE means standard error, and refer to the degree of uncertainty in a value
3.   Residual is the difference between the expected value as calculated according to the Rasch measurement model and the observed value.
4.   DF stands for degrees of freedom, and refers to the number of scores in a distribution that are free to change without changing the mean distribution.
5.   ChiSq stands for Chi-square
6.   Prob refers to the probability based on Chi-square and indicates the level of certainty to which the item fits the measurement model.

Targeting

A Person-Item Threshold Distribution graph shows the item thresholds in standard unit called logits plotted along the same scale as the person measures. This graph shows how well the item difficulties are targeted to the student measures (see Figure 10.1). The graph demonstrates reasonable targeting of item thresholds (-2.8 logits to +2.8 logits) against the student measures (-1.2 logits to +5.0l logits). This graph shows the vast majority of the students were targeted by the items at appropriate difficulty. However, for future studies perhaps a few more of the difficult items could be included to cover students of higher abilities (students with measures + 2.8 to +5.0 Logits). There is also a gap for items difficulties between +0.4 to +1.4 which can be added to improve the targeting.

Person-Item Threshold Distribution
(Grouping Set to Interval Length of 0.20 making 40 Groups)
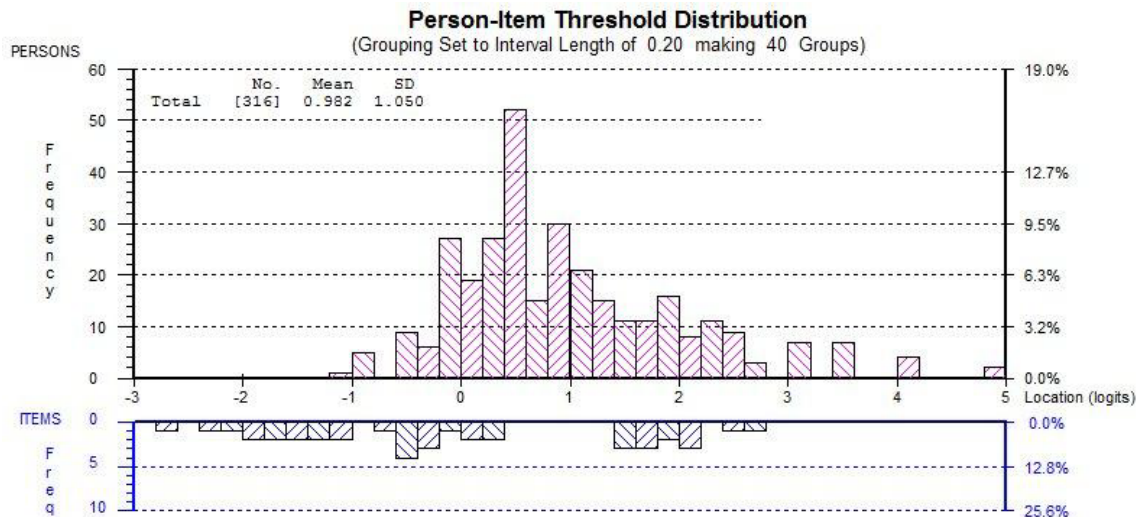
Figure 10.1 Targeting Graph for Motivation
Note: Person measures are on the top of the graph and Item thresholds are on the bottom section of the same scale in Logits.

Discrimination

Item Characteristic Curves examine the relationship between the expected response and the mean group student measures. These graphs display how well the item discriminates between groups of person with different abilities (see Figure 10.2). Item 1 Characteristic Curve shows that the item discriminates well for students with different measures. The Item Characteristic Curves for all items were checked and found to be satisfactory but are not shown here to avoid unnecessary repetition.

The Item Characteristic Curves can also be depicted by gender to show any differential item functioning. Figure 10.3 shows this for item 1 where F=1.71, df= 1, 283, p=0.19. This means that that there is no statistically significant difference by gender for item 1 (that is, no differential item functioning by gender). All the other items were checked and it was found that there was no differential item functioning, but the graphs are not reported here.
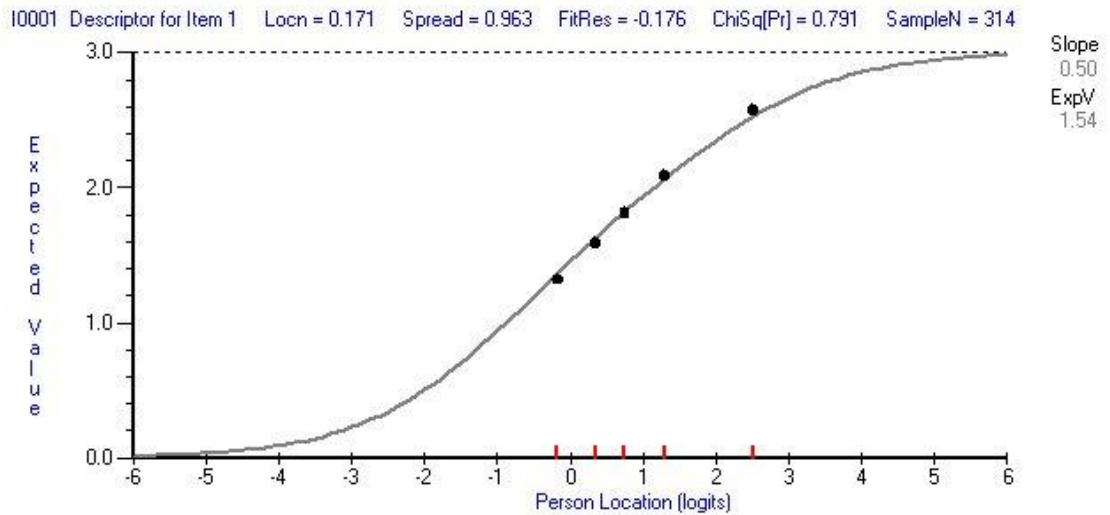
Figure 10.2 Item Characteristics Curve: Item 1 – Motivation
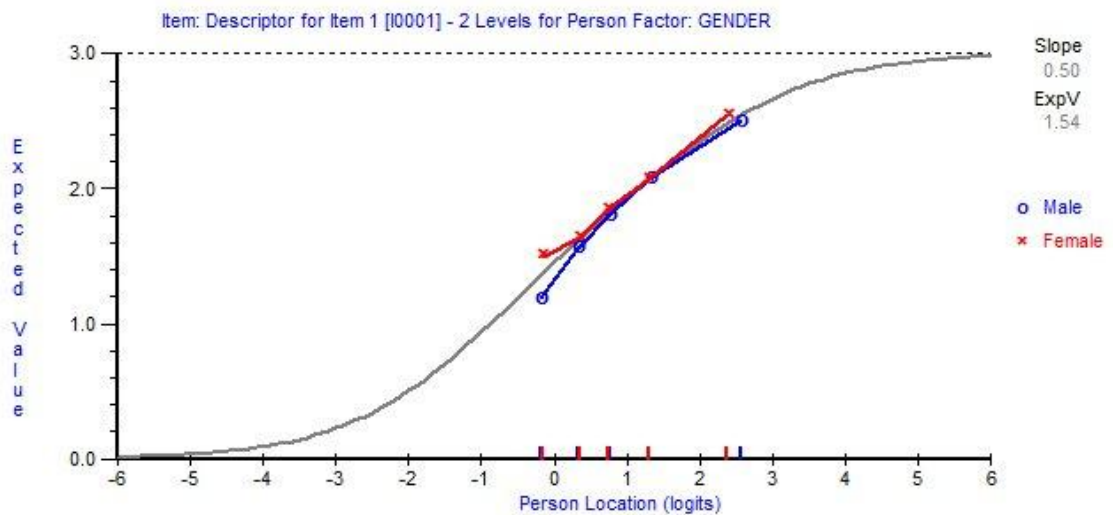
Figure 10.3 Item Characteristics Curve: Item 1 – Motivation by Gender
Note: F=1.71, df= 1, 283, p=0.19 and there is no differential item functioning.

Consistency of Item Response

Figure 10.4 shows the Response Category Curve for item 1 whose difficulty measure is 0.434. The graph shows that students with a measure of -6 logits have a probability of about 1 in answering this item 'not at all' (score of 0). As the person measure increases, the probability of answering the next category increases, as in the case of the red line showing the person with measure of close to -1 logits. The probability of answering the next category 'not often' (score of 1) increases to almost 0.5 as the person measure increases to about 1.5 logits. As the person measure reaches the highest level of +6 logits, the probability of answering the highest category 'very

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often' (score of 3) reaches 1. This means that the students have answered the response categories for item 1 consistently and logically. The Response Category Curves for the other items were checked and they were found to be satisfactory meaning that the students used the response categories consistently and logically for all items.

I0002 Descriptor for Item 2   Locn = 0.434   Spread = 0.985   FitRes = 0.057   ChiSq[Pr] = 0.919   SampleN = 314
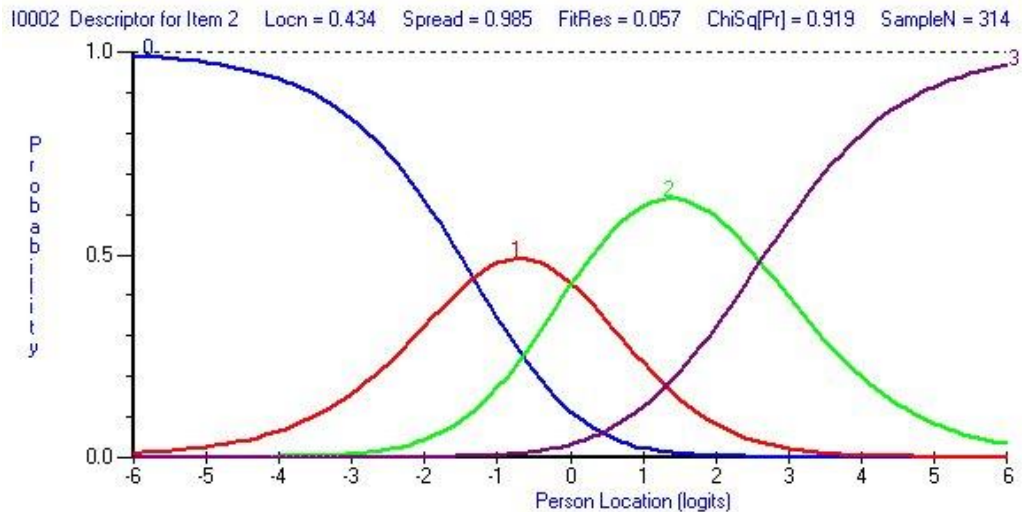
Figure 10.4 Response Category Curve (Item 1) – Motivation

Item Difficulties for the Linear Scale

Table 10.3 shows the 13 items that 'hang together' sufficiently well to form a reliable scale for the measure of Motivation. It lists the item difficulties on the same scale as the student measures of Motivation. The easiest item is number 13 (Do you try to achieve high marks in your studies? (before the start of the course)) – difficulty is -0.47 logits). The hardest item is number 10 (Do you read and research widely on various topics especially those related to your course? - difficulty is +0.44 logits).

Table 10.3 Motivation Items and their difficulties (I=13)

Items Description	Before start of course	After start of course
Standard		
1 - 2 Do you feel that you are studying as hard as you can?	0.17	0.43
3 – 4 Do you try to achieve better results than what you have achieved so far?	-0.43	DNF
Goal		
5 – 6 Do you set yourself academic goals?	DNF	0.06
7 – 8 Do you try to find better ways to achieve your academic goals?	DNF	-0.21
Task		
9 – 10 Do you do the required homework assigned to you?	0.07	-0.00
11 – 12 Do you plan your study so that you can succeed in all the units?	DNF	DNF
Effort		
13 – 14 Do you try to achieve high marks in your studies?	-0.47	0.05
15 – 16 Do you put in extra effort and seek additional help from others to achieve better results?	DNF	0.25
Desire to learn - Interest		
17 – 18 Do you have the interest to learn?	-0.26	-0.11
19 – 20 Do you read and research widely on various topics especially those related to your course?	0.44	DNF

Note: DNF means did not fit the Rasch measurement model

CONSTRUCT VALIDITY – MOTIVATION TO ACHIEVE ACADEMICALLY

While seven items did not fit the model and were discarded after the initial analysis, the overall construct is reasonably 'solid', and the exclusion of these seven items did produce a better scale. Table 10.3 revealed some disagreement between the predicted order of item difficulties and the actual measured order. (1) The sub-group Standard seems to be rated harder by the students than was predicted this may be due to the students being not familiar with the standard of the Australian VET system. Anecdotal evidence and personal experience of the author of this study support the observations that student may not have sufficient understanding of the academic requirements of VET courses. This may have caused the students to be insufficiently prepared for their academic study and not fully informed of the standards expected of them. If this is the case, it will have an impact on the next sub-group Goal, where students may not have set themselves realistic goals. Future studies could refine these items to focus on exploring their prior assessments of the expected standard and how they will motivate themselves to achieve the standards. This sub-group should be moved down the vertical order as part of the more difficult items. (2) The sub-group Interest – Desire to Learn seems to be an easy item to the students (easier than was predicted). This may be because most students perceive VET courses to be easy in comparison to university and can lead to good employment opportunities. As is evident from the qualitative responses many international students do rate positively the opportunity to work and this could provide an interest in the course. In future studies, questions on interest can be enhanced to assess the other interests (non-academic) which may motivate students. (3) Sub-group Task, students are finding doing homework harder than was predicted. This could be because most students complete their VET tasks in class rather than completing their work at home. This item can be modified to record the number of tasks completed on time and can be included as part of the harder items.

As predicted for all items where both perspectives fit the measurement model, the perspective of 'after the course starts' is harder than 'before the course starts', with one exception. For the item 'do you do the required homework assigned for you' is about the same difficulty in both perspectives. So there is some agreement between the predicted order of item difficulty and the actual measured order. So if there is any future use of this scale, some re-designing of some items should be made.

SUMMARY

A reliable linear scale measuring Motivation to Achieve Academically was created using the RUMM2030 computer program (Andrich, Sheridan & Luo, 2013) from data using 13 items with N=316 students at six Registered Training Organizations in Western Australia. The following six aspects support this conclusion and, while the scale is not ideal and can be improved, valid inferences can still be drawn from its use.

1. The data from the 13 items ' hang together' well enough to produce a linear scale with a Person Separation Index of 0.81, meaning that the measures are sufficiently separated by more than their standard errors;

2. The scale is constructed with reasonable agreement amongst the students about the linear progressive item difficulty of the items all along the scale;

3. All items fit the model with probabilities greater than $p = 0.10$, except for seven items (4, 5, 7, 11, 12, 13, and 20) and they were discarded;

4. Targeting of item difficulties against the student measures was satisfactory but some improvement in this targeting should be done in any future use of this scale;

5. The scale shows that all the items discriminate satisfactorily and that there is no significant gender bias in any of the items;

6. The scale shows the students have answered the response categories consistently and logically; and

7. There is no differential item functioning by gender for any of the 13 items forming the linear scale.

Valid inferences can now be drawn from the scale and these are reported through the next chapter, Chapter eleven which explains the relationships between the variable Motivation and some VET characteristics, and Motivation and some student Personal Characteristics.

CHAPTER ELEVEN - DATA ANALYSIS (PART VI)

RELATIONSHIPS BETWEEN MOTIVATION TO ACHIEVE ACADEMICALLY AND VET COURSE CHARACTERISTICS AND PERSONAL CHARACTERISTICS

This chapter explains the Rasch Analysis of the relationships between Motivation and the context variables VET Characteristics and Personal Characteristics. The data collected for the present study were processed by the RUMM 2030 computer program and the outputs from the program are interpreted to show the relationships between the various characteristics. For the VET characteristics, the Rasch measurement analysis focuses on the relationships between Motivation and (1) Value for Money, (2) Suitability for the Education Background, (3) Reasonable Adjustment, (4) Leads to Good Career Opportunities, (5) Utilises the Latest Technology, and (6) High Reputation in Home Country. For the Personal Characteristics, the Rasch measurement analysis focuses on the relationship between Motivation and the following characteristics; (1) Gender, (2) Age, (3) Personal Safety, (4) Country of Origin, (5) Family's Financial Position, and (6) Prior Academic Qualification.

RELATIONSHIPS BETWEEN MOTIVATION TO ACHIEVE ACADEMICALLY AND VET COURSE CHARACTERISTICS

Data for each of the VET course characteristics were collected using questions (see Appendix A questionnaire) where the students were asked if each of the characteristics was true (yes) or false (no). In each of these characteristics, it is expected that a positive response, in other word a yes answer to the questions, would relate to higher perception of Motivation and vice versa. The details of the outputs generated by the RUMM 2030 are explained in subsequent paragraphs.

Value for Money

As shown in Figure 11.1, a majority of the 303 students responded positively (213 said yes versus 90 who said no) that there was value for money for the VET courses in

which they were enrolled. The mean score for the positive response is 1.020 which is higher than the 'no' mean score of 0.884, this is not statistically significant (F=1.08, df=1,302, p=0.30). This is not as predicted in the conceptual model where it was expected that students who believe that there is value for money will also have higher Motivation.
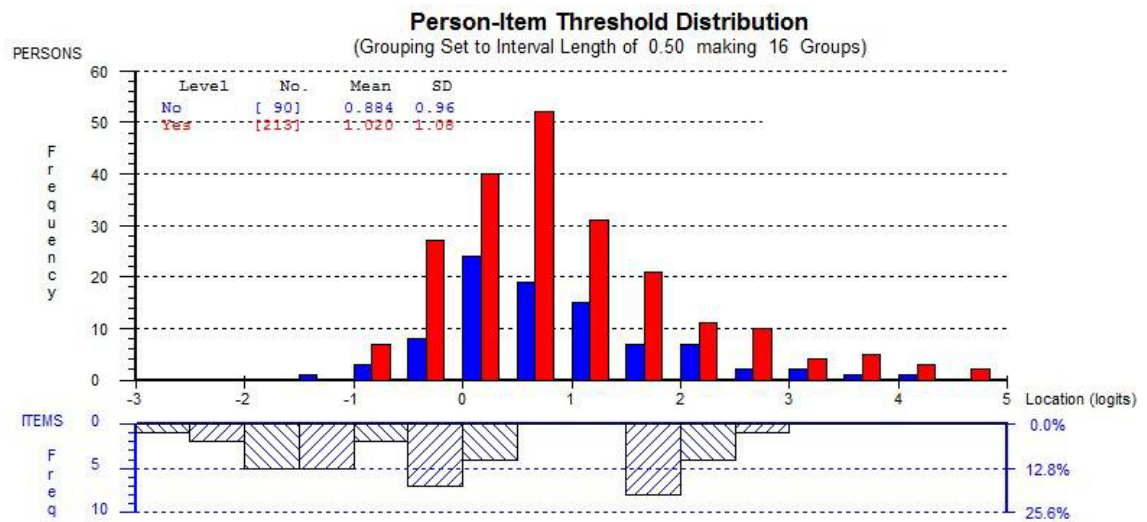
Figure 11.1 Relationship between Motivation and Value for Money
Note: 1 - F=1.08, df=1,302, p=0.30 and is not significant.
          2 - Measures are on the upper scale from low (LHS) to high (RHS)
          3 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Suitable for their Education Background

As shown in Figure 11.2, a majority of the 287 students responded positively (235 said yes versus 52 who said no) that the course in which they were enrolled in was suitable for their education background. The mean score for a positive response is 1.019 and this is higher than the mean score for negative response of 0.818. However, it is not statistically significant (F=1.56, df=1,285, p=0.21). This is contrary to the prediction in the conceptual model where it is expected that students who believe the course is suitable for their qualifications will also have higher Motivation.
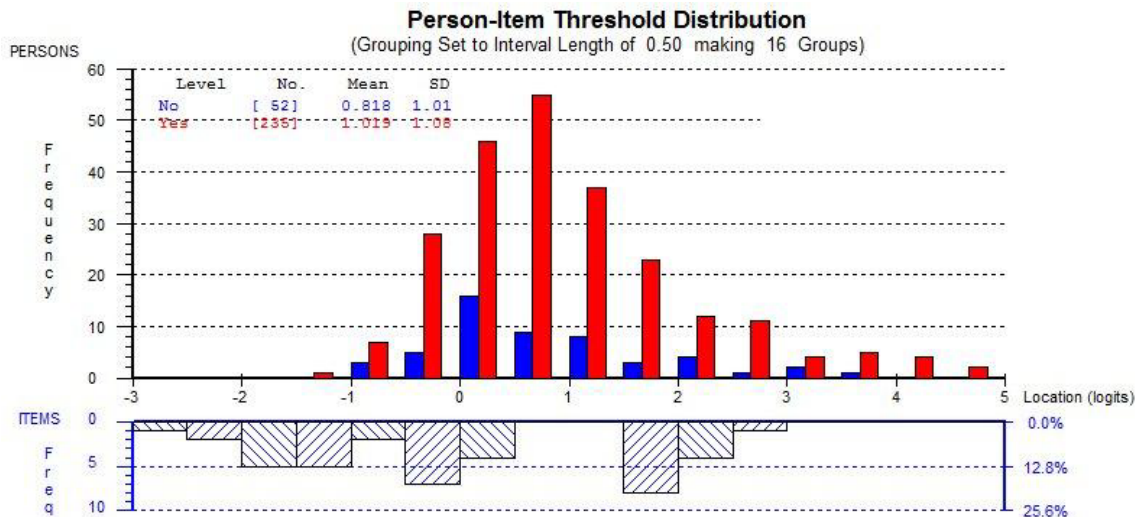
Figure 11.2 Relationship between Motivation and Educational Background
Note: 1 - F=1.56, df=1,285, p=0.21 and is not significant
          2 - Measures are on the upper scale from low (LHS) to high (RHS)
          3 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Reasonable Adjustment

As shown in Figure 11.3, a majority of the 287 students responded positively with a mean score of 1.021 (195 said yes versus 92 who said no) that the course in which they were enrolled provided reasonable adjustment to cater to their education background. The positive response mean score is 1.021 and the negative response mean score is 0.902. This is not statistically significant (F=0.81, df=1,285, p=0.37). Thus it cannot be claimed that students who perceived that there is reasonable adjustment to suit their circumstances in their VET course will have a higher Motivation. This is not as predicted in the conceptual model.
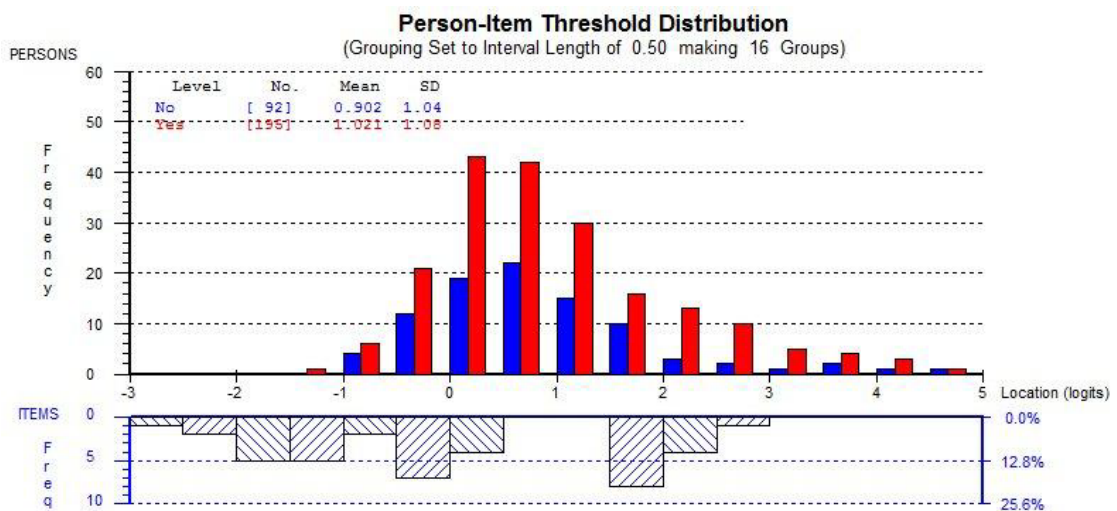
Figure 11.3 Relationship between Motivation and Reasonable Adjustment
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
          2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

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Good Career Opportunities

As shown in Figure 11.4, a majority of the 303 students responded positively with a mean score of 0.969 (223 said yes versus 81 who said no) that the course in which they were enrolled would lead to good career opportunities. The positive mean score of 0.969 is also lower than the negative mean score of 0.997 but this is not statistically significant (F=0.05, df=1,302, p=0.85). Thus it cannot be said that students who believe that VET courses lead to better career opportunities will have higher Motivation and this is contrary to what was predicted.
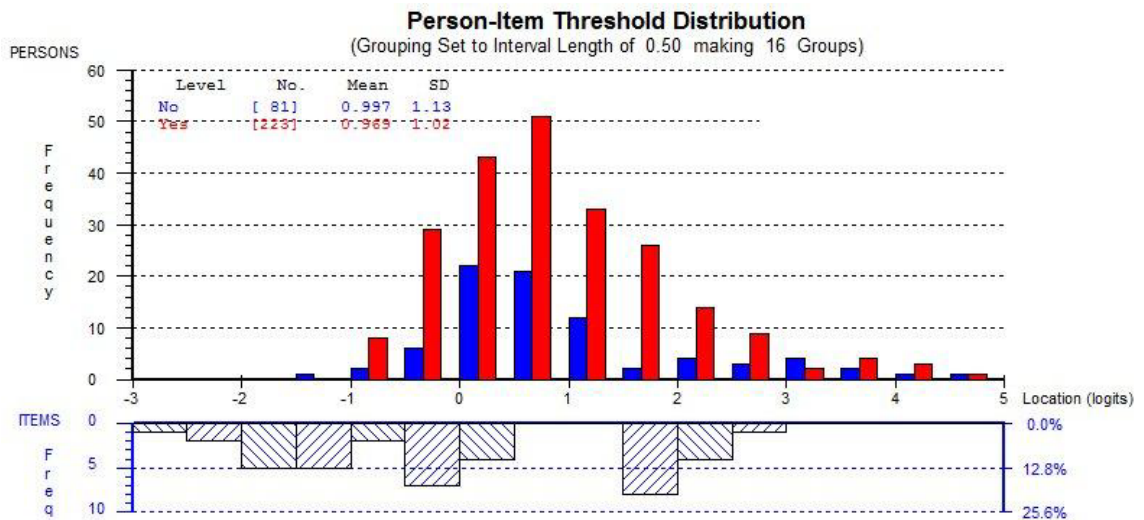
Figure 11.4 Relationship between Motivation and Good Career Opportunities
Note: 1 - F=0.05, df=1,302, p=0.85 and this is not significant.
         2 - Measures are on the upper scale from low (LHS) to high (RHS)
         3 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Utilising the Latest Technologies

As shown in Figure 11.5, a majority of the 304 students responded positively with a mean score of 1.027 (191 said yes versus 113 who said no) that the course in which they were enrolled utilised the latest technologies. The positive mean score of 1.027 is higher than the negative mean score of 0.892, but this is not statistically significant (F=1.19, df=1,302, p=0.82). Thus, it cannot be claimed that students enrolled in courses that use the latest technologies are more likely to have higher Motivation. This is not as predicted.
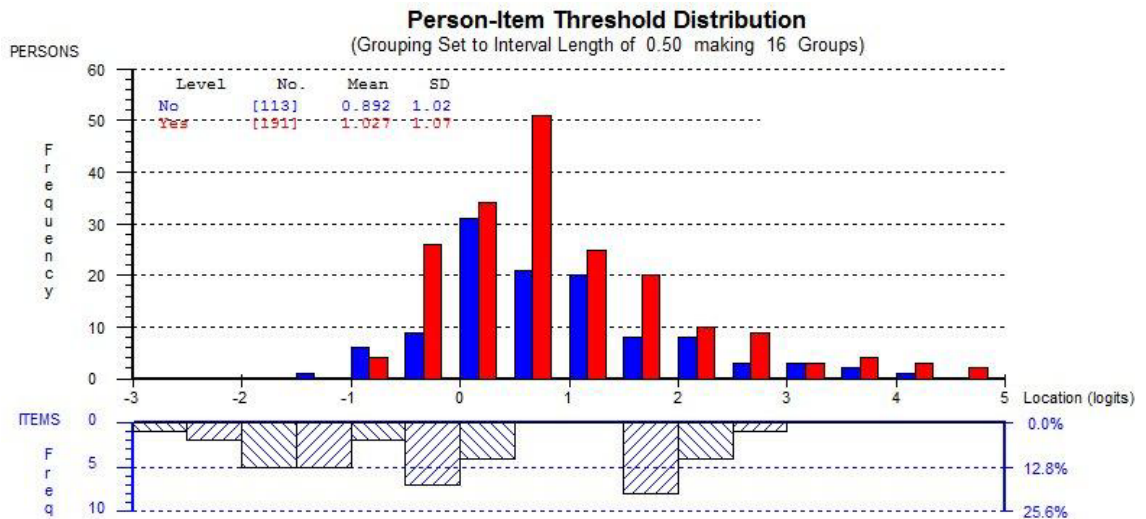
Figure 11.5 Relationship between Motivation and Utilising the Latest Technologies
Note: F=1.19, df=1,302, p=0.82 and this not significant.
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
             2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

High Reputation at Home Country

As shown in Figure 11.6, a majority of the 302 students responded positively with a mean score of 0.980 (200 said yes versus 102 who said no) that the course in which they were enrolled has a high reputation in their home country. The mean YES measures and the mean NO measures are not statistically significant (F=0.001, df=1,300, p=0.97). So it cannot be claimed that students studying in a VET course that has a high reputation in their home country will have higher Motivation. This is not as predicted.

Figure 11.6 Relationship between Motivation and High Reputation at Home Country
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
             2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

RELATIONSHIPS BETWEEN MOTIVATION TO ACHIEVE ACADEMICALLY AND PERSONAL CHARACTERISTICS

Six personal characteristics are expected to be related to Motivation: (i) Gender; (ii) Age; (iii) Personal safety; (iv) Country of Origin; (v) Financial Background; and (vi) Level of Prior Education. In this study, questions were designed for students to specify their personal characteristics using a choice of up to four nominated answers. Each of these six personal Characteristics expects a nominal response using labels from 1 to 4.

Gender

As shown in Figure 11.7, a total of 286 students were included in this Rasch analysis of which 131 were females and 155 were males. The recorded mean score for Motivation for male students is 1.193 and is higher than the recorded female score of 1.075. However, this is not statistically significant (F=0.86, df=3289, p=0.95). This is not as was predicted, the male students were expected to rate their Motivation higher than females students do.
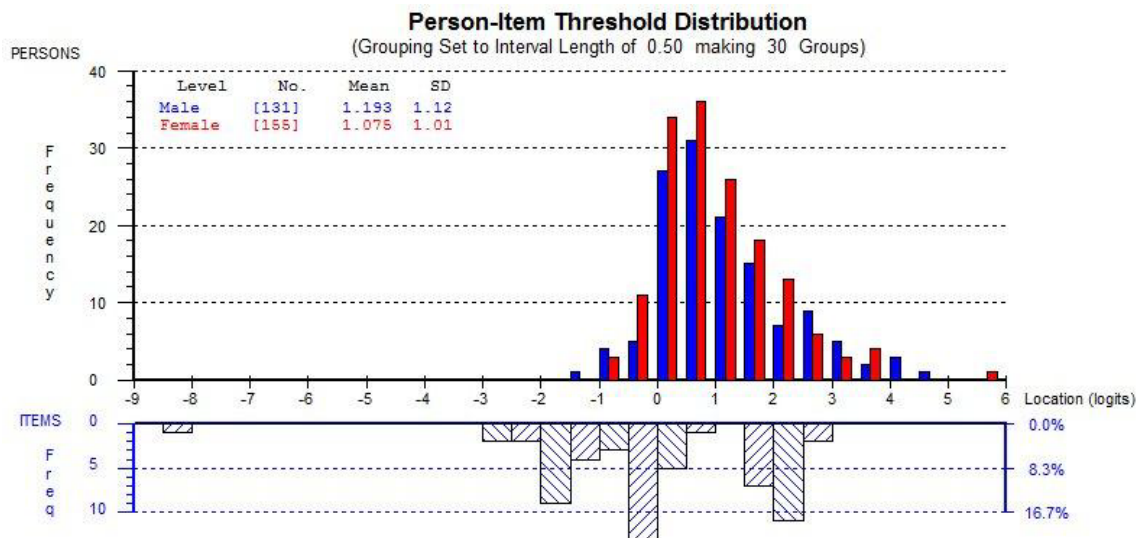
Figure 11.7 Relationship between Motivation and Gender
Note: 1 - F=0.86, df=3289, p=0.95 and is not significant
       2 - Measures are on the upper scale from low (LHS) to high (RHS)
       3 - Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Age

As shown in Figure 11.8, a total of 293 students were included in this Rasch analysis of which 45 were less than 19 years of age, 178 were between the age of 20 and 30 years old (inclusive), 54 were between the age of 31 and 40 years old (inclusive) and 16 were over the age of 41. The recorded mean scores for Motivation for each age group were 1.089, 1.150, 1.233 and 0.978 respectively. However, this is not statistically significantly different (F=0.11, df=3,289, p=0.95) and thus does not support the predicted relationship that older students were expected to have higher Motivation.
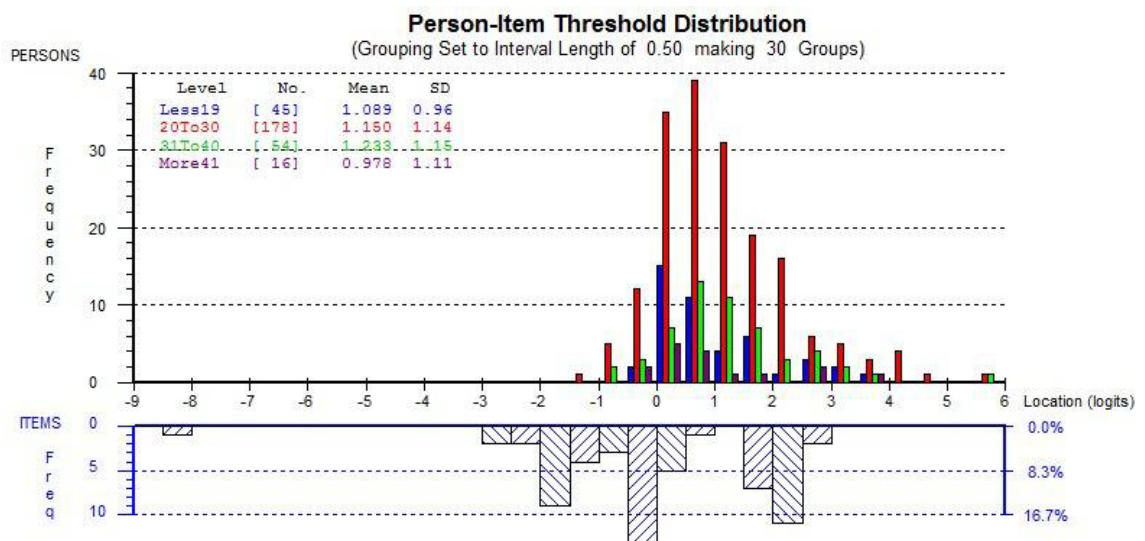
Figure 11.8 Relationship between Motivation and Age
Note: 1 - F=0.11, df=3,289, p=0.95 and is not significant
         2 - Measures are on the upper scale from low (LHS) to high (RHS)
         3 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Personal Safety

As shown in Figure 11.9, a total of 294 students were included in this Rasch analysis of which 3 felt unsafe, 116 felt not very safe, 130 felt safe and 45 felt very safe. The recorded mean scores for Motivation for each group were 1.485, 0.932, 1.181 and 1.555 respectively. This is approaching statistical significance (F=3.15, df=3,290, p=0.03) and though those who felt very safe compared to those felt not safe is significant. There is a tendency for those who feel very safe to have a higher motivation than the others.
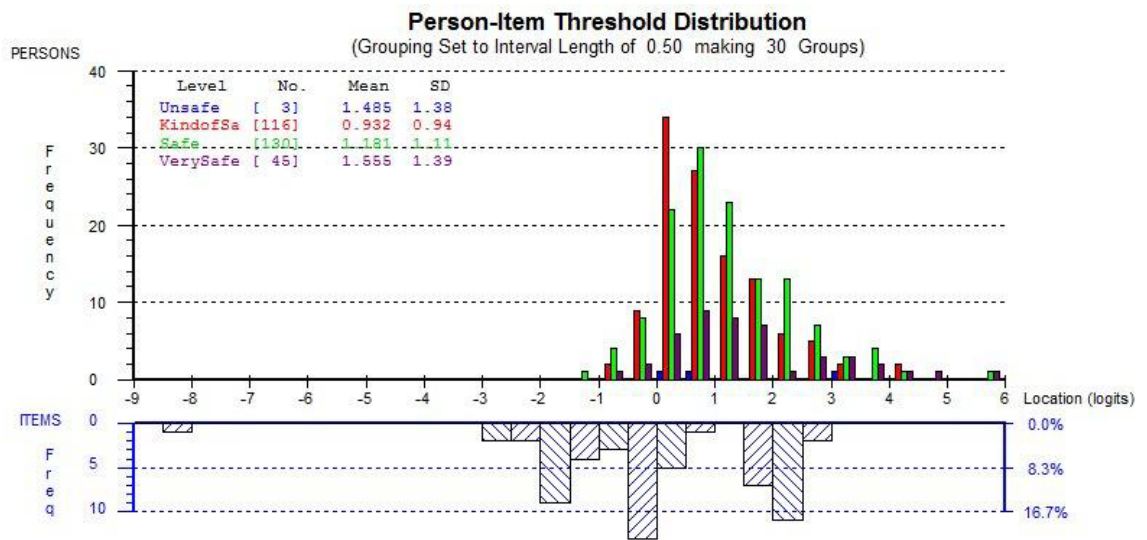
Figure 11.9 Relationship between Motivation and Personal Safety
Note: 1 - F=3.15, df=3,290, p=0.03. There is a tendency for those who feel very safe to have a higher
        motivation than the others.
        2 - Measures are on the upper scale from low (LHS) to high (RHS)
        3 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Country of Origin

As shown in Figure 11.10, a total of 292 students were included in this Rasch analysis of which 57 from the Indian-subcontinent (India, Pakistan, Bangladesh, Nepal, Bhutan, Sri Lanka, Afghanistan and Maldives), 62 from South East Asia (Cambodia, Laos, Burma (Myanmar), Thailand, Vietnam, Malaysia, Indonesia, Philippines and Singapore), 88 from East Asia (People's Republic of China, Hong Kong, Macau, Taiwan, Japan, North Korea, South Korea, and Japan) and 85 from other countries. The recorded mean scores for Motivation for each country of origin group were 1.504, 0.813 0.919 and 1.362 respectively. This is approaching statistical significance (F=4.66, df=3,288, p=0.05) but, while there is a tendency for the Indian sub-continent students and other students to have a have higher Motivation than those from South-East Asia and East Asia it is not statistically significant. The model predicted that students from Asia were expected to have higher Motivation and so this result is not as predicted by the conceptual model.
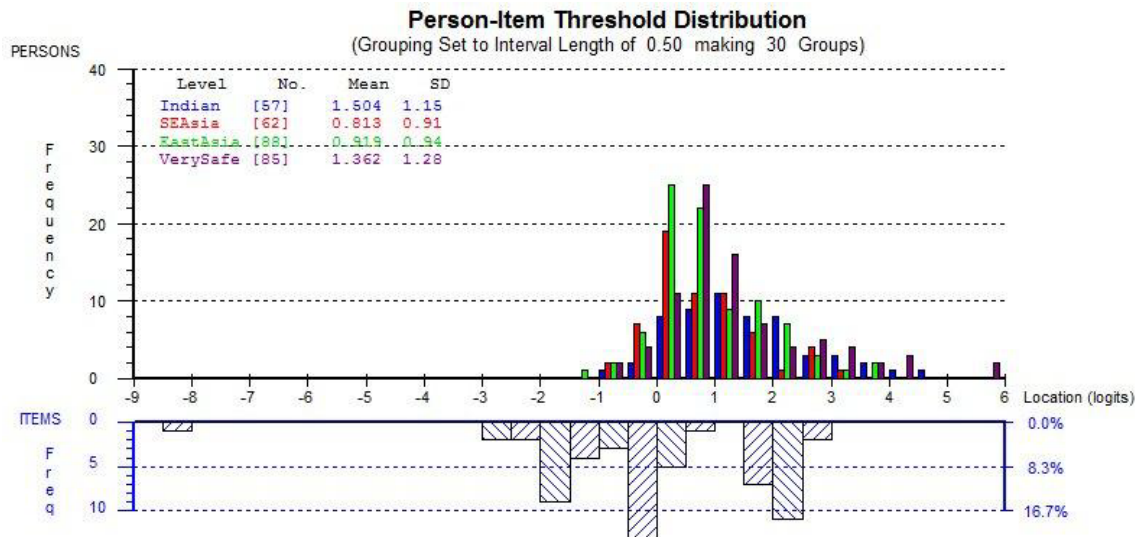
Figure 11.10 Relationship between Motivation and Country of Origin
Note: 1 - F=4.66, df=3,288, p=0.05 and there is a tendency for students from India and other places to
        have a higher motivation than those from SE Asia and East Asia.
        2 - Measures are on the upper scale from low (LHS) to high (RHS)
        3 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

Family Financial Position
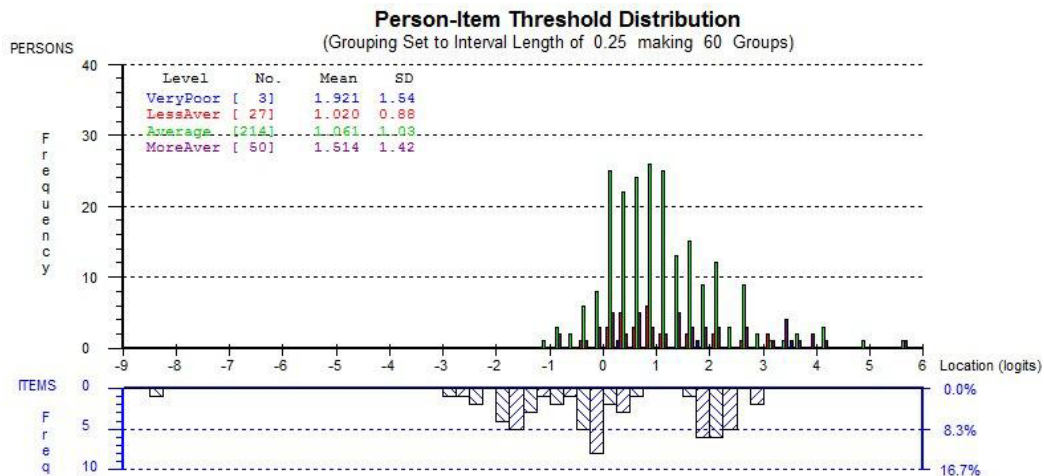
Figure 11.11 Relationship between Motivation and Family Financial Background
Note   1 - Measures are on the upper scale from low (LHS) to high (RHS)
        2 – Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

As shown in Figure 11.11, a total of 294 students were included, of which three were from very poor families, 27 were from less than average families (financially), 214 were from average families (financially) and 50 were from more than average families (financially). The recorded mean scores for Motivation for each of these groups were

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1.921, 1.02, 1.061 and 1.514 respectively, this is approaching statistical significance (F=2.70, df=3,290, p=0.05). While there is a tendency for students from very poor families and better than average families (financially) to have a higher Motivation than the others, this is not statistically significant. This is partly contrary to what was predicted in the conceptual model which predicted that poorer students were expected to have lower Motivation.

Prior Qualification

As shown in Figure 11.12, a total of 294 students were included in this Rasch analysis of which 17 had not completed high school, 105 had completed high school, 134 had a college degree and 38 had a post graduate degree. The recorded mean scores for Motivation for each of these groups were 1.306, 1.047, 1.179 and 1.212 respectively. This is not statistically significance (F=0.43, df=3,290, p=0.73) and there is no tendency for students with higher prior qualifications to have higher Motivation and vice versa. The model predicted that students who had higher prior education would have higher Motivation than those students with a lower level of prior education, but this is not the case.
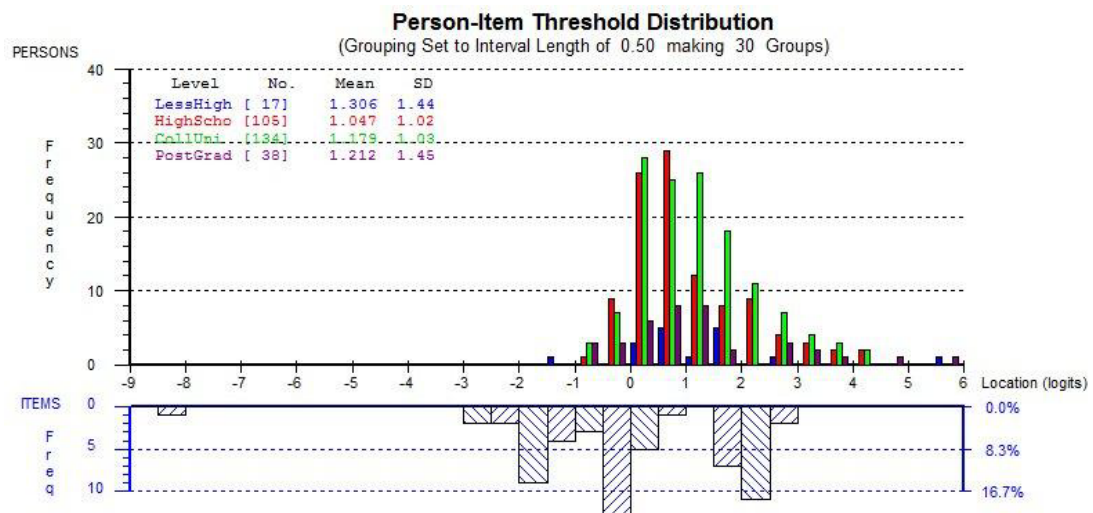
Figure 11.12 Relationship between Motivation and Highest Prior Academic Qualification
Note: 1 - F=0.43, df=3,290, p=0.73 and this is not significant
            2 - Measures are on the upper scale from low (LHS) to high (RHS)
            3 - Item difficulties are on the lower scale from easy (LHS) to hard (RHS)

SUMMARY

The RUMM 2030 computer program was used to analyse responses from N=313 students to investigate the relationships between the Motivation and the two context variables, VET Characteristics and Personal Characteristics. The VET Characteristics included are Value for Money, Suitable for the Education Background, Reasonable Adjustment, Lead to Good Career Opportunities, Utilised the Latest Technology, and High Reputation in Home Country. The Personal Characteristics include Gender, Age, Personal Safety, Country of Origin, Family's Financial Position, and Prior Academic Qualification. The outputs from the RUMM 2030 program are interpreted and the relationships between the various characteristics are as follow.

Relationships between Motivation to Achieve Academically and VET Course Characteristics

1. Value for Money – Higher value for money for the VET course in which they were enrolled was not associated with higher academic motivation. This is contrary to the prediction in the conceptual model.

2. Suitable for the Education Background – There is no strong statistical evidence to suggest that the VET courses that were suitable for their education backgrounds for students was associated with higher academic motivation. This is contrary to what was predicted in the conceptual model.

3. Reasonable Adjustment – It cannot be claimed that students who have more reasonable adjustment to suit their circumstances in their VET course will have a higher Motivation. This is not as predicted in the conceptual model.

4. Good Career Opportunities **–** It cannot be said that students with better career opportunities will have higher Motivation and this is contrary to what was predicted.

5. Utilised Latest Technologies – It cannot be claimed that students enrolled in courses that use the latest technologies are more likely to have a higher Motivation. This is not as predicted.

6. High Reputation at Home Country – It cannot be claimed that students studying in VET courses that have a high reputation in their home country will have higher academic motivation, and this is not as predicted.
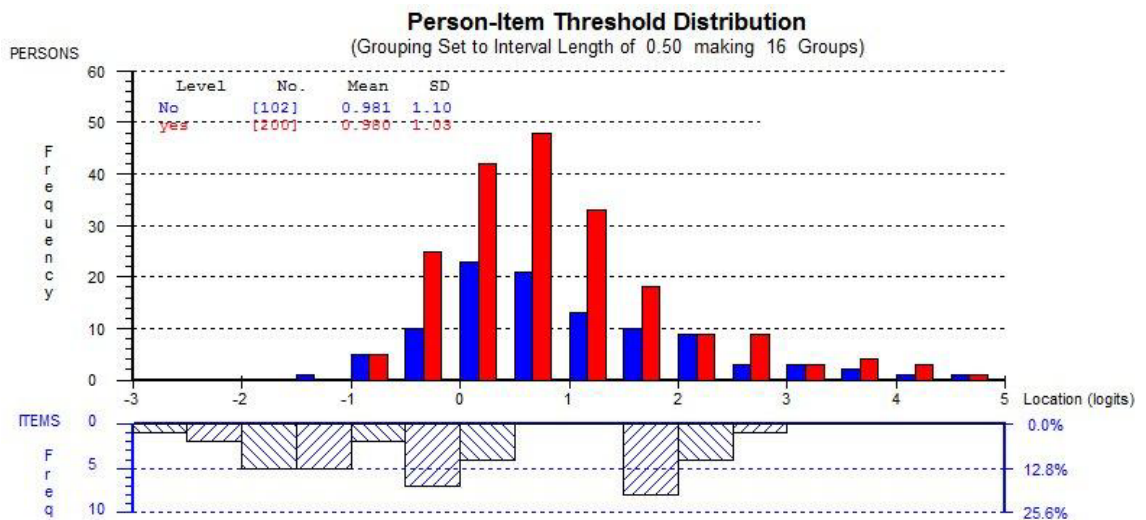
Relationships between Motivation to Achieve Academically and Personal Characteristics

1. Gender –Male students did not rate their academic motivation higher than females and this is contrary to what is predicted.

2. Age – It cannot be claimed that the older students will have significantly higher academic motivation than the younger students in VET courses and this is contrary to predictions.

3. Personal Safety – Personal safety is not associated with a significant difference in academic motivation, however, those of the view that it is 'kind of safe' have a significantly lower academic motivation than those with the view that they feel 'very safe'.

4. Country of Origin – Only students from the Indian sub-continent and students from other than Asian regions (Others) have significantly higher academic motivation than from other Asian regions.

5. Family Financial Position – Students from less than average families (financially) have much lower academic motivation compared to students from above average family financial backgrounds, and this is contrary to what was predicted in the conceptual model.

6. Prior Qualification - There is no significant difference in the academic motivation between students with higher prior qualification than those with lower prior qualifications. This is contrary to the prediction of the conceptual model.

The next chapter explains the qualitative analysis of this study.

CHAPTER TWELVE - DATA ANALYSIS (PART VII)

QUALITATIVE ANALYSIS

This chapter describes the collection and processing of the qualitative data, and discusses the extraction of the inferences from the data generated from the five open-ended questions. This is followed by an explanation of the implications of the inferences in relation to the Quality of Learning Experiences, Self-Concept, Motivation, VET Qualifications and Reasons for Studying in Australia. The chapter ends with a summary of findings.

The inclusion of the qualitative questions in the present study provides added flexibility for the respondents to provide written inputs to the current study. These qualitative questions were added at the end of the section of the questionnaire for each variable. Respondents were free to express their opinions and explain their reasons for their opinions. Miles and Huberman (1984), Huberman and Miles (2002) argued that qualitative data can provide a rich description and explanation of processes and contexts that should enrich the research findings over-and-above those obtained from a quantitative approach alone. Patton (1999) believes in adding qualitative approach to complement and strengthen research. For the present study, the qualitative messages were sourced from the responses to questions that allowed the students to freely express their opinions about the variables. This enabled the researcher to make inferences in the context relevant to the variables and the kind of language comfortable to the students. This information would not otherwise be available from the quantitative measurement analysis.

The qualitative open-ended questions placed at the end of the section of the Perception of Quality of Learning questionnaire was: "Do you think you have received the best learning experience and why?" "Do you feel that you could and did achieve the best academic results so far and why?" was included at the end of the Self-Concept questionnaire. "Do you feel that you have the motivation to succeed and why?" was inserted at the end of Motivation to Achieve Academically questionnaire. "Do you think the VET qualification will help you to get a job and why?" was included at the end of VET Course Characteristics questionnaire; and finally, "What was your most

important reason for choosing to come to Australia to study and why?" was inserted at the end of the personal characteristics questionnaire.

INITIAL QUALITATIVE ANALYSIS

The qualitative responses from the 14 trial sample data were examined. The initial analysis showed that students were recording their inputs to the open-ended questions reasonably well, while the use of English was brief and was not always grammatically correct, the messages were readable and understandable. It was decided that students were to be verbally reminded that they are free to express their opinion and that their responses will remain anonymous. Students were also reminded that they can write in point-form in response to each of the open-ended questions. This message was highlighted to the teachers and trainers who handed out the questionnaires. They was no further change to the open-ended questions.

The information from these questions was entered into an Excel Worksheet; each message was perused, contextualised and classified into categories relevant to the variables which the open-ended question was targeting. Common themes for each of the categories were extracted and analysed. Tables were constructed to present the results by the number of occurrences, the inference category, the samples of representative messages and summary of inferences were created from the information provided by the students. These inferences are discussed in the context of each variable in subsequent paragraphs. The above approach is modelled along the lines suggested by Miles and Hubermann Data Analysis (Flow Model) as shown in Figure 12.1 below.
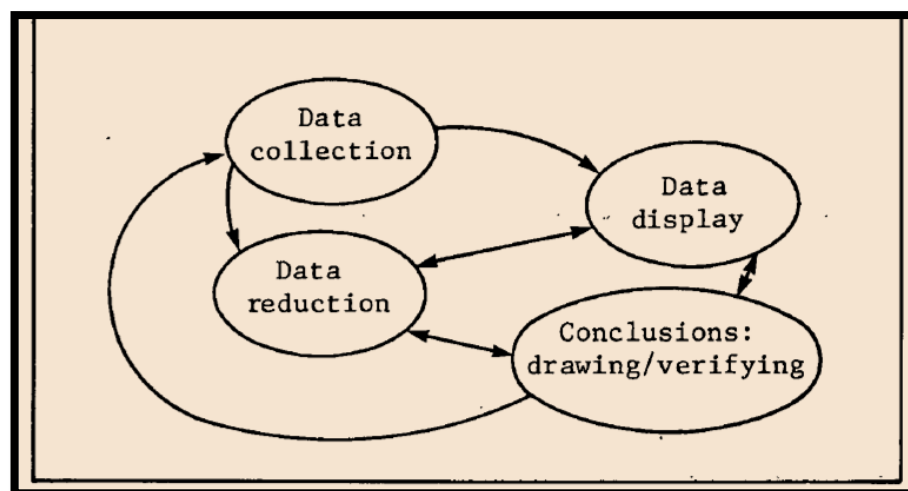
Figure 12.1 Components of Data Analysis; Flow Model
Source: Drawing valid meaning from qualitative data: Toward a shared craft (Miles & Huberman, 1984)

Miles and Huberman (1984, 1994) argued that having the conceptual framework as a guide for data reduction will provide extra information, help to focus on the main issues and research questions being investigated and enhance any study that includes quantitative analysis. Patton's (1999) proposition to combine both quantitative and qualitative approaches, highlighted the triangulation opportunity to verify and strengthen research findings. Applying the processes as shown in Figure 12.1 above, the relationships of quality of learning and the other four variables are the centre of the focus of the present study and the data deduction will converge on these areas. The relationships between the variable: 'Quality of Learning Experiences', Self-concept and Motivation, and the context variables are also explored.
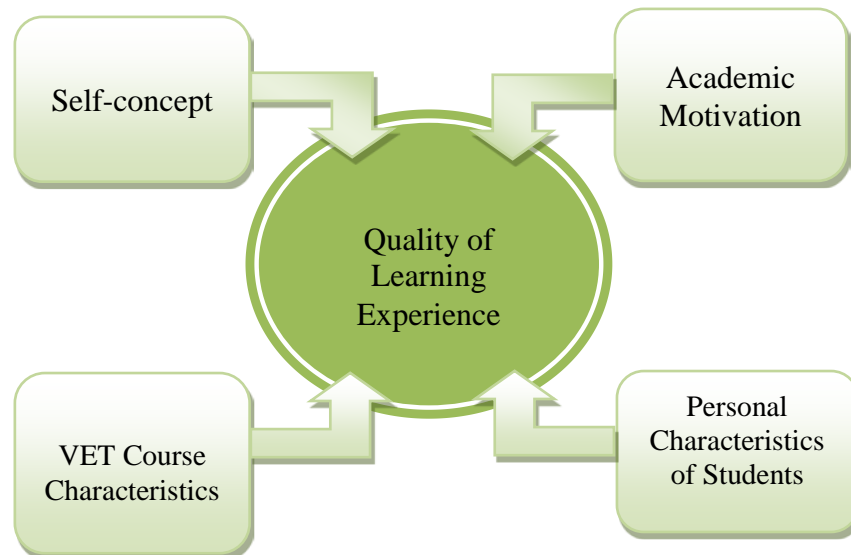
Figure 12.2: The Theoretical Model Showing Relationship between Variables
Source: Designed by author for the study

The analysis of the qualitative data was conducted for each variable and the related open-ended question associated with the variable. The focus of the analysis is on the inferred conclusion derived for the variable and its relationships to the other variables.

Quality of Learning Experiences

Do you think you have received the best learning experience and why?

After examination of all the responses for this question, the responses were first categorised into (1) No, or only negative remark(s); (2) Yes, but without supporting reason; (3) for Yes or kind of Yes with reason(s); and (4) Strong positive feedback including details of more than one positive aspects of quality. The format for the audit trail is QL/NNNN, where QL denotes quality of learning open-ended question and NNNN refer to the informant reference number assigned to each questionnaire answered by the students. Based on these categories, attempts were made to extract and deduce the messages from the students. The inferences were based on the dominant messages extracted from the student's written responses and some of them are listed in the summary table as shown in Appendix C. The findings are summarised below. Quotations as evidence are reported verbatim.

Category 1: No or only negative remark(s)

In this category, 18 out of a total of 120 students have reported negative perceptions of quality of learning experiences and the main issues influencing their perceptions have been the lack of facilities and resources, or poor quality of resources provided by the colleges. Some of the messages expressed by the students were:

> No, because the academic resources are inadequate, the trainer repeats similar things again & again. (QL1030)
> I think my course lack of facilities. Due to library. (QL1093)
> The computer in the lab is too slow, even my iphone is faster than that. (QL1197)

These negative messages are embedded within the selected responses listed in Appendix C and seem to be the common perception among this category of responses.

Category 2: Yes but without supporting reason

In this category, 34 out of 120 students responded with a positive "yes" without further detail. Presumably, students in this category perceived that they had received a quality learning experience, or they had not put much thought into the quality issue. However, it is fair to say that the quality of learning experiences received had been positive as assessed by these students.

There was no comment in this category to quote as the students did not provide any reason.

Category 3: Yes or kind of Yes with reason(s)

Fifty-eight (58) students out of a total of 120 responded that they were positive about the quality of learning experiences. The dominant messages were the quality of teachers and the learning that took place. The messages expressed were:

> Yes, I love xxx (Masked out) College. It's a very nice place to study. The teachers are very helpful. (QL1010)
> Yes, because my teacher will explain every point to us. (QL1072)
> Yes it's good because of some teachers are very helpful and have very good knowledge of subject. (QL1091)

The clearly positive learning experiences were common among almost half of the responses in this category. Many of the messages expressed appreciation of the caring attitude of the teachers and the teaching skills of the teachers. The conclusion derived from this category is that the majority of the students did receive quality learning and the teachers played a major part in influencing the perceptions of quality of these students.

Category 4: Strong positive feedback including details of more than one positive aspects of quality

Ten (10) out of a total of 120 students whose messages are grouped under this category provided strong positive acknowledgements of the quality of learning experiences received. Perhaps more importantly, these messages provided succinct details of what had been learnt and can be applied, potentially delivering values to their future business ventures. Some of the messages are:

> The quality of my course is very good because it helps me in my business. (QL1190)
> Overall quality of the course is really good and I am satisfied with because I learn lot of practical thing in all activities. (QL1211)
> This course is interesting and high quality to study. It can provide students to have the knowledge and skills to build their own business. (QL1230)

This category of responses highlight the importance of delivering course contents that meet the expectation of student and leveraging on the strength of VET course characteristics which are more practical oriented.

In summary, the inferences extracted from these responses for the quality of learning experiences (see Appendix C) contained 18 out of 120 that were negative feedback and 102 responses that were positive feedback. The dominant message from the students indicates that the quality of learning experiences has been good. The standout positive aspects have been the teachers, the delivery (practical activities) and the courses that were appropriate to the students' needs. In the views of most of the students, good quality learning experiences are being achieved as a result of the good teaching, the practicality and relevance of the course to the students. These are certainly supported by research from Krapp (1999) and Brown and Cocking (2000) on interest and relevance of courses, and Bateman, Keating and Vickers (2009) with regard to quality and education of trainers. The skill focus approach certainly is part of the VET characteristics.

The negative aspects of quality of learning experiences were the lack of, or poor resources and facilities. Järvelä and Volet (2004) and Volet and Jarvela (2001) highlight the importance of the physical environment that has an impact on motivation which in this case may have resulted in the negative learning experiences for these students. The six colleges which participated in this present study, four have small campuses and the facilities and resources are limited. It is the observation of the researcher in this present study that there are many private Registered Training Organisations around metropolitan Perth in Western Australia, which have similar physical constraints in space and resources.

Looking at the Quality of Learning Scale from the Rasch measurement (refer to Table 6.3), the harder items rated by the students were Learning Resources, My Teachers, Social Aspects and the Arts, and these sub-groups of quality of learning also featured in the qualitative data. The overwhelming negative aspects, in the views of some students, were also the poor resources and facilities. Comparing the findings from the quantitative and qualitative analysis and anecdotal evidences, they all point to the same conclusion which highlights the strength and weaknesses of the VET industry.

The above findings suggest that the areas which needed improvement among the private VET colleges within the current study, and may be present to some extents

within the VET industry, are the facilities and the resources areas. Most of the private training providers are commercial entities and costs would be one of the major constraints resulting in limitation of their resources and the physical environment for social interactions. It is also conceivable that with the escalating costs of compliance (see Table 1.3), the temptation for the private VET providers to cut back on resources like computing facilities and other learning resources would be strong, and reducing expenditure for rental by cutting back on size of premises (therefore less space for students to socialise) would probably be strong too, in some cases. All these have a tendency to negatively impact on quality of learning experiences for the students in a major way.

Self-Concept

Do you think your academic result so far is satisfactory and why?

The open-ended question for Self-Concept received 160 responses. After careful examination, they were categorised as: (1) Negative Self Confidence - Poor English and study skills; (2) Increasing Self- confidence, making an effort to improve results and study skills; (3) Positive of self-confidence, good academic results and exploring ways to improve study skills; and (4) Self confidence is high and enjoying academic life. The format for the audit trail is SC/NNNN, where SC denotes Self-Concept open-ended question and NNNN refer to the informant reference number assigned to each set of questionnaire answered by the students in the current study. Based on these categories, attempts were made to extract and reduce the messages from the informants. The inferences were based on the dominant message extracted from the students' written responses and some of them are listed in the summary Appendix C. The findings are summarised below.

Category 1: Negative Self-Confidence – Poor English and study skills

Twenty-one (21) out of a total of 160 students reported negative self-concepts and the main issues influencing their self-concept have been their poor English language and study skills. Some of the messages expressed by the students were:

Not yet. I have to improve my English in the next 5 weeks. (SC1013)

Not very satisfactory because I didn't have enough time to finish my study. My study sometimes is not efficient. (SC1017)
Not really because I still feel hard to understand the class sometimes. (SC1021)

These negative messages are common within this category of responses as can be seen in Appendix C. This category of responses made up 13 per cent of the 160 responses recorded.

Category 2: Increasing Self- Confidence – Making an effort to improve result and study skills

Fifty-five (55) out of a total of 160 students reported negative self-concepts, however, these messages also indicate efforts were being made to improve their Self-Concept and confidence level was improving. The students felt confident that their academic results will improve. The main problems cited were their poor English language and study skills, but however, they also stated these were improving. Some of the messages expressed by the students were:

Not sure, I will try my best to achieve the best results. But not too sure about the achievement because I am too slow in the progress as the lack of English & computer skill. (SC1023)
Not yet, I feel that I've learned grammar but I have to improve my vocabulary and practice the speaking. (SC1306)
No, I don't unfortunately I'm not feel confidence with my English this including pronunciation and grammar I think I could have better for living in Australia more than 1 year. (SC1059)

These negative messages were common within this category of responses as can be seen in Appendix C. This category of responses made up 34 per cent of the 160 responses recorded.

Category 3: Positive of self-confidence, academic results and exploring ways to improve study skill

Sixty-three (63) out of a total of 160 students reported positive self-concepts about, and confidence in, their academic results. The students felt confident of academic progress and were seeking out means to improve their study skills. Some of the messages expressed by the students were:

> Yes. I do. I have improved and learned a lot from this course. And I'm getting used to operate those software with English too. (SC1086)
> It all depend on my way of studying and with all the help I get from all my friends and mainly my lecturer, am sure I will reach my goal. (SC1101)
> In my opinion my academic result is satisfactory because I did lots of research and take ideas from teacher to finish my assignments. So I was competent.(SC1195)

These positive messages are common within this category of response as can be seen in Appendix C. This category of response made up 39 per cent of the 160 responses recorded.

Category 4: Self confidence is high and enjoying academic life

Twenty-one (21) out of a total of 160 students reported high self-concept and applying skills which they have learnt. The students felt confident with the knowledge they had learnt and they were enjoying their studies. Some of the messages expressed by the students were:

> Yes, because the information provide us during assignment which makes us confidence and strong on work place. (SC1214)
> Academic result is satisfactory because when I get satisfactory result then I feel confident in my ability and gain reward and enjoy my study. (SC1217)
> Yes, definitely satisfactory because I worked hard, had commitment to my studies, organised and seriously when it comes to assignments and class. (SC1227)

These positive messages are common within this category of responses as can be seen in Appendix C. This category of responses made up 13 per cent of the 160 responses recorded.

As it is evidenced from category 1 responses, low self-concept and low self-efficacy were having impact on student's confidence in their academic performance. Conversely categories 2, 3 and 4 are reflecting higher self-concept and confidence in their self-efficacy. Embedded within the positive messages are the positive learning experiences providing reinforcing confidence and individual satisfaction with the academic performance. Efficacy in the language and study skills had significant impacts on the quality of the learning outcome as expressed by the students and more importantly, the added confidence which propelled the students to expect better outcomes in their ongoing academic performances. These are relevant to Private RTOs as RTOs do need to have effective strategies to help the students overcome the negative self-concept and develop positive self-efficacy to achieve better learning experiences and ultimately the intended academic outcomes. As goals and standards are crucial part of the self-concept and self-efficacy, not meeting or setting of lower standards and goals by these students can result in unsatisfactory academic outcomes and result in non-compliance to standards prescribed by current regulations. As reported by Bong and Skaalvik (2003), negative self believe and self-view against their peers can result from low self-concept; taken into consideration of a relatively small college student population among private colleges, such negativity, if not properly managed can have considerable impact to reputation of the college and problematic academic performance issues. As Bong and Skaalvik (2003) explained with regard to environmental reinforcements, the negativity and resulting poor academic performances if persisted, can have the unintended compliances consequences relating to private colleges regulated by current legislations, there can be far reaching consequences resulting in college closures and ultimately student welfares. This present study also concurs with some results from Bong and Clark (1999); Waugh (2001) and Ali, McWhirter and Chronister (2005); self-concept and efficacy show a definitive co-relation with quality of learning experience and academic performance in vocational education and training.

In summary, the inferences extracted from these responses about Self-Concept consisted of 21 out of 160 that were negative and 139 that were positive. The overall message from the students is indicating that their Self-Concept is high. Looking at the summary of the inferences, the negative aspects of Self-Concept were influenced by their poor English language and study skills. Looking at the Self-Concept Scale from the Rasch measurement (refer Table 8.3) the harder items rated by the students were

capability and perception of achievement, these sub-groups of Self-Concept could be impacted by students feeling that their English language and study skills are areas in which they have to improve. As evidenced from the other categories of the qualitative findings when students are confident in those skills, their Self-Concept improved and their academic confidence and results followed suit. The qualitative findings highlighted the potential impact of language and study skills on the students' self-concept and these may have resulted in the lower self-concept measures as indicated by the Rasch measurement scale. Based on the experiences of the researcher of the present study, having worked and visited the various private colleges, there is anecdotal evidence of disparity in the student's language ability and study skills. It is not surprising that some international students may not have been sufficiently prepared to undertake the VET courses which they were enrolled. This disparity may also transcend across standards and assessment outcomes among private colleges. It is worth noting that language skill is not just problem existing among the international students, Clayton, Blom, Meyers, Bateman, (2003) cited the same problem existing among significant number of the Australian workers, it is for this reason, among other thing that the trainer's TAE qualification has been upgraded to include language literacy and numeracy in the course. Perhaps, this is a good start, so that trainers/lecturer in the VET sector can quickly identify students with such problem and address them as soon as possible.

The findings of relatively high self-concept and the quality of learning experiences in this present study also reflect the positive co-relation between these variables as proposed in the theoretical model. Looking at the impact of language and study skills to students self-concept and learning experience, and the possible disparity of standards achieved by students among the colleges, perhaps proper moderation across colleges; which is what is expected by ASQA and the standard setting authority like NSSC, may help to underscore the disparity of standard among the private colleges and generate further actions by private VET colleges to address such issue.

In view of this, the ways in which the colleges could assist the students are to assess the language and study skills of the students thoroughly and provide appropriate trainings to upgrade their skills when necessary. The colleges should also provide adequate explanation of the VET system to the students so as to assist the students with the selection of appropriate VET courses and to better prepare the students to handle the demand of their choice of academic courses. These preparations are particularly

important to students attempting VET courses for the first time but, of course, all these cost money and therefore could potentially push up tuition fees.

Motivation:

Do you feel that you have the motivation to succeed in the course that you are studying and why?

After careful examinations of all 150 the messages for this question, the responses were first categorised into (1) Not Really motivated; (2) Somewhat motivated; (3) Motivated by personal goals; and (4) Vision of achieving personal goals and applying what is learnt. The format for the audit trail is M/NNNN, where M denotes Motivation open-ended question and NNNN refer to the informant reference number assigned to each questionnaire answered by the students in the current study. Based on these categories, attempts were made to extract and reduce the messages from the informants. The inferences were based on dominant messages extracted from the student's written responses and some of them are listed in the summary table as shown in Appendix C. The findings are summarised below.

Category 1: Not really motivated

Eleven (11) out of a total of 150 students who responded have reported no motivation and the main issues influencing their Motivation have been their lack of personal interest in what they were studying. Some of the messages expressed by the students were:

> no because I found myself totally not interested in this unit. It is difficult for me to concentrate on study. (M1272)
> No, don't feel like this course. (M1313)
> No I don't because I am lazy. (M1277)

Samples of these negative responses are listed in Appendix C. This category of responses made up 7 per cent of the 150 responses recorded.

Category 2: Somewhat motivated

Thirty-two (32) out of a total of 150 students reported some form of motivation and the main issues driving their Motivation have been their personal goals and their interest in what they were studying. Some of the messages expressed by the students were:

> Yes I'm following my ambitions and goals. (M1027)
> I have this motivation from time to time but not all the time. I usually feel it when I am doing good at subjects that I am interested. (M1063)
> I had the motivation to study English, but after a year is tiring and sometimes boring, but to study I think that there is always some motivation. (M1242)

Samples of these positive responses are listed in Appendix C. This category of responses made up 21 per cent of the 150 responses recorded.

Category 3: Motivated by personal goals

Eighty-eight (88) out of a total of 150 students stated that their motivations were to achieve their personal goals and their course of study will help them achieve that. Some of the messages expressed by the students were:

> Yes, I have motivation to succeed because I want to make a good career in my life. (M1011)
> Yes I think I motivation to succeed because I want to learn new things and use in my personal life. (M1069)
> YES, because I love what I'm studying and I hope to work with it. (M1088)

These positive responses are listed in Appendix C. This category of responses made up 59 per cent of the 150 responses recorded.

Category 4: Vision of achieving personal goals and applying what is learnt

Nineteen (19) out of a total of 150 students visualised that what has been learnt will help them to achieve personal goals and they are planning to practice what they have learnt. Some of the messages expressed by the students were:

> Yes, because I'm gonna open business, that material very helpful for me. (M1204)
> I have planned to open my own business in future. So, new techniques when I study during course it keeps me motivate and boost up my enthusiasm level. (M1208)
> I have the motivation to succeed in my course because I really like it so much and I hope one to reach my goals even if English is not my first language but I will try all my best to learn as I can. (M1105)

These positive responses are listed in Appendix C. This category of responses made up 13 per cent of the 150 responses recorded.

The qualitative responses in this present study has shown emphatic relationship of motivation and the interest construct, be it interest in the course or interestingness of the course. Close examinations of all the motivation categories derived from the qualitative data concurred with Brown and Cocking (2000) and Krapp (1999) findings, in that these observations re-affirm succinctly that high students' motivation can be derived when there is interest and the enduring interest. In particular, Brown and Cocking (2000) believe that students' motivations are re-inforced by the perception of the usefulness of what is learnt. Looking at engagement with the objects and activities, and enduring interest such aspects are also reflected in the students comments earlier about the lack of resources and facilities which could have impacted negatively interestingness and hence motivation. Volet and Jarvela (2001), Järvelä and Volet (2004), Jarvela and Volet (2004), and Jarvela (2011) were among the others researchers which arrived at the similar conclusion. In terms of VET education, Misko, Nguyen, and Saunders (2007) relating "…an intrinsic interest in a trade is the main motivation …" (p.8) and those who were positive about their experiences were successful in their learning outcomes this findings concur with the theoretical framework where quality of learning experience is expected to be positively related to the motivation of the students.

In summary, the inferences extracted from the Motivation qualitative responses contained 11 out of 150 which were negative and 139 which were positive. The overall

Motivation of the students is high. Looking at the summary of the inferences, the negative aspects of Motivation were due to lack of interest in the course in which they were enrolled and the overwhelming positive motivation came from the interest they expressed in their courses, the relevance of the courses to their personal goals and the applicability of what they have learnt. These aspects of motivation are as predicted by the theoretical model. The model expects that Motivation has a positive co-relation with the quality of learning experiences.

Looking at the Motivation Scale from the Rasch measurement (refer to Table 10.3) their goals and the desire to learn were on the lower end of the scale, meaning that they were easy for the students. The Rasch measurement scale therefore also point to an overall support for high motivation among students within the private colleges. The clear connections which the student's qualitative responses highlighted were (1) how their motivation is inextricably related to the interest in the course enrolled, (2) how student's motivation relate to the relevance of their study to their personal goals and (3) ultimately how motivation is driven by the practicality of what is learnt to their personal goals. The confirmation from the Rasch measures and the anecdotal evidence from the researcher's observations within the VET industry and this qualitative finding are strong evidence that VET course providers ought to give greater emphasis in guiding potential students in their selection of courses, setting of student's personal goal and developing and delivering courses which are relevant to their target students. There is no doubt significant benefits can be achieved by the VET colleges by closely matching expectations for the students with the courses.

VET Course Characteristics:

What do you think are the good and bad parts of the VET course that you are doing now and why?

The open-ended question for VET Characteristics attracted 139 responses. After careful examinations of all the messages for this question, the responses were first categorised as (1) No good; (2) Some aspects are good; (3) specific aspects of the VET courses are good; and (4) Course is good and relevant to personal goals. The format for the audit trail is VC/NNNN, where VC denotes VET Characteristics open-ended

question and NNNN refers to the informant reference number assigned to each set of questionnaires answered by the students in the current study. Based on these categories, attempts were made to extract and reduce the messages from the informants. The inferences were based on the dominant messages extracted from the student's written responses and some of them are listed in the summary Appendix C. The findings are summarised below.

Category 1: VET Courses No good

Twenty-three (23) out of a total of 139 students reported that the VET course in which they were enrolled were no good and the main issues influencing their perceptions were poor quality of courses, and poor resources provided. Some of the messages expressed by the students were:

> In general, the quality of courses in Australia is not good at all for the price the study pays. (VC1047)
> The knowledge about different units is quite limited. (VC1087)
> Bad – we need to have a book because paper copy it is not good. We don't use the technology facilities to improve the course. (VC1241)

These negative responses are listed in Appendix C. This category of responses made up 17 per cent of the 139 responses recorded.

Category 2: Some aspects of the course are good

Forty-two (42) out of a total of 139 students reported some aspects of the course were good and the main positives of the courses were the teachers, and the practical aspect of the course. The bad aspects of the VET courses were the poor facilities and resources. Some of the messages expressed by the students were:

> bad: general organization (e.g. classes day and practice days), poor resource, high fees, unit last too long, old equipment, recreation area, kitchen dirty, dirty fridge and microwaves, no dish soap
> Good; good teachers (VC1274)
> Good point: I will be able to use what I am learning in the future. Bad point: There are many units that I need complete. (VC1022)

I understand that Business administration is mostly based on computer works but it is a shame to not have group activities where everybody can express themselves. The good part is that each student is completing autonomous on his work and in terms of handling assignments on time. (VC1017)

These responses are listed in Appendix C. This category of responses made up 30 per cent of the 139 responses recorded.

Category 3: Specific aspects of VET courses are good

Fifty-five (55) out of a total of 139 students cited their courses as good because the courses were relevant to what they wish to learn and helpful in their field of work or future business intentions. Some of the messages expressed by the students were:

It's good, because they are very interesting and very useful for the future career. And they are not too heavy and too stressful. But it would be better if they could also help to get an opportunity to get a working visa in Australia too. (VC1019)
I think it would increase my chance of getting jobs that require knowledge about Microsoft office & MYOB as they are very widely used and practical software and many company use them. (VC1063)
There are a lot of good things about my course - good practice knowledge. Helpful in living and doing work in Australia. (VC1121)

These positive responses are listed in Appendix C. This category of responses made up 40 per cent of the 139 responses recorded.

Category 4: Course is good and relevant to their personal goal

Nineteen (19) out of a total of 139 students revealed that what is learnt will help them to achieve their personal goals and they will be able to practice what they have learnt. Some of the messages expressed by the students were:

The good part of the course is that we are using latest technology and up to date information about topic and subject. I think the course materials are quite compatible with the practical and professional life. (VC1005)
Yes, I have completed certificate III in this course, and then I got a job that related with the course. And, Now I am continuing to the higher level of the course until Diploma, and I hope by completing this course, I will get promoted to the higher level of my job. (VC1010)

> For me, everything is good. Especially for my teacher. I didn't have before, In this school a teacher which gives all the time motivation for his students. (VC1237)

These positive responses are listed in Appendix C. This category of responses made up 14 per cent of the 139 responses recorded.

The inferences extracted from these qualitative responses for the VET Course Characteristics contained 23 out of 139 which were negative and 116 which contained positive remarks. The overall responses of the students are positive for the VET Course Characteristics. There are varying evidences of application of good technology, practicality of skills learnt, employability of qualification gained and students finding relevance of the course however, there is no clear confirmation from this qualitative findings the quality of the characteristics of VET courses.

In summary, the negative aspects of the VET course cited were poor resources and facilities, and poor quality of the VET courses. The positive responses came from the relevance of the courses to their personal goals and the application of what they have learnt. Looking at the VET Course Characteristics from the Rasch measurement (see also chapters seven, nine and eleven), the suitability of the course to the student's educational background and good career opportunities were both rated highly by the students. These are supported by the qualitative responses. The relevance of the courses to personal goals and employment opportunities are common themes generating positive responses. Relative to other findings in this study regarding quality, these qualitative responses did not deliver a strong support to the VET courses even though the practicality and relevance to personal goal are re-affirmed in these messages. The poor facilities and resources and the lack of social interactions opportunities also confirmed similar findings from Rasch measures in this study. These negative responses deliver a clear message that VET colleges would need to focus on upgrading their facilities and resources, and deliver a more vibrant environment for positive social interactions either in class or out of class activities. In the researcher's own observation private VET colleges are driven by meeting the demands of the academic and administrative obligations at the expense of the student's social and psychological welfare. The current compliance regime did not help in either enforcing such requirement nor incentivise VET colleges for the provision of such environment.

Personal Characteristics:

What are the most important reasons for choosing to come to Australia to study?

The open-ended question for Personal Characteristics received 119 responses. The reasons stated by students for coming to Australia were analysed and categorised into four major sub-groups, the reasons were categorised as: (1) Other than education purposes; (2) Specific educational purpose only; (3) Education and other purposes; and (4) Quality of education or high reputation of Australian education. The format for the audit trail is PC/NNNN, where PC denotes Personal Characteristics open-ended question and NNNN refer to the informant reference number assigned to each set of questionnaire answered by the students in the current study. Based on these categories, attempts were made to extract and reduce the messages from the informants. The inferences were based on dominant messages extracted from the student's written responses and some of them are listed in the summary table as shown in Appendix C. The findings are summarised below.

Category 1: Other than educational purpose

Forty-eight (48) out of a total of 119 students reported their reasons for choosing Australia to study were not for education but were for work, and others were attracted by the natural beauty of the country, the life styles, the multicultural society and some just aimed to secure permanent resident status. Some of the messages expressed by the students were:

> There are more opportunities, and we can also work while we are studying. (PC1013)
> Much slower pace in studies, in my country is very hectic. It's world renounce. I love the outdoors in this country, fishing and camping. And job opportunities. I love this country. (PC1021)
> Having a chance to stay in Australia to find a sponsor and be a PR. (PC1099)

These responses are listed in Appendix C. This category of responses made up 40 per cent of the 119 responses recorded.

Category 2: Specific educational purpose only

In this category, 14 out of a total of 119 students who responded have reported that they are here simply for the educational purpose and the most common purpose was to study English and gain higher academic qualifications. Some of the messages expressed by the students were:

> Because I would like to upgrade my level of understanding English. (PC1001)
> for a higher education. (PC1273)
> for higher study. (PC1262)

These responses are listed in Appendix C. This category of responses made up 12 percentage points of the 119 responses recorded.

Category 3: Education and other purposes

Twenty-six (26) out of a total of 119 students cited their purpose for choosing Australia was because of the good facilities and to explore what Australia has to offer. Some of the messages expressed by the students were:

> I've chosen to study in Australia because Australia is a big country and is a multicultural. So I think It's a good place to learn English and to know about other countries while I am studying. (PC1010)
> I do not think that Australia offers a lot of opportunities in terms of education compared to Europe. And thus, the main reason is the cost of education. I do not believe that the cost and the provided education offers a good value. However, most universities in Australia offers very good facilities (modern, easy access, a lot of recreational activities...) It does not only form a student to be professionally active, it also "teaches" him to be socially active. (PC1017)
> Is safe in all aspects, up to dated knowledge, has good environment and climate it has too. My other family members are also here that's why I chosen Australia for studies. (PC1220)

These responses as can be seen in Appendix C. This category of responses made up 22 per cent of the 119 responses recorded.

Category 4: Simply because of Quality of education/high reputation

Thirty-one (31) out of a total of 119 students who responded came to Australia because of the global recognition of Australian qualifications and the high reputation of the quality of education. Some of the messages expressed by the students were:

> The Australian standard and quality of education system, and a multicultural society image are some of the reasons that I choose Australia for study. (PC1005)
> Because its degree is much worth it in all over the world, then others. (VC1195)
> I think Australian study business give the practical knowledge and help to setup your own business so I choose Australia as my study destination. I am also very appreciate I am achieving my goal. (VC1252)

These responses are listed in Appendix C. This category of responses made up 26 per cent of the 119 responses recorded.

The inferences extracted from these qualitative responses relating to Personal Characteristics contained 48 out of 119 from students who said they came to Australia not because of educational purposes and 71 who came to Australia for educational and 'other' purposes. Forty per cent (40) of the respondents cited their reasons to be in Australia were other than for educational purposes, and some of these students most likely held a student visa. This high percentage would seem to be of concern, considering that all students are aware, or should be aware, that their student visas are meant for educational purposes and there could even be more students who may be here in Australia for other than educational purposes, but had not said so. The wider implication is how education service providers deal with these students in terms of engaging with these students in their educational activities.

In summary, looking at the students who cited education as their main reason for being in Australia, and more importantly 26 per cent of those considered the high reputation and global recognition of the Australian qualifications as their main reason for studying in Australia; this highlights the need for private education service providers to deliver the quality education and to maintain the high reputation. The majority of the students in the current study who are here for the education purpose, also rated highly the multicultural community, the life styles and natural beauty of Australia as part of

their reasons for coming to Australia. These underscore the importance for education service providers to promote such opportunities as part of their overall strategies to deliver quality learning. In view of the negative responses in this current study which stated lack of resources and facilities among providers, the education service provider should be acutely aware that international students need more opportunities and facilities for the above purposes. There is increasing evidence that education service providers are increasingly offering blended delivery including online learning, and this further restricts interactions between students. As Curtis and Lawson (2001) stated in exploring collaborative online learning, textual and online interactions lack "challenge and explain" which characterise good exchange and will limit certain aspects of learning experiences, particularly in cultural exchanges between students. The Rasch measures in this study revealed the lack of opportunities in the social and the art aspects of college life, the Rasch Scale also confirmed the difficulties among the private VET colleges in offering the facilities and environment conducive to creating a vibrant social environment for their students. There is no surprise to this researcher, having worked in the VET industry for many years and visited many colleges over the years, limitations of space and facilities are common among the private colleges.

SUMMARY

Evidence from the qualitative responses revealed issues which were not covered by the quantitative (Rasch measurement) data analysis. These qualitative messages exposed other potential influences on quality of learning, relationships between the variables and reasons for choosing Australia for further education. These summary inferences derived from the qualitative data are listed in Table 12.1.

Table 12.1 Inferences Summary

Variables	Inferences
Quality of Learning Experiences (Do you think you have received the best learning experience and why?)	• Perception of quality is influenced by the lack of facilities and resources provided. • Caring teachers and good teaching are key factors having positive impacts to the perception of quality learning. • Perception of quality is impacted by not just the provision of quality learning but also factors like practicality of the knowledge acquired and confidence to apply the knowledge acquired.

Self-Concept (Do you think your ACADEMIC RESULT so far is satisfactory and why?)	• Language, computer and study skills remain the main obstacle for those students with lower self-confidence • Positive Self-Concept can be found among students who are seeking out method to improve or knowing areas to improve however unsatisfactory academic results can impact Self-Confidence. • Students develop positive self-confidence once they received good results from their study and perhaps become familiar with the VET system of assessment. Students also begin to enjoy their study and exploring ways to improve the efficacy of their study skills. • When the student's Self-Concept is high they are able to benefit beyond just passing the units, they are able to find value and purpose in their study.
Motivation (Do you feel that you have the MOTIVATION TO SUCCEED in the course that you are studying and why?)	• Lack of interest in the course is the main cause of negative motivation. • Having personal goal and an interest in the course are key to positive motivation • Student's motivation is sustained by having a purpose and success in their study • Motivation is strongest when student can visualised what is learnt will help to achieved personal goal especially when student can see the practical side of what is learnt.
VET Characteristics (What do you think is/are the good/bad part of the VET course you are doing now and why?)	• Some students cited poor quality of courses, and poor resources provided by the colleges. • Main positives of the courses were the teachers, and the practical aspect of the course, the bad aspects of the VET courses were the poor facilities and resources. • Students who response positively cited their courses were relevant to what they wish to learn and helpful in their field of work or future business intentions.

Personal Characteristics (What is/are the most important reason(s) for choosing to come to Australia to study?)	• Some students who came to Australia using student visa but not for educational reasons are attracted by the:-
	  o Life style
	  o The natural beauty of environment
	  o The multicultural social environment
	  o Opportunities to work
	  o Opportunities to gain permanent resident status
	
	• Students who came for educational reasons came to:-
	  o Learn English
	  o Gaining better qualifications
	  o The main attractions of Australia education are:
	  o Choices of courses
	  o Good facilities
	  o Exploring what Australia has to offer
	  o All the reasons for non-educational purpose above
	  o Student's perception of quality is most influenced by:-
	  o Recognition and reputation of the Australian qualification internationally.
	• Students who perceived Australian standard of education is high because:-
	  o Use of the latest technologies
	  o Courses are practical and applicable in business
	  o And all the reasons listed above

Source: Kho's data for this study

Looking at the qualitative inputs from the students, the colleges could assist the students to assess their language and study skills more thoroughly and provide appropriate training to upgrade their skills accordingly. The colleges could also provide adequate explanation of the VET system to the students, so as to better prepare the students with the necessary skills to pursue their academic studies, beyond just a usual half-day or one-day orientation program. These preparations are particularly important to students attempting VET courses for the very first time.

Students cited achieving personal goals and being able to practice what they have learnt in the place of work as a key to self-confidence in their studies. Colleges could therefore provide in-depth counselling services to all students and guide the students to select the appropriate courses and set their personal goals accordingly.

The majority of the responses rated highly the multicultural community, the life style and natural beauty of Australia as being part of their reason for studying in Australia. That is, the students didn't just make the decision to come to Australia based on educational purposes. This underscores the importance for educational service providers to make available such opportunities as part of their overall strategies to deliver quality learning.

The negative responses were mainly about lack of resources and facilities among educational service providers and highlight the negative impacts when such expectations were not achieved. The colleges should be acutely aware that international students need more opportunities and facilities for these social, cultural and recreational activities.

It is equally important to recognise that setting the correct expectation with the students and meeting the expectations of the students are fundamental in enhancing student self-concept, providing positive motivation to the students and delivering quality learning experiences.

The following chapter (Chapter Thirteen): (1) answers the research questions; and (2) explains the results in relation to other research and explores the implications of the current study for private registered training organizations and future research.

CHAPTER THIRTEEN: ANSWERING THE RESEARCH QUESTIONS, DISCUSSION AND IMPLICATIONS

This chapter answers the research questions stated in Chapter One. Based on the findings from the data collected, these research questions are answered in line with the results of the Rasch analysis and qualitative analysis. This is followed by a discussion of the findings in comparison with the literature reviewed in Chapter Two. The chapter concludes with the implications for the private VET registered Training Organizations as suggested by the findings in the present study.

RESEARCH QUESTION 1

1.   *Using Rasch measurement, what do students perceive are the easy aspects pertaining to their perception of Quality of Learning Experiences in VET courses? What do the students perceive are the hard aspects pertaining to quality of learning experiences in VET courses?*

Answer from Rasch Measurement

A linear scale of international students perception of Quality of Learning Experiences based on the six aspects: (i) Activities & Assignments; (ii) Discussions; (iii) Practical; (iv) Learning Resources; (v) My Teacher; and (vi) Social & Arts was created using the Rasch Model. The linear scale was produced using data collected from international students (N=303) at six Private Registered Training Organisations around the metropolitan areas of Perth in Western Australia using the RUMM 2030 program (Andrich, Sheridan & Luo, 2013). This was done by calibrating the person measures together on the same scale with the item difficulties in standard units call logits. From the 30 items, two items were found not to fit the scale very well, however, excluding those two items did not improve the scale and so they were retained in the scale. Data from the 30 items was used to create a reliable linear scale from which valid inferences could be drawn. The scale data show good global item and person fit to the measurement model, the response categories were answered logically and consistently, and the targeting of the item thresholds against the person measure were good too. There is no gender bias found in these items within the scale.

The students found that Activities and Assignments, and Practical aspects of their course among the easiest items; the Discussions and the Teacher aspects were moderately hard items; and Learning Resources and the Social Activities and the Arts Discussions were the hardest items. The easiest items are number 4, "I seek more help from the teacher and do my own independent research to complete my assignments" (after the start of the course) with a difficulty of -0.545 logits and item number 11 "thinking of using the skills you learnt from the course in your current job or in your future job" (before start of course) with difficulty of -0.482 logits. The hardest items are number 18 "I use library facilities in the college or any other libraries around for my study and assignments" with a difficulty of +0.809 logits and "attending arts and cultural events and enjoying discussions about culture and the arts with others" (after start of the course) with a difficulty of +0.715 logits (for details of the order see Table 6.3).

It was also found that student expectations before start of course were easier than actually doing it after start of course for most items, as predicted. This was not so for two items: (1) regarding the use of the computer and (2) seeking guidance from the teacher. For example, students found that the actual use of computers was easier than what was initially expected by the students. They also sought help from their teachers more frequently after the start of the course than they expected before the start of the course.

Answers from open-ended question

The qualitative responses of the student to the quality issues support the item difficulties based on the Rasch linear scale where the students highlighted the lack of facilities and resources being the major negative of their course. On the other hand, the students were emphatic and generous in their praise for the quality of the teachers from the colleges. Students cited factors like practicality of the knowledge acquired and confidence to apply the knowledge learnt as positive drivers of their perceptions of quality.

2.   *Using Rasch measurement, what do students perceive are the easy aspects pertaining to their Self-Concept of Academic Achievement in VET courses? And what do the students perceive are the hard aspects pertaining to Self-Concept of Academic Achievement in VET courses?*

Answers from Rasch Measurement

A linear scale of international students perception of Self-Concept based on the three aspects: (i) Capability; (ii) Perception of achievement; and (iii) Confidence in academic life, was created using the Rasch model. A linear scale was generated using the data collected from international students (N=313) at six Privately Registered Training Organisations around the metropolitan area of Perth in Western Australia using the RUMM 2030 program (Andrich, Sheridan & Luo, 2013). All items, except item 12, had a satisfactory fit to the measurement model but, even with item 12 included, all 14 items 'hang together' very well to produce an acceptable scale. The data forming 14 item linear scale proved to be reliable as there was an acceptable fit to the measurement model and so valid inferences can be drawn from its use. These scale data show good global item and person fit to the measurement model, the response categories were answered logically and consistently, and the targeting of the item thresholds against the person measures were good.

The linear scale revealed the aspects of Self-Concept where the students were positive about themselves and other aspects of the Self-Concept which could be improved. The students found confidence in academic life among the easiest items; their capability was moderately hard; and their perception of achievement the hardest. The easiest item is number 10 "I get along well with my teacher and fellow students at the college" (after the start of the course) with a difficulty measure of -0.612 logits. A moderately hard item is number 2 "Do you think you are smart enough to cope with your course?" (After start of course) with a difficulty of +0.19 logits. Item number 7 "Do you like doing assignments for your course?" (After the start of course) with a difficulty measure of +0.682 logits was found to be the hardest item among the 14. (For details of the order of difficulty for all the items, see Table 8.3 in Chapter Eight).

Consistent with the previous research question, teachers play an important part in the Self-Concept of their students and students are finding it easy to get along with their teachers. In relation to their perceptions of achievement, especially the items on doing assignments, students expected assignments to be hard but they were finding it actually even harder to do the assignments.

The majority of the students also found that their expectations (before the start of course) were easier than actually doing it (after the start of course). Where they didn't was for items 3 and 4, and items 9 and 10. Students found that their confidence to complete the course is actually higher after the start of the course than before the course. They also found it easier to get along with their teachers than they expected.

Answers from the open-ended question

The qualitative responses of the students to the Self-Concept question generally supported the item difficulties from the Rasch linear scale, where students revealed language, computer and study skills remain the main obstacles for those students with lower self-confidence, while positive self-confidence is enhanced by academic achievements from their study. Of course, the qualitative data do not form a linear scale like the Rasch analysis and are less accurate in that sense, but the qualitative data are generally supportive of the findings from the Rasch created linear scale. In comparing the Self-Concept among the students, there is evidence to suggest that self-concept is a self-sustaining force, when students begin to enjoy their study and explore ways to improve the efficacy of their study skills, their self-confidence will also improve. Importantly, when the student's Self-Concept is high they are able to benefit beyond just achieving good academic results, they are able to find value and purpose in their study.

3.   *Using Rasch measurement, what do students perceive are the easy aspects pertaining to their Motivation to Achieve Academically in VET courses? And what do the students perceive are the hard aspects pertaining to their Motivation to Achieve Academically in VET courses?*

Answer from Rasch Measurement

A linear scale of international students perception of Motivation to Achieve Academically based on the five supporting aspects: (i) Standards, (ii) Goals, (iii) Tasks, (iv) Effort and (v) Desire to Learn was created using the Rasch Model. The linear scale was generated using data collected from international students (N=316) at six Private Registered Training Organisations. Of the 20 items, seven did not have a satisfactory fit to the measurement model and were discarded. The other 13 items 'hang together' reasonably well to produce an acceptable scale. There was a good global item and person fit to the measurement model, the response categories were answered logically and consistently, and the targeting of the item thresholds against the person measures were reasonable. The 13 item scale proved to be reliable as there was an acceptable fit to the measurement model and so valid inferences could be drawn from its use.

The linear scale revealed the aspects of student motivation which were positive and other aspects of the Motivation which could be improved. The students found Task items among the easiest; the Standards items moderately hard; and Desire to Learn and Interest in Learning the hardest. The easiest item is number 13 "Do you try to achieve high marks in your studies?" (before the start of the course) with an item difficulty measure of -0.47 logits. The hardest item is item number 19 "Do you read and research widely on various topics especially those related to your course?" (after start of course) with a difficulty measure of +0.44 logits. A moderately hard item is item number 10 "Do you do the required homework assigned to you?" (after start of course) with a difficulty measure of 0.00 logits. Consistent with the previous question, academic standards play an important part in the motivation of students. Students expect that it is easy to score high mark but students did not do the required homework and research widely in their study. The students have a high expectation but they did not put in the required effort and so their expectations often fell short.

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As predicted by the measurement model, the perspective of 'after the course starts' is harder than 'before the course starts', with one exception. For the item 'do you do the required homework assigned for you' is about the same difficulty in both perspectives. There is good agreement between the predicted perspective order of item difficulties and the actual measured order.

Answer from the open-ended question

The qualitative responses by the students to the Motivation perspective generally supported the results from the Rasch linear scale. Students revealed that the lack of interest in the course is the main cause of negative motivation, having personal goals and an interest in the course are keys to positive motivation, and students' motivation is sustained by having purpose and success in their studies. Motivation is strongest when students can visualise what is to be learnt that will help them to achieve their personal goals. The students were also motivated by how practical they think the content of what is to be learnt was to the job to which the content is related.

RESEARCH QUESTION 4

4.   Using Rasch measurement, what is the relationship between Quality of Learning Experiences (as the dependent variable) and VET course characteristics (Value for Money, Suitability for the Education Background, Reasonable Adjustment, Lead to Good Career Opportunities, Utilises the Latest Technology, and High Reputation in Home Country)?

Answers from Rasch Measurement

Value for Money

More students with higher quality measures tended to respond positively that there was value for money for the VET course in which they were enrolled. Based on this study, students who believe there is value for money in the VET course in which they were enrolled also experienced higher quality of learning experiences.

Suitability for the Education Background

There is a tendency for students with higher quality measures to respond positively, supporting the view that the VET courses were suitable for their education backgrounds. This study supports the prediction of the theoretical model that students who believe the course is suitable for their qualifications will also experience higher quality of learning experiences.

Reasonable Adjustment

This study showed that it cannot be claimed that students who have more reasonable adjustment to suit their circumstances in their VET course will have a higher perception of quality in their VET course.

Leads to Good Career Opportunities

There is no statistical evidence from this study to confirm that students who believe that VET courses lead to better career opportunities will have higher quality of learning experiences.

Utilises the Latest Technology

There is statistical evidence from this present study that students enrolled in courses that use the latest technologies are more likely to have higher perceptions of quality of learning in their VET courses.

High Reputation in Home Country

There is a tendency for students studying in a VET course that has a high reputation in their home country to say that the quality of their VET course is high, as predicted.

Answers from open-ended question

The inferences extracted from these qualitative responses contained 23 out of 139 which were negative and 116 which contained positive remarks of the VET system in

Australia. The overall responses of the students were positive for the VET Course Characteristics. However, the students highlighted the lack of facilities and resources as being the major negative characteristic of their course. On the other hand, the students were emphatic and generous in their praise for the quality of the teachers from the colleges. Students cited factors like practicality of the knowledge acquired, confidence to apply the knowledge learnt and the potential to assist their future business ventures as positive drivers of their quality perception.

RESEARCH QUESTION 5

5.   What is the relationship between Quality of Learning Experiences (as the dependent variable) and personal characteristics (Gender, Age, Personal Safety, Country of Origin, Financial Background, and Level of Prior Education)?

Answers from Rasch Measurement

Gender

It cannot be claimed, as was predicted, that male students would rate their quality of learning experiences in their VET course as higher than females do.

Age

There is no statistical evidence that a relationship exists between students' age and quality of learning experiences.

Personal Safety

A total of 286 students were included in this Rasch analysis of which 3 felt unsafe, 113 felt not very safe, 127 felt safe and 43 felt very safe. The recorded mean measures for Quality of Learning Experience for each group were 0.220, 0.279, 0.530 and 0.598 respectively. This is statistically significant (F=4.42, df=2,285, p=0.005), but the differences are due to the extremes. If one just takes the unsafe versus the safe (that is, just dichotomises the data), then there is no statistical difference and this is not as

predicted. However, there is statistical evidence suggesting that those students feeling unsafe perceived lower quality of learning experience and those feeling very safe have higher perceptions of quality in learning experiences.

Country of Origin

A total of 284 students were included in this Rasch analysis of which 56 came from the Indian-subcontinent (India, Pakistan, Bangladesh, Nepal, Bhutan, Sri Lanka, Afghanistan and Maldives), 59 from South East Asia (Cambodia, Laos, Burma (Myanmar), Thailand, Vietnam, Malaysia, Indonesia, Philippines and Singapore), 86 from East Asia (People's Republic of China, Hong Kong, Macau, Taiwan, Japan, North Korea, South Korea, and Japan) and 83 from other countries. The recorded mean measures for Quality of Learning Experience for each country of origin group were 0.673, 0.424, 0.361 and 0.366 respectively. This is statistically significantly different ($F=3.41$, $df=3,285$, $p=0.005$). This is as predicted by the conceptual model that students from Asia were expected to have higher quality of learning. This study attests that Students from Asian country of origins, but not East Asian, perceived higher quality of learning experiences in the views of the students.

Family Financial Position

There is no statistical evidence in this study to confirm any relationship between family finance and quality of learning experience.

Prior Qualification

There is a tendency for students with higher prior qualifications to say that the VET course quality is higher and vice versa, but it is not statistically significant.

Answers from the open-ended question

The inferences extracted from these qualitative responses contained 48 out of 119 from students who said they came to Australia not because of educational purposes and 71 who came to Australia for educational and 'other' purposes. Forty per cent (40) of the respondents cited reasons to be in Australia other than for educational purposes, and some of these students most likely held a student visa. This high percentage would seem more of a concern considering that

all students are aware, or should be aware, that their student visas are meant for educational purposes and there could be an even higher percentage of these students who may be here in Australia for other than educational purposes but had not said so. Looking at the students who cited education as their main reason for being in Australia, 26 per cent of those considered the reputation and global recognition of the Australian qualifications as their main reason for being here. The majority of the responses rated highly the multicultural community, the life styles and natural beauty of Australia as part of their reasons of being in Australia.

RESEARCH QUESTION 6

6. What is the relationship between context variable Self-Concept and VET course characteristics (value for money, reasonable adjustment, lead to good career, Application of technology, and high reputation in home country)?

Answers from Rasch Measurement

Value for Money

Contrary to predictions, no evidence was found to support the prediction that students with high Self-Concepts expected higher value for money in their chosen VET course.

Suitable for the Education Background

There is no statistical evidence to confirm that students who believe the course is suitable for their qualifications will also have a higher Self-Concept in this study.

Reasonable Adjustment

There is no statistical evidence in this study to support the prediction that students who have more reasonable adjustment to suit their circumstances in their VET course will have higher Self-Concepts.

Good Career Opportunities

There is no statistical evidence in this study to support the prediction that students who believe that VET courses lead to better career opportunities will have higher Self-Concepts.

Utilising the Latest Technologies

It cannot be claimed, as predicted, that students enrolled in courses that use the latest technologies are more likely to have higher Self-Concepts.

High Reputation at Home Country

It cannot be claimed, as predicted, that students studying in a VET course that has a high reputation in their home country will have high Self-Concepts.

Answers from the open-ended question

The overall message from the students is indicating that their Self-Concept is high no matter how many of them have lower language skills and study skill difficulties. It is possible that the language and the unique VET course characteristics are having an impact on these students due to their unfamiliarity with the education system in Australia.

RESEARCH QUESTION 7

7.   What is the relationship between context variable Self-Concept and student personal characteristics (Gender, Age, Personal Safety, Country of Origin, Financial Background, and Level of Prior Education)?

Answers from Rasch Measurement

Gender

As was predicted, the male students rated their Self-Concept significantly higher than females students do.

Age

This study does not support the predicted relationship that older students were expected to have higher Self-Concepts than younger ones.

Personal Safety

Students who have high views of their safety have significantly higher Self-Concepts than students who feel unsafe.

Country of Origin

A total of 292 students were included in this Rasch analysis of which 57 from the Indian-subcontinent (India, Pakistan, Bangladesh, Nepal, Bhutan, Sri Lanka, Afghanistan and Maldives), 62 from South East Asia (Cambodia, Laos, Burma (Myanmar), Thailand, Vietnam, Malaysia, Indonesia, Philippines and Singapore), 88 from East Asia (People's Republic of China, Hong Kong, Macau, Taiwan, Japan, North Korea, South Korea, and Japan) and 85 from other countries. The recorded mean measures for Self-Concept for each country of origin group were 1.565, 0.619, 0.701 and 1.342 respectively. This is statistically significant ($F=11.48$, $df=3,288$, $p=0.0000$). The Indian sub-continent students and other students have higher Self-Concepts. The model predicted that students from Asia were expected to have higher Self-Concept because Asian students often have to provide for their families back home. The Rasch analysis shows the Asians from the Indian-subcontinent students (but not South East Asia, and East Asia) and other students have higher Self-Concept than the other groups. This is not as predicted by the conceptual model.

Family Financial Position

A total of 294 students were included in this Rasch analysis of family financial positions, of which three were from very poor families, 27 were from less than average families, 214 were from average families and 50 were from more than average families (financially). The recorded mean scores for Self-Concept for each of these groups were 2.066, 0.691, 0.996 and 1.453 respectively, this is statistically significant ($F=4.23$, $df=3,290$, $p=0.006$). However, the students from very poor and more than average

families financially have higher Self-Concepts, and this is contrary to what was predicted in the conceptual model which predicted that poorer students were expected to have higher Self-Concepts.

Prior Qualification

There is no tendency for students with higher prior qualifications to have higher Self-Concept and <u>vice versa</u>. The model predicted that students who had higher prior education would have higher Self-Concepts than those students with a lower level of prior education, but this is not necessarily the case.

Answer from open-ended question

The inferences extracted from these qualitative responses about Self-Concept consisted of 21 out of 160 that were negative and 139 that were positive. The overall message from the students is indicating that their Self-Concept is high. The negative aspects of Self-Concept were influenced by their poor English language and study skills. As evidenced from the other categories when students are confident in those skills, their Self-Concept improved and their academic confidence and results followed suit.

RESEARCH QUESTION 8

8.   What is the relationship between Context variable Motivation and VET course characteristics (value for money, reasonable adjustment, lead to good career, Application of technology, and high reputation in home country)?

Answer from Rasch Measurement

Value for Money

Although a majority of the 303 students responded positively (213 said yes versus 90 who said no) that there was value for money for the VET courses in which they were enrolled, this is not statistically significant, and this was not as predicted in the conceptual model where it was expected that students who believe there is value for money will also have higher Motivation.

Suitable for their Education Background

Although a majority of the 287 students responded positively (235 said yes versus 52 who said no) that the course in which they were enrolled was suitable for their education background, this was not statistically significant, and was contrary to the prediction in the conceptual model where it is expected that students who believe the course is suitable for their qualifications would also have higher Motivation.

Reasonable Adjustment

It cannot be claimed that students who have more reasonable adjustments to suit their circumstances in their VET course will have a higher Motivation. This is not as predicted in the conceptual model.

Good Career Opportunities

It cannot be said that students who believe that VET courses lead to better career opportunities will have higher Motivation and this is contrary to what was predicted.

Utilising the Latest Technologies

It cannot be claimed that students enrolled in courses that use the latest technologies are more likely to have higher Motivation. This is not as predicted.

High Reputation at Home Country

It cannot be claimed that students studying in a VET course that has a high reputation in their home country will have higher Motivation. This is not as predicted.

Answer from open-ended question

In summary, the inferences extracted from the Motivation qualitative responses contained 11 out of 150 which were negative and 139 which were positive. The overall motivation of the students is high. The negative aspects of motivation were due to lack

of interest in the course in which they were enrolled and the overwhelming positive motivation came from the interest they expressed in their courses, the relevance of the courses to their personal goals and the application of what they have learnt.

The Motivation Scale from the Rasch measurement showed that their goals and the desire to learn were on the lower end of the scale, meaning that they were easy for the students. Despite this, it was clear from the qualitative data that students with no clear goals in their study struggle with motivation to perform. The motivation scale seems to be distorting the view that these students may not have received proper guidance in their course selections and may not have selected courses which best suit their personal aspirations. There is some anecdotal evidence encountered by the present researcher while working within the private VET colleges that it is likely some students were unwillingly slotted into courses that fitted within the constraints of their agents, college and, or, financial circumstances.

RESEARCH QUESTION 9

9.   What is the relationship between Motivation and student personal characteristics (Gender, Age, Personal Safety, Country of Origin, Financial Background, and Level of Prior Education)?

Answer from Rasch Measurement

Gender

The recorded mean score for Motivation for male students is 1.193 and is higher than the recorded female score of 1.075. However, this is not statistically significant ($F=0.86$, df=3289, $p=0.95$) and this is not as was predicted.

Age

The recorded mean scores for Motivation for each age group were 1.089, 1.150, 1.233 and 0.978 respectively. However, this is not statistically significantly different ($F=0.11$, df=3,289, $p=0.95$) and thus does not support the predicted relationship that older students were expected to have higher Motivation.

Personal Safety

A total of 294 students were included in this Rasch analysis of which 3 felt unsafe, 116 felt not very safe, 130 felt safe and 45 felt very safe. The recorded mean scores for Motivation for each group were 1.485, 0.932, 1.181 and 1.555 respectively. This is not statistically significant (F=3.15, df=3,290, p=0.03) even though those who felt very safe compared to those not feeling safe is significant. There is a tendency for those who feel very safe to have a higher motivation than the others.

Country of Origin

A total of 292 students were included in this Rasch analysis of which 57 came from the Indian-subcontinent (India, Pakistan, Bangladesh, Nepal, Bhutan, Sri Lanka, Afghanistan and Maldives), 62 from South East Asia (Cambodia, Laos, Burma (Myanmar), Thailand, Vietnam, Malaysia, Indonesia, Philippines and Singapore), 88 from East Asia (People's Republic of China, Hong Kong, Macau, Taiwan, Japan, North Korea, South Korea, and Japan) and 85 from other countries. The recorded mean scores for Motivation for each country of origin group were 1.504, 0.813 0.919 and 1.362 respectively. This is not statistically significant (F=4.66, df=3,288, p=0.05) but, however, there is a tendency for the Indian sub-continent students and other students to have a have higher Motivation than those from South-East Asia and East Asia. The model predicted that students from Asia were expected to have higher Motivation and so this result is not as predicted by the conceptual model.

Family Financial Position

There was a tendency for students from very poor families and better than average families (financially) to have a higher Motivation than the others. This is partly contrary to what was predicted in the conceptual model where poorer students were expected to have lower Motivation.

Prior Qualification

There is no tendency for students with higher prior qualifications to have higher Motivation and <u>vice versa</u>. The model predicted that students who had higher prior

education level would have higher Motivation than those students with a lower level of prior education, but this is not the case.

Answer from open-ended question

The inferences extracted from the qualitative responses from the Personal Characteristics contained 48 out of 119 students who said they came to Australia not because of educational purposes and 71 who came to Australia for educational and 'other' purposes. Forty per cent (40) of the respondents cited reasons to be in Australia other than for educational purposes, and these students most likely held a student visa. It would seem that a significant number of students were abusing the student visa system. The sixty per cent of students, who cited education as their main reason for being in Australia, and more importantly 26 per cent of those who came because of the reputation and global recognition of Australian qualifications, highlights the expectation for a high quality education. The majority of the responses also rated highly the multicultural society, the life styles and natural beauty of Australia as part of their reasons of being in Australia.

DISCUSSIONS AND IMPLICATIONS

The literature reviewed in the present study supports the argument that Rasch measurement with linear scales is a superior method for measuring psychometric traits in similar studies. It is important to highlight that the present study successfully produced linear scales using Rasch measurement for quality of learning experiences, self-concept and motivation for international students from private registered training organisations in Western Australia. These linear scales and the relationships of these three variables in the context variables VET Characteristics and personal characteristics were derived using the RUMM 2030 Computer program. This has not been done in recent times for VET students in private colleges in Western Australian or anywhere in Australia and so the present study has some significance.

Quality

The UNESCO/OECD Guidelines on Quality Provision in Cross-Border Higher Education Students and Learners stated that protection from the risks of misinformation, from low-quality provision of courses and qualifications of limited validity was important (UNESCO, 2005). The guidelines for higher education institutions and providers also highlighted misinformation and quality assurance, besides language and facilities issues (Knight, 2011). Looking at the linear scales in the present study, the learning resources and language skills certainly were issues of concern to students. Knight (2011) commented on the diversity of the providers, the commercialization and accreditation of providers, and ultimately the strength of the assurance system as issues that influence perceptions of the international students in choosing courses for study. Perhaps the Cheng and Yin (1997) resources input model enforces quality through high quality student intake, employing qualified staff, providing better facilities and equipment, and better staff-student ratio. Nightingale and O'Neil (1994) propose institutional development which focuses on facilities and opportunities as possible answers in this case. Knight (2011) said that there is a need to find a better approach to strenghten the quality assurance framework that broadens resources and facilities of private colleges and enhance English and study skills requirements. The data from the present study seem to support these comments.

The present study supports the success and prefences of the students for the practice based approach of the VET courses, and with the advance of eLearning, there is a potential to extend the deployment of such activities (Knowles, Holton III, & Swanson, 2012) in some courses but cautions should apply to others which may not be suitable. E-learning and collaborative learning (Curtis & Lawson, 2001) has been shown to help students and they are currently improving their application in blended delivery among private registered training organizations. Merriam, Caffarella, and Baumgartner (2012) commented the self-directed context as another proposition worthy of consideration. Similarly, Clarke and Volkoff (2008) argued for the need to extend deliveries beyond traditional classroom setting, to break the mould, revolutionise delivery and enhance accessibility through flexible blended-delivery strategy can be another solution. Blended-delivery can be an effective method to embrace, engage and expand learning in VET; however, the quality assurance system would be required to upgrade its monitoring processes for education providers. As has happenned in the past, regulatory

authorities have had to play 'catchup' to the detriment of the students and the VET industry as a whole.

The Rasch and qualitative analysis have alluded to the importance of social activities and non-academic activities being instrumental in students perceptions and preference for Australian educational experiences. Such needs of the students have an indispensable role to contribute to the academic and psysiological well-being of their students and the enduring motivation to learn (Waugh, 1998; 2003). Perhaps the Knowles' (1980, 1984) notion that adult learning add to the problem solving drive the desire for these international students to look for more real life social experiences to complement their classroom learning. The colleges and the industry would need to work together, inspite of the resource constraints of individual players within the industry, to provide the necessary support mechanism to fulfill the needs of the international students. In particular, the students' needs in social activities and the arts provide opportunities for social and cultural institutions to help students. A proactive and collaborative approach from the private education service providers should consider such third party service providers to fill the gaps for those colleges which are constrained by their resource limitations. The Rasch measure for learning resource seems to concur with Hill, Lomas, and MacGregor (2003) where students from this present study find learning resources relatively easy on the linear scale. This study also concurs with MacGregor (2003) that students who are really happy with the teachers, have higher quality of learning experiences, motivation, and self-concept.

There is evidence of wide ranging learning experiences received by the students, and perhaps the quality indicator concept will illuminate the performance of registered training organizations (Karmel, Fieger, Blomberg, & Loveder, 2013). With regard to English language skills, study skills and familiarity with the VET system found in this current study, such issues should be addressed through the orientation program. Colleges should consider a comprehensive set of assessment procedures with the aim of identifying and developing a tailored program for individual students to address the weaknesses, if any, for these students.

Self-Concept

The linear scale for the Self-Concept 'hangs together' well enough to produce a reliable scale and its construct validity is satisfactory. While aspects of the vertical order

of the item difficulties in the linear scale can be improved, it can still be used to make valid inferences.

Hattie's hierarchical model of self-concept (Hattie, 1992) contained seven categories: classroom, ability, achievement, peer views, family, confidence and physical appearance, but he only tested it with True Score Theory. Waugh (2001) used the following categories with Western Australian data: capability, perceptions of achievement, confidence in academic life, relationships with peers and family, and personal confidence and found that a reliable scale could be constructed using Rasch measurement. The Rasch analysis in the present study used capability, achievement and confidence as the main categories (there is some overlap with the Hattie and Waugh categories) and this supports most of these categories used by Hattie (1992) and Waugh (2001) (peer and physical self-concept were not included in the present study). In the present study, confidence in academic life is rated easier than perception of achievement and the ability to cope with academic study. As in Mintz and Muller (1977) and Caplin (cited in Bong & Clark, 1999) and Zimmerman in 2001 self-regulation as self-directive process this is also evidenced from the qualitative data in this present study. Most international students treasured the social cultural, environment and lifestyles aspects of their stay in Australia, these items are also among the easy items of the linear scale produced in this present study. The self-concept findings also endorsed the quality findings where students related much of their positive self-concept through their non-academic activities. In terms of perception of achievement and coping with study, self-concept highlights the need for further support from the education service providers. Nightingale and O'Neil (1994) advocate the partnership concept between students, teachers and colleges. In summary the literature reviewed and findings from the present study, support the argument that the improvement to the student's self-concept will also enhance the student's learning experiences.

Motivation

The data for the linear measure, Motivation, 'hang together' well enough to produce a reliable scale and there is a reasonable fit to the measurement model. While aspects of the vertical order of the linear scale as presented in the questionnaires can be improved, the Rasch analysis demonstrated that a reliable linear scale was created from which valid inferences could be made. The model also supported the predicted

horizontal arrangement of item difficulties which showed that expectations were easier than actual behaviour. The data collected and their scale reliability as evidenced in their fit to the Rasch measurement model (psychometric characteristics) affirm the construct validity of the data and therefore the soundness of the linear scale produced. The successful creation of this linear scale supported the research of Waugh (1998, 2001, 2002) and Waugh and Njiru (2005).

The item on standards was rated harder by the students than was predicted. The student's readiness to embark on the foreign education system in an unfamiliar study environment seems to have had an impact on student motivation, as discussed by Volet and Jarvela (Volet, 2001)(Jarvela, Volet, & Järvenoja, 2010). It is also possible that students may not have been properly briefed on the courses into which they were enrolled and had not therefore set appropriate expectations. Anecdotal evidence and the personal experience of the author of the present study support the observations that some students may not have sufficient understanding of the academic requirements of VET courses. This may have caused the students to be insufficiently prepared for their academic study and not adequately informed of the standards expected of them. This also can have some flow-on effects where the sub-group Task is rated harder than predicted and the students were finding it harder to complete their assigned homework. The sub-group Interest is rated easy, which is supported by Misko, Nguyen, and Saunders (2007) in their research on apprenticeships which highlighted the interest being driven by opportunity to apply what is learnt at work and gaining an employment opportunity. Most international students have part-time work and relate their ability to work in their field of study or areas of interest, as part of the attraction to study in Australia.

It is desirable that international students have the necessary information about the VET system in Australia to assist them in the setting of proper and attainable goals. It is necessary for colleges to work with the students to develop their study skills to accomplish their goals. The VET industry would benefit greatly from developing strategies to provide an appropriate study environment, deliver the opportunities for students to practice their skills, and have access to the social and cultural activities to balance the students' academic pursue. These certainly are material findings supported by Knowles et al, (Knowles, Holton & Swanson, 2012) for adult learning.

RELATIONSHIPS OF QUALITY OF LEARNING TO VET COURSE & PERSONAL CHARACTERISTICS

Vet Course Characteristics

The sample of students in the present study included six private registered training organisations offering both VET and ELICOS courses. It is predicted that the VET characteristics defined in the present study should relate positively to quality of learning experience. The positive relationships for Quality of Learning experience found with selected VET Characteristics are Value for Money, Suitability of Education Background (only approaching significance), Utilising Latest Technologies and High Reputation in Home Country (only approaching significance). There is no positive relationship between Quality of Learning Experiences with Reasonable Adjustment, or Good Career Opportunities. It is possible that the students did not need or receive reasonable adjustment to their course to suit their personal circumstances. It is possible that the Career Opportunity characteristic is due to the type of courses in which the international students were likely to be enrolled. As seen from the April 2013 Research Snapshot (n.a., 2013b) by Australian Education International (AEI), the breakdown of enrolment by field of education among the top ten nationalities combined were, 'Management and Commerce' (57.5%), 'Engineering and Related Technologies' (7.8%), 'Information Technology' (6.9%), 'Food, Hospitality and Personal Services' (6.2%) and Society and Culture (5.2%). These were the top five broad fields of education in combined higher education and VET enrolments in 2012. The Management and Commerce fields were the two most popular fields of education for higher education and VET. It is likely that students who were enrolled into other than 'Engineering and Related Technologies' (7.8%), 'Information Technology' (6.9%), 'Food, Hospitality and Personal Services' (6.2%) would not have found themselves working in the field related to their study and therefore may not appreciate the "Good Career Opportunity" while studying, and hence this lead to the non-relationship.

Personal Characteristics

The positive relationships for Quality of Learning experience found with selected Personal Characteristics are with male students, Asian students (Indian-subcontinent,

and South East Asia, but not East Asia) and students with higher prior qualifications. They all have significantly higher perceptions of VET quality than the other groups involving Age, Personal Safety and Family Financial Position which do not lead to significantly different views on VET quality.

The recent headline news of the safety issues of international students and various expert opinions about the rights of international students (Marginson, 2011) is partly supported in this present study. This present study has found some negative impact to quality of learning experiences when student do feel unsafe while student feel very safe the quality of learning experience turn positive. Ross and Mahlck (1990), and Yorke and Thomas (2003) raised the issue of socio-economic factors potentially influencing quality of learning experience. However, in this present study there is no evidence to suggest financial background influenced learning experiences. The student profile from this present study consists of 30 (three from very poor and 27 from less than average) against 264 (214 from average and 50 were from more than average family) could skew towards students from overwhelmingly strong financially background to result in this statistical aberration.

RELATIONSHIP BETWEEN SELF-CONCEPT AND VET COURSE & PERSONAL CHARACTERISTICS

Qualitative Analysis

The qualitative inferences supported research by Hattie (1984), Bong and Clark (1999) and Waugh (2001) that there is strong positive influence of self-concept for academic achievements. The undertone of the messages is biased to the positive. It is reasonable to expect that these students are growing their self-confidence and their self-concept as a result of the academic influences at the VET colleges they attend. The positive self-concept and academic success has a flow-on effect to other areas of academic life among these students. This group of students manifest mainly good positive views of self-concept and academic performance.

Relationships of Motivation

Looking at the Motivation Scale from the Rasch measurement (refer to Table 10.3), student goals and their desire to learn were on the lower end of the scale, meaning

that they were easy for the students. Despite this, it was clear from the qualitative data that some students with no clear goals in their study struggled with motivation to perform well academically. It would seem that these students may not have received adequate guidance in their course selections and may not have selected courses which best suit their personal aspirations. From Knowles, Holton and Swanson (2012) came six principles of andragogy, the adult student's orientation and motivation to learn is one of relevance, and these students were looking to the colleges to provide what they considered to relevant instruction. It is highly likely that some students unwillingly slotted into courses that fitted within the constraints of their agents and, or, financial circumstances. There was some anecdotal evidence encountered by the present researcher while working within the private VET colleges supporting this conjecture. In Nightingale and O'Neil (1994), four levels of development for the purpose of quality enhancement at the first level of "individual development which emphasizes partnership between students, teachers and mentors to improve quality of learning" will certainly be relevant, and there is a definite need for the partnership approach to deliver the goals to whom the students are aiming.

Volet and Jarvela (2001) discussed factors such as schools, classrooms, family, peer groups, community, country, culture, ethnicity and history which influenced academic motivation. In this present study, there was only patchy evidence supporting such arguments, not particularly any strong evidence. The clearer influences were factors like country of origin, and family financial position. In the Waugh (2001, 2005) and Waugh and Njiru (2005) studies, goals and desire to learn, and interest in learning standout as the factors which influenced motivation and these are affirmed in this present study. Student interest is an aspect driving motivation and this is similarly echoed in research by Misko, Nguyen, and Saunders (2007).

IMPLICATIONS FOR PRIVATE VET REGISTERED TRAINING ORGANIZATIONS, STUDENTS AND THE VET SECTOR

Quality of learning

The students highlighted the lack of facilities and resources as being a major negative issue for some of their courses. On the other hand, the students were emphatic and generous in their praise for the quality of the teachers from the colleges. Students

cited factors like practicality of the knowledge acquired and confidence to apply the knowledge learnt as positive drivers of their quality perception.

Most international students may find the Australian VET system different and more complex than education in their home countries; there is a need for colleges to provide better information before students arrive at the colleges. Colleges should consider a comprehensive set of assessment procedures with the aim of identifying and developing a tailored program for individual students to address their weaknesses and offer the opportunity to enhance their English and study skills. It is necessary to provide in-depth counselling services to all students and guide the students to set their personal goals accordingly. Colleges should invest in the necessary support mechanisms to fulfill the needs of the international students in the social and the art aspects. One option could be collaborating with social and cultural institutions for the participation of international students. Students cited achieving personal goals and being able to practice what they have learnt in the place of work as a key to self-confidence in their studies. This is an area warranting further investigation for the practice-based approach of the VET courses, particularly in the light of increasing popularity of elearning. There is a need to strenghten the aquality assurance framework leading to better resources and facilities of private colleges.The quality indicator concept (My Skills Website) could be an answer to better convey quality performance of registered training organization and provide transparency to the VET market place in general.

Self-Concept

Teachers are playing an important part in the self-concept of the students; and students are finding the teacher easy to get along with. The private VET education industry has done well to maintain a high self-concept among the students, and perhaps the overall high praise of the teaching staff have contributed to maintaining high self-concepts among the students. Future research could have a more targeted focus in assessing other contributing factors to students' self-concept. The qualitative responses of the student to the self-concept question supported the Rasch linear scale where students revealed language, computer and study skills remain the main obstacle for those students with lower self-confidence, while positive self-confidence is partly driven by good academic results from their study. The basic computer skills should be included in the tailored program for individual students who may need to upgrade their

computing skills especially those who came from countries with limited exposure to computing technology. Importantly, when the student's self-concept is high they are able to benefit beyond just passing the units, they are able to find value and purpose in their study.

Motivation

The sub-group Standard seems to be rated harder by the students than was predicted and this may be due to the students not being familiar with the standard of the Australian VET system. Anecdotal evidence and the personal experience of the author of this study support the observations that student may not have sufficient understanding of the academic requirements of VET courses. This may have caused the students to be insufficiently prepared for their academic study and not fully informed of the standards expected of them. If this is the case, it will have an impact on the next sub-group goals, where students may not have set themselves realistic goals. Future studies could refine these items to focus on exploring their prior assessments of the expected standard and how they will motivate themselves to achieve the standards. Some students perceive VET courses to be easier and can lead to good employment opportunities. As is evident from the qualitative responses, many international students do rate positively the opportunity to work and this could provide an interest in the course. In future studies, questions on interest can be enhanced to assess the other interests (non-academic) which may motivate students.

Qualitative Analysis

Looking at the qualitative inputs from the students, the colleges could assist the students to assess the language and study skills of the students thoroughly and provide appropriate training to upgrade their skills accordingly. The colleges could also provide adequate explanation of the VET system to the students so as to prepare the students with the necessary skills to pursue their academic studies beyond just a usual half-day or one-day orientation program. These preparations are particularly important to students attempting VET courses for the first time.

Students cited achieving personal goals and being able to practice what they have learnt in their place of work as a key to self-confidence in their studies. Colleges could

therefore provide in-depth counselling services to all students and guide the students to set their personal goals accordingly.

The majority of the responses rated highly the multicultural community, the life style and natural beauty of Australia as being part of their reason for being in Australia. That is, the students didn't just make the decision to come to Australia based on educational purposes. This underscores the importance for educational service providers to promote such opportunities as part of their overall strategies to deliver quality learning.

The negative responses were mainly about lack of resources and facilities among some educational service providers and highlight the negative impacts when such expectations were not achieved. The colleges should be acutely aware that international students need more opportunities and facilities for these social, cultural and recreational activities.

WHAT CAN THE STUDENT, TRAINING PROVIDERS AND VET INDUSTRY DO?

Fundamental to any service or product suppliers is the service or the product itself. The training organization must ensure that not just the outcomes are important to international students; this present study has confirmed that the quality of the content, the delivery of the content and the environment in which the service is delivered must meet the customer/students expectation.

It is incumbent on training providers to have formal initial assessment and disclosure of pre-requisites on not just paper qualifications but holistic study skills. This could form the centre piece of initial consultations with every potential student. Consultants could involve qualified assessors with formal processes and procedures, and documentation which are mandatory and auditable. This should be part of the pre-commencement planning session giving students plenty of time and opportunity to arrive at an informed decision.

International students should become savvy consumers who are prepared to do their own research, including asking tough questions to determine the true quality of the services from the training organizations which are on offer. The best place to start for all parties is for training organizations to have qualified resources to explain to the students before the commencement of the course to plan and established formal binding commitments, to set goals, prepare actionable plans and develop monitoring processes for a successful completion of the course. The goals should be simple, achievable, and measurable with appropriate reward and consequences. This tailored approach for each student will deliver the quality expectations for students, training organizations and industry regulators and ultimately contribute to the growth of the VET industry for the benefit of all stakeholders. The change and simplification of the focus of quality assurances to students, training providers, and the processes to deliver the agreed outcomes, using this approach, will be more cost effective than the current heavy-handed complex compliance regime which piles on suffocating financial and excessive documentary obligations.

Prior to the start of the course orientation should be done for every student. It is in this session that each of the initial assessments, the plans tailored for each student, the course materials and resource checklist can be reviewed, so that students will be aware of the whole learning journey that has been designed for them. If there is any need for

basic study skills enhancement, a program could be presented to students who need this training. It is equally important for students to be fully informed of the expectation of the VET courses in which they are enrolled and the governing rules and conditions of their enrolment, including obligations under specific student visa regulations which apply to students' academic performance. While it is not possible to cover all the rules and regulations of the college and regulatory authorities, instruction can be made available for students to access the needed information in their own time. Orientation is an excellent opportunity for the training providers to build the relationship with students who have decided that the college is a quality focused organization and this first impression can develop lasting impacts on the students and that of the industry as a whole.

Given that international students are attracted to our vast array of life style activities, Australia's natural environment, and the multi-cultural society training providers have a competitive advantage over many other countries to deliver a distinguish and invigorating learning experience to international students which is unsurpassable by competitors from many other countries. Collaboration with other industry players, for example travel agents, event organisers and to develop recreational and even practical learning opportunities will definitely enhance learning experiences. With the increasing popularity of blended delivery, this approach offers immense opportunities to look at delivery method beyond the traditional classroom environment. Incorporating such provision within the regulatory framework is less arduous and simpler to implement.

There must be continuing assessment of technology, equipment and facilities available against student population against specific course offers. Typical resource constraints needing mandated resources should be included in all course specifications that are transparent to students on enrolment. Such information should provide estimates of specific resources, e.g. internet access, computing hardware and software requirements. Mandatory skill requirements and level of skill competencies can be specified and students can be formally assessed for such skill sets. At the point of enrolment, a checklist could support the declaration that the training provider has assessed and allocated relevant resources against each of the students who has been enrolled. During orientation, students can be shown the necessary facilities and acknowledge that they have seen and verified to their satisfaction that such resources

and facilities has been made available. To support the student's positive feedback about practicality and potential relevance to their business aspirations, colleges should explore further opportunities for blended delivery to incorporate application of the skills learned. While those courses that relate to Engineering and Trades, Computing and Hospitality, do consist of practical and work experiences, other courses may utilise simulations. While simulated work environments have been in place for some courses, the implementation of such facilities could be expanded to include work experience and even work place observations and student journals to form part of the overall assessments. The ultimate resources and facilities provision is to deliver the right level of learning experiences in both theoretical and practical spaces.

As part of the completion and award sign off process, each student should be shown the complete range of the documentation, as recorded and pledged from initial consultation, delivery, any interventions that took place, and the final outcome of the study. In each of these steps, the student could be given freedom of expression to document their experiences against these processes, procedures and record their honest opinions. Training providers could use this same opportunity to assess and reflect upon what must have been many of the measurable successes for each graduate. Constructive inputs from students, deficiencies highlighted, or high praise received, can be shared with fellow colleagues to either revitalise continuous improvement and/or celebrate the success of yet another proud graduate.

Academic programs have been designed and constantly reconstructed to cater to the demands of the students and the thriving economic activities. Developing Non-academic courses in the form of a hobby or an interest, but not a trade or professional knowledge, can readily add value to an economic activities and marketing that to a foreigner can be challenging. Perhaps designing a course about the culture of Australia which includes a tour of the magnificent rock arts in the outback, and learning how to prepare an authentic Aussie BBQ, can be of interest to some, but whether can it add value to the economic activities of the students in their home country is another matter. Some elements of these types of activities may be contemplated as part of the unit or a unit in itself within a package; the flexibility should be there to package this into relevant courses.

Perhaps even before we start to think of what to offer, we need to ascertain what specific aspects of non–academic activities are of real interest to students and how these

can be packaged into relevant courses that are of practical application. We know from this present study that VET students are attracted to our lifestyle, natural attractions, the diverse cultures, and even the social and political freedom which we enjoy in Australia. Would a partial incorporation of some elements of these into present courses as recommended above be of any interest to VET students? I think they would.

FUTURE RESEARCH

Developing a linear scale for quality of learning is a challenging pursuit. The present study with its inherent limitation, detected glimpses of many psychometric traits which played a significant role in the perception of quality of learning as demonstrated by Waugh (1998, 2001, 2002, 2005). However, much more can be done to test other factors which can influence such perceptions. While the present study confirms many of the influential aspects in Waugh's research on quality of learning, self-concept and motivation, the order and response categories proved to be elusive. The linear scale for Quality of Learning generated from the data collected from the six private registered training organisations in Western Australia did reveal a few problems in the design of the items in the order of difficulties. For future study, the sub-group learning resource could be enhanced to focus on environment, equipment, tools (software and hardware) rather than libraries. The sub-group practical should be moved to the easier items or the order of difficulty increased. Sub-group social and the art should be improved by focusing on the social activities made available to students within the colleges. Future study can certainly look into further evidence of VET characteristics, self-concept and motivation and how they impact quality of learning.

Quality of learning, as is uncovered in the present study, reveals a few dimensions which were not the central focus of this present study. Among them, perhaps the non-academic related reasons for choosing to study in Australia is one compelling aspect which warrants further investigation. In particular, this aspect of motivation to come to Australia can have many implications for Australian VET system. Among those of interest, will be to study how these specific purposes of coming to Australia impact on the quality of learning. Related to this will be what is the real goal of these students, what types of courses is best suited to these students, how do we market these courses to these students, what qualification is needed and certification to award, and finally how

do we manage the academic affairs of these student given that they may have limited interest in the paper achievement.

The linear scale for Self-Concept generated from the data revealed a few problems in the design of the items in the order of difficulties. For future study, the sub-group Confidence in Academic Life should be moved up the vertical order as students seems to rate these items easier against others. The sub-group Capability is showing that students are more confident of completing the course then coping with the course, perhaps questioning the number of units needed to be re-assessed for the course enrolled is a better measure of the students' capability. Sub-group Perception of Achievement has problem in assessing achievement; students are more comfortable with completing assignments than achieving high marks. A better measure may be the unit of competencies achieved within the set timeframe and the amount of help needed in completing their course work. In the horizontal construct it is necessary to examine the need to reverse the order of the response categories for some items, for example instead of 'not at all', 'not often', 'often' and 'very often' to 'very often', 'often', 'not often' and 'not at. This is for items where students could become more efficient or able after the start of the course than before the start of the course.

For future study, the sub-group Standard seems to be rated harder by the students than was predicted, and this can be moved to the harder items. The sub-group Interest – Desire to Learn seems to be an easy item to the students (easier than was predicted) and this should be moved to the easier items or the order of difficulty increased. For the sub-group Task, students are finding doing homework as harder than was predicted, this should be included among the harder items.

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APPENDIX A - QUESTIONNAIRE

In answering "Section I, II A & II B – Quality of Learning Experience" questions, you need to consider your overall experience for the whole course. If less than half of your experience/course units agree(s) with the statement then you will choose "Not at all" or "Not often", otherwise you will choose "Often" or "Very Often".

Example: Questions about your VET Course, if before the start of your course, you expect to ask question in discussion and lecture, you will then put a cross below the box "Often" or "Very often". On the next section the question refer to what actually happened during your course, therefore if you don't ask question then you will cross below the box "not at all" or "not often".

Your perception of the QUALITY of learning experience in an Australian VET training college	What I Expected Before the Course			
My Course	Not at all	Not often	Often	Very often
1. How often do you ask questions in discussion, lecture and your own research?			X	

What Actually Happened During the Course			
Not at all	Not often	Often	Very often
X			

Section I – Dependent variables - Quality of Learning Experience

Your perception of the QUALITY of learning	What I Expected Before the Course					What Actually Happened During the Course			
Sub-Group: My course	Not at all	Not often	Often	Very often		Not at all	Not often	Often	Very often
Activities & assignments									
1. Do you combine ideas from text book, internet and other sources to complete your assignments?									
2. Do you seek more help from teacher, and do your own independent research to complete your assignments?									
Discussion									
3. Do you ask questions in class, lecture or group activities?									
4. Do you do independent research to prepare for group discussion or for class activities?									
Practical									
5. Do you use any of the skills you have learnt from your course in your place of work or work experience?									

	Not at all	Not often	Often	Very often		Not at all	Not often	Often	Very often
6. Do you think of how to use the skills you learnt from the course in your current job or in your future job?									
Sub-Group: Learning Resources									
7. Do you feel that the college provides you with enough facilities to study and research?									
8. Do you use the college computer to do research for your study and assignments?									
9. Do you use the library facilities in the college or any other libraries around you for your study and assignments?									
Sub-Group: My Teacher									
10. Do you ask your teacher about how to do well in assignments and course work?									
11. Do you talk to your teacher after class about your assignments and course progress?									
12. Do you seek guidance or discuss about your interest, ambition and career goals with your teacher?									
Sub-Group: Social and the arts									
13. Do you meet fellow students from different classes or courses in and out of the college?									
14. Do you have discussion with students who came from different country, culture or religious beliefs?									
15. Do you attend arts and cultural events and enjoy discussing about the culture and the arts with others?									

For the answer to the question below please write in your own words:-

Do you think you have received the best LEARNING EXPERIENCE and why?	

Section II A – Self-Concept: Academic Achievement

Your perception of the QUALITY of learning	What I Expected Before the Course					What Actually Happened During the Course			
Self-Concept: Academic Achievement	Not at all	Not often	Often	Very often		Not at all	Not often	Often	Very often
Capability									
1. Do you think you are smart enough to cope with your course?									
2. Do you feel confident of your ability to complete your course?									
Perception of achievement									
3. Do you like doing assignments for your course?									
4. Do you try hard to get high marks to gain any kind of reward?									
Confidence in academic life									
5. Do you get along well with your teacher and fellow students at the college?									
6. Do you enjoy the college life whether is study or social activities?									
7. Do you feel confidence of yourself whether it is study or social activities or your career future?									

For the answer to the question below please write in your own words:-

Do you feel that you can/have achieved the best <u>ACADEMIC RESULTS</u> so far and why?	

Section II B – Motivation to achieve academically

Your perception of the QUALITY of learning	What I Expected Before the Course					What Actually Happened During the Course			
Motivation to achieve academically	Not at all	Not often	Often	Very often		Not at all	Not often	Often	Very often
Standard									
1. Do you feel that you are studying as hard as you can?									
2. Do you try to achieve better results than what you have achieved so far?									
Goal									
3. Do you set yourself academic goals?									
4. Do you try to find better ways to achieve your academic goals?									
Task									
5. Do you do the required homework assigned to you?									
6. Do you plan your study so that you can succeed in all the units?									
Effort									
7. Do you try to achieve high marks in your studies?									
8. Do you put in extra effort and seek additional help from others to achieve better results?									
Desire to learn - Interest									
9. Do you have the interest to learn?									
10. Do you read and research widely on various topics especially those related to your course?									

For the answer to the question below please write in your own words:-

Do you feel that you have the MOTIVATION TO SUCCEED and why?	

In answering "Section III – VET Courses characteristics" questions, you need to consider your overall experience for the whole course. If less than half of your experience/course units agree(s) with the statement then you will tick the box below "No", otherwise you will tick the box below "Yes".

Section III – VET Courses Characteristics

Situation Variables: VET Course Characteristics	Yes	No
1. Do you think the course you are enrolled in is good value for money?		
2. Do you think the course you are enrolled in is suitable for your education background?		
3. Do you think the course has more room for reasonable adjustment to cater to your education background?		
4. Do you think the course you are enrolled in will lead to good career opportunities?		
5. Do you think the course you are enrolled in utilised the latest technology?		
6. Do you think the course you are enrolled in has a high reputation in your country?		

For the answer to the question below please write in your own words:-

Do you think the VET qualification will help you to get a job and why?	

In answering "Section IV – Personal Characteristics" questions, for each question please cross **ONE** of the most appropriate boxes applicable to you only.

Section IV – Personal Characteristics

	Situation variables: Personal Characteristics			
1. Your Gender	**Male** ☐	**Female** ☐	**Others** ☐	
2. Your age	**19 or younger** ☐	**20 - 30 years old** ☐	**31 - 40 years old** ☐	**Over 41 years old** ☐
3. How do you rate your personal safety in Australia	unsafe ☐	kind of safe ☐	safe ☐	very safe ☐
4. Which part of the world do you come from (See notes below for more information)	Indian sub-continent[1] ☐	South East Asia[2] ☐	East Asia[3] ☐	Others[4] _____
5. What is your family's financial position in your home country	Very poor ☐	Below average ☐	Average ☐	above average ☐
6. What is your highest academic qualification achieved from your home country	I did not complete high school ☐	I completed high school ☐	I hold a college or university degree ☐	I have post graduate qualification ☐

For the answer to the question below please write in your own words:-

What is your most important reason for choosing to come to Australia to study and why?	

Notes:-
1. **Indian sub-continent[1]** India, Pakistan, Bangladesh, Nepal, Bhutan, Sri Lanka, Afghanistan and Maldives
2. **South East Asia[2]** Cambodia, Laos, Burma (Myanmar), Thailand, Vietnam, Malaysia, Indonesia, Philippines and Singapore
3. **East Asia[3]** People's Republic of China, Hong Kong, Macau, Taiwan, Japan, North Korea, South Korea, and Japan
4. **Others[4]** Any other countries not mentioned above, please write the name of the country

APPENDIX B - INFORMATION LETTER TO PARTICIPANTS

My name is Pooh Tee Kho and I am a post graduate student in a Master Degree by Research at Edith Cowan University in Perth, Western Australia. You are invited to participate in this survey, which is being conducted as part of the requirements for my degree. This research has ethics approval from the Human Research Ethics Committee at ECU.

This research aims to investigate the relationships between international students' perceptions of the Quality of Learning Experiences and their Self-Concept of Educational Achievement and Motivation to Achieve Academically, in the context of differences in two sets of situation variables. One set is the personal characteristics/social economic factors of the students (gender, age, personal safety, country of origin, financial background, and level of education) and the second set is the chosen VET course characteristics (value for money, reasonable adjustment, offers good job prospects , Application of technology and high reputation of course in home country).

If you choose to participate in this project you will be asked to participate in a questionnaires survey of approximately 15 - 20 minutes. The information will be used to complete the requirements for the research project noted above, and only the research student (Chief Investigator) and the research supervisor will have access to the information. All information collected for this survey will be kept confidential and will only be used for the purposes of this research. You will not be identified in any written assignment or presentation of the results of this research project. All data collected will be stored securely on ECU premises for five years after the research has concluded, after which the data will be confidentially destroyed. I do not anticipate any risk in your participation in this survey however I thank you for the inconvenience of using up 15 – 20 minutes of your time.

Participation in this project is voluntary. If you choose to participate, you are free to withdraw from further participation at any time without giving a reason and with no negative consequences. Your consent is assumed if you choose to return the questionnaires.

If you have any questions or require any further information about the research project, please feel free to contact the following:
Student Researcher: Pooh Tee Kho
Email: pkho@ecu.edu.au

Supervisor: Professor Russell F. Waugh
Telephone: +618 9370 **6941**
Email: r.waugh@ecu.edu.au

If you have any concerns or complaints and wish to contact an independent person about this research, you may contact:
Research Ethics Officer
Edith Cowan University
Phone: (+618 6304 2170
Email: research.ethics@ecu.edu.au

Thank you for your time

Yours sincerely,
Pooh Tee Kho

Note: Exact messages (spelling errors corrected) are quoted except name of the College which has been removed if quoted.

Quality of Learning Experience Question: - Do you think you have received the best learning experience and why?

Summary of Inferences

Number of Responses	Inference Category	Informant Reference Number	Samples of Detail Message	Inferences
18	No or only negative remark(s) - Overwhelmingly negative about facilities and resources	1030	No, because the academic resources are inadequate, the trainer repeats similar things again & again.	Perception of quality is influenced by the lack of facilities and resources provided.
		1071	No, because the resources provided are not enough.	
		1093	I think my course lack of facilities. Due to library.	
		1197	The computer in the lab is too slow, even my iphone is faster than that.	
		1243	I THINK IT IS NOT ENOUGH; THE SCHOOL DOES NOT USE ALL FACILITIES TO TURN THE WAY OF LEARNING GOOD. AND THE LEVEL OF STUDENTS IN THE CLASS IS MIXED, IT IS NOT GOOD.	
		1252	What I thought of lecturing was that we were provided some books to use but there were no books except handouts. (Not enough info)	
34	Yes but without supporting reason - positive overtone without negative remarks		No remarks	No details
58	Yes or kind of Yes with reason(s) - Overwhelmingly positive feedbacks about quality of the teachers	1010	Yes, I love xxx (Masked out) College. It's a very nice place to study. The teachers are very helpful.	Caring teachers and good teaching are key factors having positive impacts to the perception of quality learning.
		1018	Yes, I have because I believe I got the best training from my teacher which shows in my results.	
		1072	Yes, because my teacher will explain every point to us.	

		1191	Yes it's good because of some teachers are very helpful and have very good knowledge of subject.	
		1232	The course is good mainly because the teacher is good and dynamic.	
10	Strong positive feedback including details of more than one positive aspects of quality – positive about the quality of the teachers and practicality of the course	1022	Very good. Every time I had trouble doing my research or studies, teacher helped a lot.	Perception of quality is impacted by not just the provision of quality learning but also factors like practicality of the knowledge acquired and confidence to apply the knowledge acquired.
		1121	Overall quality is great because teachers are very good and helpful (They make you do a lot of practice which is excellent).	
		1190	The quality of my course is very good because it helps me in my business.	
		1211	Overall quality of the course is really good and I am satisfied with because I learn lot of practical thing in all activities.	
		1230	This course is interesting and high quality to study. It can provide students to have the knowledge and skills to build their own business.	
		1238	The quality is very high because classes are small and personal.	

Source: Kho's data for this study

Self-Concept Question: - Do you think your academic result so far is satisfactory and why?

Summary of Inferences

Number of Responses	Inference Category	Informant Reference Number	Samples of Detail Message	Inferences
21	Negative Self Confidence - Poor English and study skills	1004	Till now not yet because is not focusing on study.	(1) Language remain the main obstacle for self-confidence (2) Lack of study skills impact self confidence
		1007	No, because my effort is not great.	
		1009	Easy to understand questions or not and how far I understand the subject or other.	
		1012	It's not satisfactory yet because I have lots to study and learn.	
		1013	Not yet. I have to improve my English in the next 5 weeks.	
		1016	No. It isn't my English has been improving but it isn't good at all. Specially in Academic Result, because is high level.	
		1017	Not very satisfactory because I didn't have enough time to finish my study. My study sometimes is not efficient.	

		1021	Not really because I still feel hard to understand the class sometimes.	
55	Increasing Self-Confidence – Making effort to improve result and study skills	1023	Not sure, I will try my best to achieve the best results. But not too sure about the achievement because I am too slow in the progress as the lack of English & computer skill.	(1) Language and computer skills cited as impediments but overall remain positive. (2) Seeking out method to improve or knowing areas to improve. (3) Lower Self-Confidence impacted by less than satisfactory academic results.
		1030	I have been trying to do my best to achieve the good ACADEMIC RESULTS. But I am not really confident about my achievement because lack of English and computer skill.	
		1035	Not as good as best. Because I need to make more time to improve myself, which means I should take the lower level education first.	
		1036	Not yet, I feel that I've learned grammar but I have to improve my vocabulary and practice the speaking.	
		1043	I think so because academics want always more and more information.	
		1052	It's very hard to study a lot because when you keep study for these days you brain will try to lose you whoever or whatever you are.	
		1059	No, I don't unfortunately I'm not feel confidence with my English this including pronunciation and grammar I think I could have better for living in Australia more than 1 year.	
63	Positive self-confidence, academic results and exploring ways to improve study skill	1078	Yes. I completed the assignments on time and got good feedback from teachers.	(1) Students develop positive self-confidence once they received good results from their study and perhaps become familiar with the VET system of assessment. (2) Students begin to enjoy their study and exploring ways to improve the efficacy of their study skills.
		1080	Yes my academic result is good and teachers help us to give good examples.	
		1084	I believe that my academic results are satisfactory because I have completed my course, meeting all the deadlines. I have completed all my units by doing researches and also by self-assessments.	
		1085	I believe I have achieved the best academic result so far due to the fact that I got great help from my teacher and used the facilities/internet to my full advantage.	

		1086	Yes. I do. I have improved and learned a lot from this course. And I'm getting used to operate those software with English too.	
		1094	I think I've learnt lots of stuff about business especially. It was good to use MYOB. It was very interesting.	
		1101	It all depend on my way of studying and with all the help I get from all my friends and mainly my lecturer, am sure I will reach my goal.	
		1103	I think so as you would need to do quite a bit of thinking when working through the course book and thus you would learn the knowledge & skill that the unit want to deliver.	
		1109	First I came here I didn't want to do that course but now I'm looking interest and my result will be satisfactory and this course is valuable in our country.	
		1189	The environment is very friendly in class and outside the class, which helps to concentrate on academic results.	
		1195	In my opinion my academic result is satisfactory because I did lots of research and take ideas from teacher to finish my assignments. So I was competent.	
21	Self confidence is high and enjoying academic life	1207	Because I feel confident and I can do work in a professional way.	(1) Student Self-Concept is high, getting more out of the course which they have an interest in beyond just passing the units.
		1208	My result is satisfactory, because I have worked very hard and my teachers helped me a lot and also my teachers are especially very encouraging.	
		1209	Yes, I am satisfied from my result as I have my English a lot here in speaking writing reading and listening.	
		1214	Yes, because the information provide us during assignment which makes us confidence and strong on work place.	
		1217	Academic result is satisfactory because when I get satisfactory result then I feel confident in my ability and gain reward and enjoy my study.	

| | | 1222 | Yes I am satisfy with the academic results because the course satisfy all my requirements Yes I am motivated I will succeed in the course | |
| | | 1227 | Yes, definitely satisfactory because I worked hard, had commitment to my studies, organised and seriously when it comes to assignments and class. | |

Source: Kho's data for this study

Motivation question: Do you feel that you have the motivation to succeed in the course that you are studying and why?

Summary of Inferences

Number of Responses	Inference Category	Informant Reference Number	Samples of Detail Message	Inferences
11	Not really motivated	1272	no because I found myself totally not interested in this unit. It is difficult for me to concentrate on study.	Lack of interest in the course main impact on motivation
		1313	No, don't feel like this course.	
		1277	No I don't because I am lazy	
32	Somewhat motivated	1027	Yes I'm following my ambitions and goals.	Having personal goal and an interest in the course are key to motivation
		1063	I have this motivation from time to time but not all the time. I usually feel it when I am doing good at subjects that I am interested.	
		1106	Yes because we will get our goals.	
		1242	I had the motivation to study English, but after a year is tiring and sometimes boring, but to study I think that there is always some motivation.	
88	Motivated by personal goals	1008	YES, because I love what I'm studying and I hope to work with it.	student's motivation is sustained by having a purpose and success in their study
		1011	Yes, I have motivation to succeed because I want to make a good career in my life.	

		1069	Yes I think I motivation to succeed because I want to learn new things and use in my personal life.	
19	Vision of achieving personal goal and applying what is learnt	1204	Yes, because I'm gonna open business, that material very helpful for me.	Motivation is strongest when students can visualise what is learnt will help to achieved personal goal especially when student can see the practical side of what is learnt.
		1252	Yes, because it is the field I want to be, I know I can use the knowledge in a long term.	
		1088	Yes, because I have a business mind, and I am preparing for owning a business and I will!	
		1208	I have planned to open my own business in future. So, new techniques when I study during course it keeps me motivate and boost up my enthusiasm level.	
		1297	I know where I want to be in 5 years & 10 years. I work hard to reach success and I am motivated to learn when it is interesting!!!!	
		1105	I have the motivation to succeed in my course because I really like it so much and I hope one to reach my goals even if English is not my first language but I will try all my best to learn as I can.	
			AFTER COMPLETING THIS COURSE I MIGHT MOVE TO UNIVERSITY FOR M.B.A THAT'S WHY I AM QUITE DETERMINE TO GET IT DONE SUCCEESFULLY.	

Source: Kho's data for this study

VET Characteristics Question: - What do you think are the good and bad parts of the VET course that you are doing now and why?

Summary of Inferences

Number of Responses	Inference Category	Informant Reference Number	Samples of Detail Message	Inferences
23	No good	1047	IN GENERAL THE QUALITY OF COURSES IN AUSTRALIA IS NOT GOOD AT ALL FOR THE PRICE THE STUDENT PAYS.	poor quality of courses, and poor resources provided
		1087	The knowledge about different units is quite limited.	
		1241	BAD- WE NEED TO HAVE A BOOK BECAUSE PAPERS COPY IT IS NOT GOOD. WE DON'T USE THE TECHNOLOGY FACILITIES TO IMPROVE THE COURSE.	
42	Some aspects are good	1274	bad: general organization (e.g. classes day and practice days), poor resource, high fees, unit last too long, old equipment, recreation area, kitchen dirty, dirty fridge and microwaves, no dish soap Good; good teachers	Main positives of the courses were the teachers, and the practical aspect of the course, the bad aspects of the VET courses were the poor facilities and resources
		1017	I understand that Business administration is mostly based on computer works but it is a shame to not have group activities where everybody can express themselves. The good part is that each student is completing autonomous on his work and in terms of handling assignments on time.	
		1050	THE GOOD PART IS THAT YOU HAVE TO ORGANIZE YOUR STUDY BUT THE BAD PART IS THAT YOU DON'T HAVE ENOUGH TIME AT HOME TO DO EXERCISE	
		1022	Good point: I will be able to use what I am learning in the future. Bad point: There are many units that I need complete.	
55	Specific aspects of the VET are good	1019	It's good, because they are very interesting and very useful for the future career. And they are not too heavy and too stressful. But it would be better if they could also help to get an opportunity to get a working visa in Australia too.	The courses were relevant to what they wish to learn and helpful in their field of work or future business intentions
		1039	Yes, it can help me in many companies and if I want to have a business, then I know what to do.	

Number of Responses	Inference Category	Informant Reference Number	Samples of Detail Message	Inferences
		1063	I think it would increase my chance of getting jobs that require knowledge about Microsoft office & MYOB as they are very widely used and practical software and many company use them.	
		1121	There are a lot of good things about my course - good practice knowledge. Helpful in living and doing work in Australia.	
19	Course is good and relevant to personal goal	1005	The good part of the course is that we are using latest technology and up to date information about topic and subject. I think the course materials are quite compatible with the practical and professional life.	what is learnt will help to achieved personal goal and be able to practice what they have learnt
		1010	Yes, I have completed certificate III in this course, and then I got a job that related with the course. And, Now I am continuing to the higher level of the course until Diploma, and I hope by completing this course, I will get promoted to the higher level of my job.	
		1020	It is good for me. Because I need these kinds of knowledge for my future, my business.	
		1237	For me, everything is good. Especially for my teacher. I didn't have before, In this school a teacher which gives all the time motivation for his students.	

Source: Kho's data for this study

Personal Characteristics Question: - What are the most important reasons for choosing to come to Australia to study?

Summary of Inferences

Number of Responses	Inference Category	Informant Reference Number	Samples of Detail Message	Inferences
48	Other than education purposes	1013	There are more opportunities, and we can also work while we are studying.	Most popular non education reasons for coming to Australia using student visa:-

		1021	Much slower pace in studies, in my country is very hectic. It's world renounce. I love the outdoors in this country, fishing and camping. And job opportunities. I love this country.	- Life style - The natural beauty of environment - The multicultural social environment - To work - Aiming for migration
		1099	HAVING THE CHANCE TO STAY IN AUSTRALIA TO FIND A SPONSOR AND BE A PR.	
14	Specific educational purpose only	1001	Because I would like to upgrade my level of understanding English.	Most popular educational purposes are:- - Learning English - Gaining better qualifications
		1262	for higher study	
		1273	for a higher education	
26	Education and other purposes	1010	I've chosen to study in Australia because Australia is a big country and is a multicultural. So I think It's a good place to learn English and to know about other countries while I am studying.	The main attractions of the Australian education system are: - Choices of courses - Good facilities - Exploring what Australia has to offer - All the reasons above
		1017	I do not think that Australia offers a lot of opportunities in terms of education compared to Europe. And thus, the main reason is the cost of education. I do not believe that the cost and the provided education offers a good value. However, most universities in Australia offers very good facilities (modern, easy access, a lot of recreational activities...) It does not only form a student to be professionally active, it also "teaches" him to be socially active.	

		1220	Is safe in all aspects, up to dated knowledge, has good environment and climate it has too. My other family members are also here that's why I chosen Australia for studies.	
		1005	The Australian standard and quality of education system, and a multicultural society image are some of the reasons that I choose Australia for study.	
31	Simply because of Quality of education/high reputation	1195	Because its degree is much worth it in all over the world, then others.	Perception of quality is most influenced by:- - Recognition of the Australian qualification internationally. Global reputation. - High standard of education - Use of the latest technologies - Practical courses applicable in business - And all the reasons listed above
		1252	I think Australian study business give the practical knowledge and help to setup your own business so I choose Australia as my study destination. I am also very appreciate I am achieving my goal.	

Source: Kho's data for this study