# Perceptions of Learning Environments, Learning Approaches, and Learning Outcomes: A Study of Private Higher Education Students in Malaysia from Twinning Programmes

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**This thesis is presented as part of the requirements for the award of the degree of Doctor of Education of the University of Adelaide**
**June 2005**

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## Abstract

It has been well documented that the deep/surface approaches to learning is an important construct in trying to describe differences in students' experiences of tertiary education contexts, and in trying to understand variations in the quality of their learning outcomes. However, what has been lacking is research into how approaches to learning operate in a Malaysian twinning programme context. First, a twinning programme environment is a unique and a complex setting, as students are required to function within a context which advocates ideals of their partner overseas universities, but remain within the boundaries and constraints of a Malaysian educational institution. Second, academics at twinning programmes are faced with real challenges in providing learning environments that can foster deep approaches to learning to satisfy both the aims of the 'importer' and also that of our country. Third, there is a possibility that students operating from a twinning mode and coming from diverse cultural, social, and educational environments may exhibit different learning approaches to those espoused in western contexts. The literature provides strong evidence that many factors need to be considered when contemplating the most advantageous conditions for the encouragement of deep approaches to learning that are associated with the aims of tertiary teaching and learning.

This study sets out to gain a better understanding of the way twinning programme students approach their learning. Particularly, it aimed to examine relationships among students' individual characteristics, perceptions of the learning environments, approaches to learning, and their learning related outcomes. A theoretical model based on a re-conceptualisation of the 3P Model of learning was developed to link students' background characteristics, perceptions of learning environments, learning approaches, and students' learning related outcomes. Both quantitative and qualitative methods were used in the investigation. Data for the quantitative analysis were collected in early 2003 from 368 2nd and 3rd year students from six private higher educational institutions around the west coast of Peninsular Malaysia. Rich perceptual data were collected from semi-structured interviews of 52 students.

The quantitative findings of the study indicated that: (a) Students' individual characteristics were associated with students' perceptions of their learning environments, the approaches to learning they adopted, and to their learning related outcomes; (b) Deep approaches to learning were related to students' perceptions of good teaching and provision of clear goals and standards. Conversely, surface approaches to learning were associated with students' perceptions of poor teaching, the lack of clear goals and standards, and inappropriate assessment practices; (c) Deep approaches to learning were associated with students' positive academic attainment, acquisition of generic skills, and satisfaction with course while surface approaches were associated with lower academic attainment, poorer acquisition of generic skills, and reduced satisfaction with their course. That is, deep approaches to learning contributed positively to all students' learning outcomes, while surface approaches contributed negatively to students' academic attainment, acquisition of generic skills and satisfaction with course; (d) Students' learning outcomes were associated directly with students' individual characteristics and their perceptions of the learning environments but the relationships were not mediated by their learning approaches. The analyses indicated the need to reconstruct the model developed for the analysis, indicating that approaches to learning were related to individual characteristics and learning environments but did not mediate the associations among individual characteristics, learning environments, and learning outcomes.

The qualitative analysis enhanced our understanding of the relationships among the variables. From interviews with students, the study suggests that: (a) There were relationships between the roles played by students' gender, academic discipline of choice, age, English language competencies, types of schools they attended, ethnicity, and the ways in which they perceived their learning environments and in the ways in which they approached their learning; (b) Approaches to learning were related to students' perceptions of their learning environment. Teaching and teacher characteristics were related to a variety of learning environments which caused students to vary their approaches to learning. Teaching methods, pace and sequencing of subject matter, teacher enthusiasm, understanding,

and commitments were related to students' adopting deep approaches to learning. In addition, appropriate assessment practices, clear goals and aims, sufficient resources, and adequate choice of subjects encouraged deep approaches to learning. Conversely, overload of work, poor allocation of assignments, inappropriate assessment procedures which encouraged reproduction, poor perception of the relevance of assessments, poor teaching, and poor rapport with teaching staff encouraged surface approaches to learning and might contribute to students feeling stressed, anxious, being tired, or wanting to give up. In addition, the manifestations of 'kiasu'-ism and prior learning habits encouraged students towards reproducing study approaches; and (c) Students who spoke of adopting deep approaches to learning were more positive and more confident towards their learning outcomes. On the other hand, students who adopted surface approaches expressed dissatisfaction with such approaches, and felt that it undermined the quality of their learning outcomes.

Recommendations, based on the study's findings, include suggestions for course matters, teaching practices, assessment and workload, and English language improvement.

## Declaration

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution, and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

I give consent to this copy of my thesis, when deposited in the University Library, being available for loan and photocopying.

Signed: .....
Pauline Swee-Choo Goh

Date: .....

## Acknowledgements

During my 'research journey', there were many wonderful people who have provided assistance in the preparation and completion of this thesis.

I wish to express my immeasurable gratitude and sincere appreciation to my principal supervisor, Professor Kevin Marjoribanks, for his invaluable encouragement, guidance, and motivation for making the completion of this thesis a reality. His generous attention and patient assistance in giving this thesis substance, shape, and direction gave me the confidence needed to undertake this onerous task. His excellent supervision and his sense of humour have made my period of study at the Graduate School of Education at the University of Adelaide most enjoyable and edifying.

Sincere thanks also go to my co-supervisor Dr Margaret Secombe who provided the advice and support to me during the analysis of my qualitative data. Thank you for always being there and ever ready to listen.

Just as significant to my progress were the friendly and helpful academic and administrative staff at the Graduate School of Education who expended their time, freely gave their expertise, and made the environment conducive to my stay and studies. I specifically wish to acknowledge Professor George Smolicz, Dr Margaret Scott, and Ms. Mary Brownlee.

I am most grateful to the Chief Executive Officers, Registrars, and Principals of the six Private Higher Educational Institutions (PHEI). They willingly allowed me to access their classrooms, their students, and provided the necessary resources for my research work. I also thank all the students of the six PHEI who were involved, in one way or another, with my research project. Without their participation, this research would not have been possible.

Special thanks and a deep sense of gratitude go to my husband, Chin Loi-Hin for his prayers, endurance, loyal support, and interest from the

commencement to the last pages of this thesis. Thank you for your constant demonstrations of love.

Finally, indebtedness goes to Ms. Kate Cadman from the University of Adelaide Graduate Centre and to all my friends I made in Adelaide, friends from Kathleen Lumley College, and friends from Penang, who were there ever willing to help when I needed them most - for feedback, advice, and support during my 'journey'.

# PERCEPTIONS OF LEARNING ENVIRONMENTS, LEARNING APPROACHES, AND LEARNING OUTCOMES: A STUDY OF PRIVATE HIGHER EDUCATION STUDENTS IN MALAYSIA FROM TWINNING PROGRAMMES

## INTRODUCTION

### Context of the Study

The enactment of the 1996 Private Higher Education Act in Malaysia saw a rapid expansion of Private Higher Educational Institutions (PHEI), and an increase of students enrolled in PHEI. The Act was enacted because the Ministry of Education wanted to democratise education and provide equal opportunities for more students to achieve a degree, but at the same time provide meaningful learning in PHEI (Salleh, 2003). Many PHEI have established linkages called 'Twinning Degree Programme' with curriculum imported from overseas western universities, of which Australia and UK are well represented. Typical twinning arrangements are '1+2' (one year in local PHEI and two years in overseas partner university), '2+1' or '2+2' year arrangements. '3+0' is fairly recent, in which students are allowed to complete the foreign degree entirely at the local PHEI. Student enrolment in PHEI increased from 127,594 students in 1995 to 294,600 in 2002 (Department of Private Education, 2003).

In 1999 the former Minister of Education, Datuk Seri Najib Tun Razak suggested that PHEI would be rated as a means for the public to gauge the performance of a private institution. This is in line with the call to make Malaysia the 'centre of educational excellence' (Rao, 1997, p.5). Teaching quality will be given the most marks at 30%, followed by curriculum (20%), facilities and equipment (20%), management systems (10%), quality of question papers and answers (15%), and general information of the course (5%) (Kaur & Azizan, 2000). PHEI are now required to maintain and enhance

the quality of effective learning within their management and organisation systems. The move to gauge the quality of PHEI and the former Minister of Education's objective for high teaching quality reflects the basic aim of higher education to be more innovative and to produce quality teaching, which will hopefully lead to effective student learning outcomes (Gomez, 2002; Kaur & Azizan, 2000). Clearly, academic quality in both teaching and students' learning are important issues that have come with such an expansion.

Concerns about quality of student learning in tertiary education are not a new phenomenon. In recent years, there have been significant efforts by researchers and educators towards addressing this issue and the expanding field on student learning research has produced many suggestions of what we should be doing to encourage quality learning. Although much of the research originated from the west, there has also been research carried out, of late, on the learning and learning processes of Asian students studying in western universities, especially from the student approaches to learning (SAL) position. Student approaches to learning was derived from an experiment by Marton and Säljö (1976a) to examine students' experience of a particular learning situation. They demonstrated that how each student goes about their learning will be different, and so will their perceptions of the way they should handle the learning and hence differences in learning outcomes.

Much of the student approaches to learning research has emanated from Australia and Britain (Harris, 1997; Matthews, 2003; Ramburuth, 2000; Smith, 2001; Volet & Ang, 1998; Volet, Renshaw, & Tietzel, 1994). Numerous factors and variables have been shown to affect academic achievement. Characteristics such as intelligence, cognitive styles, and personality play an important role in learning (Minnaert & Janssen, 1992; Schmeck, 1988; Watkins, 1986). Other findings from the SAL position have shown that how students go about their learning and how they perceive their own learning context, such as good teaching, clear goals, appropriate assessments and workload to be important variables influencing achievement outcomes in tertiary education (Kember, Ng, Tse, Wong, & Pomfret, 1996; Lizzio, Wilson, & Simons, 2002; Ramsden, 1984, 1992).

While the research into students' approaches to learning can be assumed to be pertinent to students studying in western universities, there is less confidence of the pertinence to Asian students' learning in their home country (Kember & Gow, 1990). Research that attempts to repeat the investigations in students' home countries tend to be limited to looking at students undertaking their own institution's curriculum in their national language (Kember & Leung, 1998a; Kember, Charlesworth, Davies, Mckay, & Stott, 1997; Leung & Kember, 2003; Tan, 1990; Wan Ali, 2000; Watkins & Ismail, 1994). Therefore, while the research has contributed to the growing knowledge of Asian students' approaches to learning, their perception of their learning context and learning outcomes, the extent to which Asian students are able to accommodate different approaches to learning within an imported Australian and British curriculum, completed entirely in the English Language, in their home country have not been examined. One such country is Malaysia where PHEI students come from different cultural traditions and different educational systems and practices. Matthews (2003) and Volet and Kee (1993) indicated that issues relating to students' learning in culturally different contexts have received very little attention.

Malaysian education places an emphasis on students to establish life-long learning (Zakaria, 2000; Abd Rashid, 2002). Students are encouraged to possess skills, which will enable them to do research and make learning decisions based on their needs, talents, and interests. The Ministry of Education indicates that graduates should be inculcated with an aspiration for life-long learning where they continually learn, think, do, and create (Zakaria, 2000). The government of Malaysia desires that graduates should possess generic skills such as problem solving, decision-making, creative skills, and being able to function as a team (Zakaria, 2000; Abd Rashid, 2002). Therefore, in addition to the traditional concerns of achievement outcomes of students in PHEI, there seems to be a great need to be informed about how student learning at PHEI and their learning environments contribute towards the possession of these skills. According to MacNair (1990) these skills are also known as process skills or competency skills, which enable students to apply effectively what they have learnt through the desired content and subject skills of higher education towards their work

environment. Lizzio, Wilson, and Simons (2002) contend that there is little evidence of the impact that learning approaches and learning context have on the development of such process skills. In regard to this, it would seem of practical importance that the statement made by Datuk Seri Najib Tun Razak that PHEI students 'were being taught but not educated and were hence unable to think critically or to be analytical…' (Indramalar, 1999, p.2), might be better understood.

Despite an extensive search of the literature, I was unable to locate previous published work, from the perspectives of PHEI students undertaking the Australian and British curricula in Malaysia, which has simultaneously examined the complexities of different variables that affect student approaches to learning and their effects on learning outcomes. Therefore, in this research, I examine the associations among students' individual characteristics, students' perceptions of their learning context, approaches to learning, and PHEI related learning outcomes for PHEI students from different cultural backgrounds. Both quantitative and qualitative methods of analysis are used.

The research is based on students in PHEI, where students go from their upper secondary education system to the PHEI to begin their studies at the degree level. Upper secondary education is made up of students from upper secondary form 5 to form 7. Students complete their upper secondary form 5 at the age of about 17 years, after which they sit for their Malaysian terminal examination. Upon completion of the examination, students can proceed to either the work force or continue on to do their pre-university degree at the PHEI and subsequently enter the overseas twinning degree programmes at PHEI. Students can also continue on to their upper secondary form 7 after form 5 to attempt their final higher school certificate which will enable them to enter directly into the overseas twinning degree programs at PHEI. PHEI twinning programmes also include mature age students who return to pursue further studies. The present research focuses on students enrolled in their second and third year degree programs in six PHEI that offer the twinning degree programmes from Australian and British universities.

## Motivation for the Study

In presenting the context of my study, it is important for me to pause and recall the motivation of this study and how it began. As an educator who comes from a PHEI environment, I realised that there was little literature in areas of PHEI students undertaking overseas western curricula in Malaysia despite extensive searches. I was thus motivated by a deep concern at this lack of attention given to the whole process of PHEI students' learning despite its unprecedented growth in student numbers at PHEI since 1995, and amidst the current call for 'quality' and for Malaysia to be a 'centre of educational excellence'. Furthermore, the democratisation of education has led to greater and wider participation of students coming from different societal groups (including mature students) with different abilities, needs, and motives. Yet there have been few attempts to seek opinions and views to reflect the important status of PHEI students, from being participants to being consumers, customers, and contributors in their own learning processes, and to the improvement of PHEI as a whole. Rogers (1969), in the 1960s claimed that 'a way must be found to develop a climate in the system in which the focus is not upon teaching, but on the facilitation of self-directed learning', and that we as educators must 'develop the creative individual who is open to all of his experience, aware of it, and accepting it…' (p.104). However, I maintain that it is not possible for PHEI to continuously 'develop a climate in the system…' that is optimal to learning unless we constantly re-evaluate and involve the students by obtaining their feedback of their learning difficulties and their learning environments.

The simple and precise statements made by Ramsden (1987), Marjoribanks (1991), and Biggs (1993a) became the impetus for the study. Ramsden succinctly states 'We ought to study learning because we want to describe what students do… we should apply what we find out to make learning better' (p.275). Marjoribanks concisely adds, 'If teachers are to be successful in stimulating students' learning then they need to understand the formidable intricacies of their undertaking' (p.3). Biggs (1993a) advocates that student learning is likened to an intricate eco-system, therefore research into this intricacy will contribute towards a better understanding of

the elements and complex inter-relationship within the educational eco-system. Thus began the journey of my study.

I consider that a greater understanding and clarity of the complexities of student learning and working towards a more conducive environment for PHEI students is to enable them to participate, learn, and develop to their fullest potential within improved environments.

## Practical Contribution of the Study

Educational research is intended to increase our knowledge about the important teaching-learning interaction, and as a consequence, to widen the knowledge-base for professional practice which can have a bearing on teaching and learning effectiveness today and in the future. Therefore, from PHEI perspectives, the current research is significant as:

First, to provide greater understanding and clarity of the complexities of the teaching and learning context, as advocated by Ramsden, Marjoribanks, and Biggs above.

Second, in the light of aggressive competition among PHEI, the findings focussing solely in undergraduate learning from the 'twinning programme' can also be of practical interest to PHEI providers as they seek to improve quality, to pursue accountability, to provide better access, to provide students with new experiences and opportunities, to enable resource sharing, and to create cost saving measures. Additionally, the findings can also be an important source of comparative data for future research under the 'twinning' mode of educational delivery.

Third, there is potential that the findings on important issues regarding teaching can substantially contribute towards professional development programmes or teacher education programmes.

Fourth, the findings may be of practical interest to administrators and educators of Australian and British higher educational institutions as they attempt to address the challenges of exporting their curricula to countries where students are influenced by different culture, educational systems, and practices. Additionally, it can also inform them as they seek to understand the impact their course designs and assessments may have on student learning and learning outcomes, where students come from widely differing cultural backgrounds.

Fifth, an enhanced understanding of the problems and needs of PHEI students can provide important information to Malaysian educational managers and leaders before any major development or transformation of educational policy which may involve changes that impact on the educational system, culture, and practices in private tertiary education.

## Structure of the Thesis

The study addresses the concern that there is a lack of research into the important learning areas of private higher education students in Malaysia undertaking the twinning programme and its ensuing quality of learning outcomes. The context within which the study took place has been introduced. Importantly, it highlights the practical significance of the study with respect to the motivation of such research. This thesis is presented in three portfolios:

**PORTFOLIO 1 (Literature Review)** contains three parts. It identifies the research problem that is central to the study. It also provides a review of relevant literature and describes the formulation of the theoretical framework that was used to guide the investigation. The key elements related to the framework are students' approaches to learning, influence of context, and students' perceptions of context. Research in each of these areas is discussed. Portfolio 1 culminates in the design of the research model and the formulation of the major research propositions.

**PORTFOLIO 2 (Methods, Data Analysis, and Findings)** contains four parts. It covers the study's design, methodology, analysis, and findings. Portfolio 2 first addresses the way in which the study was conducted. It gives an account of the modifications, development, and application of the instruments that were used to collect quantitative data. This is followed by a description of how qualitative data were collected through interviewing students who volunteered. It then reports on the statistical analysis, based on the sample, to confirm the validity and reliability of the instruments used. The Portfolio then reports on the findings of the analysis of the quantitative data. The portfolio also incorporates an analysis and interpretation of the qualitative data collected through interviews.

**PORTFOLIO 3 (Conclusions, Implications, and Recommendations)** draws together and discusses the results of the study by integrating both the quantitative and qualitative findings. It is then followed by a presentation of the recommendations for teaching and practice based on the findings. The portfolio concludes with an account of the limitations of the study and suggestions for future research.

# PORTFOLIO 1

## LITERATURE REVIEW

Portfolio 1 consists of three parts: (a) an overview of higher education in Malaysia and an indication of the research problem that is to be examined, (b) an investigation of theoretical frameworks related to the research problem, and (c) the presentation of a research model that links student background characteristics, perceptions of learning environments, approaches to learning, and student learning outcomes.

**Part 1** discusses the Malaysian education system looking specifically at the higher educational context at both the public and private sector, and the learning contexts of students in Malaysia. The discussion in Part 1 is used to form the general research problem for the study.

**Part 2** provides a review of relevant literature, and describes the building of the conceptual framework that was used to guide this study. The key elements of the framework are students' approaches to learning, the influence of context, and perceptions of context.

**Part 3** presents the research model of learning that is used in the study, and states the research propositions that were examined.

# PORTFOLIO 1
## Part 1

## EDUCATION IN MALAYSIA

### Background

Malaysia is two landmasses separated by approximately 640 miles of the South China Sea into Peninsular Malaysia and East Malaysia. The multi-ethnic and multi-religion federation of Malaysia comprises 13 states and three federal territories. Malaysia has a parliamentary governance with Tuanku Syed Sirajuddin Syed Putra Jamalullail as the 12th Head of State, and Dato' Abdullah Ahmad Badawi as the Prime Minister.

The 2000 Census reports the population of Malaysia to be 23.27 million of which 94.1% were Malaysian citizens. Citizens of Malaysia included 56.1% Malay, 26% Chinese, and 7.7% Indian, and the median age for Malaysia was 23.6 years. Although Islam is the official religion, the country freely allows the representation of the other major religions of Buddhism, Taoism, Hinduism, Christianity, and Sikhism.

Bahasa Melayu (Malay language) is the country's official language. Nevertheless, English Language is also widely used in administration and commerce. Chinese (Mandarin, Hokkien, Cantonese, Hakka, Hailan, Foochow), Tamil, Telugu, Malayalam, Punjabi, and other indigenous dialects are used extensively for social communications.

Malaysia's economy was once dependent on agricultural produce, but eventually moved to depend on the manufacturing of high technology products and electrical goods. The natural progression from agricultural to manufacturing provided the confidence that was needed to embark on a highly ambitious and progressive aim of attaining the status of a developed

country by the year 2020 (Kachar, 1997; Country Report, 1996). One important strategy employed in the quest for the achievement of 'Vision 2020' was the ambitious Multimedia Super Corridor (MSC). Nevertheless, this new endeavour will require a change in the accruement of knowledge and skills among its people, and an emphasis on the need to develop its human resources (Kachar, 1997).

Development of the education system in Malaysia is aimed firstly, at the multi-faceted role it must take in creating a united Malaysian society. Secondly, education acts as a vehicle for economic and social development, with an emphasis on responsible citizens to face the challenges of a developed nation, and in doing so, moulding future Malaysians to be leaders of tomorrow. Such aims will be achieved through the principles of the National Philosophy of Education which form the cornerstone of the Malaysian education system. The National Philosophy of Education states that:

> Education in Malaysia is an on-going effort towards further developing the potential of individuals in a holistic and integrated manner, so as to produce individuals who are intellectually, spiritually, emotionally, and physically balanced, and harmonious, based on a firm belief in and devotion to God. Such an effort is designed to produce Malaysian citizens who are knowledgeable and competent, who possess high moral standards, and who are responsible and capable of achieving a high level of personal well-being as well as being able to contribute to the harmony and betterment of the family, the society, and the nation at large. (Zakaria, 2000, p. 114)

Formulation of the National Philosophy of Education is a result of a multitude of transformations and innovations in the education system.

## Brief History of Education Provision

It was only in the second half of the nineteenth century, after obtaining independence from the United Kingdom that there were any formal state facilities for a single education system in Malaysia. Before that the education system had four separate streams and was conducted in English, Chinese,

and Tamil (Wong & Gwee, 1972; Lee, 1972). These schools had their own administrative styles, philosophies, syllabuses and policies, and were loyal to their own ideology. There was no national thinking and no particular loyalty to the country (Kachar, 1997).

Education in Malaysia went through two important periods of change. After Malaysia achieved independence in 1957, the first Education Act was introduced in 1961. The Act was particularly significant as it introduced for the first time a national system of education which 'will satisfy the needs of the nation and promote its cultural, social, economic and political development' (Hashim, 1997, p.1). Thus began the challenge in educational planning for the next forty years, with the aims of nation building, national unity, and developing human resource needs of the country, yet preserving the rights of the diverse ethnic groups.

The Education Act 1961 saw a centralised education system, with common curriculum and using Bahasa Melayu (Malay language) as the medium of instruction, and English as an important second language (Wong & Gwee, 1972; Lee, 1972). However, vernacular languages, especially Chinese and Tamil were allowed to be used as the medium of instruction at the primary level (age 7-12). The language policy was in consideration of the aspirations and sensitivities of the multiethnic population. With the Education Act, education became a federal matter where educational matters and curriculum planning were administered centrally.

By the end of the 1970s, emphases were given to science and technology areas, in the light of the economic developments of that time. The Cabinet Committee Report of 1979 and its recommendations further strengthened and reinforced the national educational policy and the National Philosophy of Education. Numerous reforms were introduced to make education and training more efficient and more attuned to the needs of the nation (Zakaria, 2000). Reforms were supported by new legislative measures to encourage the realisation of targets set by the Ministry of Education, to enable Malaysia to meet the needs of the 21st century.

New legislative measures provided the legal mechanisms necessary for a comprehensive reform of the education system. Among the changes was the promulgation of the second education Act – Education Act 1996. Under the umbrella of the Education Act 1996, the National Council of Higher Education Act 1996, the Private Higher Education Institution Act 1996, the Universities and University College (Amendment) Act 1996, the National Accreditation Board Act 1996 and the National Higher Education Fund Board Act 1996 followed, to reflect the different sectors of higher education. The Act aimed to propel Malaysia into the new millennium and to the vision of achieving the status of a fully developed nation by 2020.

Reforms within the various higher education Acts are seen as a vehicle to promote knowledge acquisition that will ignite productivity, creativity, thinking minds, and the strategic application of knowledge and skills in a globalised environment among learners. Innovative and creative learning can be acquired through seminars, conferences, tutorials, lectures, interactive learning, while a research culture needs to be inculcated within the ethos of higher education (Abd Rashid, 2002). According to Abd Rashid (2002), innovative and creative learning are important facets in higher learning as they enable the growth of generic skills. Possession of generic skills is imperative in employment, for personal growth, in self management, and in crisis management.

Development of these Acts and the reforms within them are aimed to bring about changes to institutes of higher learning (Zakaria, 2000) and enable them 'to offer a wider range of courses' and to provide students with 'different options and approaches to learning' (p.116).

## Higher Education

The Education Act 1996 further reinforced the first Education Act 1961. Nevertheless, the policies of the second education Act took a newer look at education philosophy and development. The emphasis of the reforms in the Act gives prominence to higher education. Higher education is directed at

increasing enrolment at the degree, diploma and certificate levels, particularly in science, medicine, engineering and technical-related courses (Government of Malaysia, 1996, 2001). The general aims are summarised as:

- increasing first-degree enrolments of 19-24 year-olds in public institutions from 3.5% in 1995 to 5.6% in 2000;
- improving quality and relevance to match manpower requirements;
- increasing the capacity of existing institutions, particularly in science, engineering and technical fields;
- enrolment of science courses which includes dentistry and medicine be increased from 25.6 % in 2000 to 31.3% by 2005;
- increasing private sector participation in order to expand tertiary education opportunities, thus supplementing Government efforts while reducing public expenditure on education.

Changes to the higher education policy are seen from the position of economic growth, expansion of the labour market, and the need for manpower demands in areas of science and technology-related professions. New areas of study in the sciences, technology, and management were introduced (Zakaria, 2000). In implementing this new effort, institutions of higher learning were asked to cooperate in coordination, sharing resources, and facilities (Zakaria, 2000). The thrust was now not so much upon universal literacy but to enable a larger proportion of citizens in Malaysia of the relevant age group to enter tertiary-level institutions (Neville, 1998).

There is, therefore, a challenge for the Malaysian government to satisfy the increasing demand for tertiary education. The aim is to achieve a 40% enrolment in public higher education by 2010. An additional 5.4 million places are needed to expand the proportion of 18-22 year olds in public higher education to fulfil this goal of 40% enrolment (Couturier, 2003).

### Public Higher Educational Institutions

The impact of the new policies on public higher educational institutions was substantial. In addition to increasing public institutional capacity and

student enrolments in science and technology, efforts were also put into place to increase the number of public institutions of higher learning (Neville, 1998; Lee, 1999). However, with the greater demand for higher education, it became increasingly difficult for the government to meet the demand (Lee, 1999; Zakaria, 2000). Overall enrolments for higher education in public sector higher education for degree, diploma and certificate qualifications rose by 52.7% from 1990-1995 (Government of Malaysia, 1996). At the public university level, intakes for first degrees increased by a further 11,000 students in 1990 to 17,000 in 1995. Due to the limited places available in public sector higher education, public institutions were able to admit to degree level courses only 50% of applicants (Neville, 1998).

The situation was further compounded by the economic downturn of 1997 which saw students who would have continued their tertiary education overseas applying for public universities (Lee, 1999). Such a situation further added to the strain felt by public universities to take in more qualified students (Lee, 1999). Furthermore, the enrolment into public universities was based on a quota of 55% 'bumiputera' (i.e Malays and other smaller groups defined as indigenous) and 45% non-bumiputera, notably the Chinese and the Indians (Neville, 1998). The capacity of higher education in Malaysia was inadequate to accommodate all those seeking entry (Neville, 1998).

Failure to provide tertiary education to all qualified students of Malaysia is seen as a disadvantage to the non-bumiputera (Neville, 1998) and also seen as a set-back in the aspirations of the country to produce the necessary human resource for the achievement of a developed nation (Long, 2000). To complement this deficiency, the government encouraged the private sector to play a more active role in providing mass higher education 'by inviting Western universities to import international branch campuses, management and information technology instruction centres and individual courses to be taught in Malaysian institutions' (Bennell & Pearce, 1998, p.22).

**Private Higher Educational Institutions (PHEI)**

Private higher educational institutions had their beginnings in post-secondary programmes. Post-secondary programmes prepare students for tertiary education overseas. However, the enactment of the Private Higher Education Institution Act 1996, enabled many of these same institutions to establish twinning degree programmes with foreign universities. The twinning programmes are mainly with institutions from Australia and Britain (Neville, 1998). Twinning programmes enabled students to progress from specific franchised pre-university programmes which satisfy entry requirements of degree courses, and subsequently to proceed to the first phase of the degree courses in the same private colleges. Alternatively, students can carry their pre-university qualification to another twinning degree at another college which accepts their pre-university qualification. With twinning arrangements, students spend different study periods in Malaysia and in overseas universities. For example, for a three-year degree programme, a student may spend the first year or first two years in the local college and complete the remainder at the overseas university.

In the move to open up more foreign education in Malaysia, the Ministry of Education has allowed what is known as the 3+0 foreign degree programmes where PHEI are given approval to form partnerships with foreign universities. Students are able to obtain foreign degrees locally at PHEI using similar curriculum and syllabus (Lee, 1999). Students must also satisfy the entry requirements of these foreign universities (Lee, 1999). Australian and British universities have arrangements with these PHEI to offer degree programmes in areas of architecture, design, business, commerce, accounting, music, computer science, and engineering (Zakaria, 2000). Nevertheless, for PHEI to qualify for the 3+0 status, the Ministry of Education requires that PHEI satisfy its guidelines before approval is granted. The guidelines from the Ministry of Education in 1998 (cited in Education Quarterly, 1999) require that:

1. The partner university must be certified by the authorities in their country and must be of reputable standing.

2. 3+0 programmes can only be conducted upon receiving approval from the Ministry of Education, and such course(s) must meet standard set by the Lembaga Akreditasi Negara (National Accreditation Board).
3. The degrees offered must be recognised by the government and by the relevant professional bodies in Malaysia as well as the country in which the foreign university is based.
4. The programme offered must be of the same standard and quality and should be maintained through validation exercises by the partner university.
5. The private college must have adequate infrastructure/facilities for teaching and academic staff.
6. Private colleges are not encouraged to conduct 3+0 programmes with more than three foreign universities and not more than five courses with each university.
7. Private colleges conducting the same courses are encouraged to run them together to save costs and maximise resources.
8. Fees charged must be reasonable and must be below the fees charged by the foreign university.
9. Private colleges must first obtain the views and advice of the Ministry before signing any agreement with foreign universities.
10. Approval to run the 3+0 is subject to approval from the relevant professional bodies for technical and professional courses.
11. The conduct of the 3+0 must fulfil the requirements stipulated by the relevant provisions in the Education Act 1996 and the Private Educational Institutions Act 1996.

The government can no longer be regarded as the sole financier of education. It promotes collaboration between the corporate world and public and private educational providers. The set-up of PHEI is to complement the public institutions of higher learning in providing greater access to a wider spectrum of students, especially in producing professional individuals knowledgeable in science and technology. Nevertheless PHEI are differentiated in three distinct ways. First, PHEI are set apart from the public institutions of higher learning by their substantial tuition fees. Second, the demands of the quota system of entry into public institutions resulted in

approximately a 95% non-bumiputera student population in the PHEI (Kachar, 1995). Lim (1995) pointed out that public institutions of higher learning were enrolling mainly bumiputera students and private institutions were enrolling non-bumiputera students who were unable to obtain a place in government-subsidized institutions. Third, the medium of instruction in PHEI is in English. The benefits of having qualifications undertaken in the English language are seen as more portable as 'such graduates will have a greatly enhanced marketability with medium-sized and multinational companies both domestically and abroad and a competitive competence which will be of value in the increasingly globalised business environment' (Neville, 1998, p.272).

However, PHEI have been accused of being 'for-revenue' or 'not-for-loss' institutions, where private entrepreneurs view private institutions as a profitable market. The intention of establishing PHEI has been criticised as delivering as little as possible, while receiving as much revenue as possible. Therefore, the concern is that the quality of such 'for-revenue' institutions may be below expectations (Couturier, 2003). Nevertheless, PHEI grew in numbers from 156 institutions in 1992 to 354 in 1996 (Lee, 1999). There were 534 private institutions of higher learning catering to 294,600 students in 2002 (Department of Private Education, 2003). The growth of PHEI is linked to the government's open approach in meeting the country's human resource needs and the development of a highly skilled and professional workforce (Zakaria, 2000).

Although significant changes were made to higher education to provide greater access to qualified candidates, changes were also put in place at the school level. This was to meet the individual needs of learners by providing a sound basic education for all prior to their entry to tertiary level.

## Learning Context of Students in Malaysia

In pursuing the aims stated in the National Philosophy of Education, various measures have been put in place beginning at the primary level and

continuing on at the secondary level to promote more self-reliant learners. In 1983, two major innovations that were implemented were the New Primary School Curriculum (KBSR) and the Integrated Curriculum for Secondary Schools (KBSM). Central features of the KBSR and KBSM curricula are that there will be a continuous development between the stages in every subject and there will be language, thinking skills, study skills, and moral values across the curriculum. Furthermore, the curriculum focussed on both the intellectual domain as well as emotional, physical, and spiritual domains. Skills attainment, values, attitudes, together with knowledge attainment provided a holistic curriculum. The fundamental drive is the idea of life long education or education for life (Raja Musa & Nik Yusoff, 2000).

The philosophy behind the two sets of curriculum is to encourage more student-centred teaching and learning processes that will ensure students develop their interests and inspire their interest for knowledge. First, the learners are expected to have some degree of choice and autonomy in their learning, and be able to independently perform certain tasks. Second, learners are expected to use creative and critical thinking skills to acquire knowledge and skills to enable them to reach a higher level of understanding of the teaching contents. However, Raja Musa & Nik Yusoff (2000) found weak support for the philosophy among teachers. When asked about teachers' perceptions towards the implementation of the curricula, some of the findings were that only 8.4% of teachers gave support towards learner autonomy, 8.5% gave support for giving learners' choice in their learning, and 15.3% supported using learners' self assessment. Higher support was given to group work activities (47%), and support for subject integration (20%).

The shortcomings of the curriculum may be attributed to the misalignment between how the educators internalise the theoretical basis of the underlying philosophy of the curriculum or possibly they do not believe that the pedagogical principles can work in reality (Raja Musa & Nik Yusoff, 2000). Despite the aspirations of the curriculum, Raja Musa & Nik Yusoff (2000) indicated that the school system still practices a traditional teaching method and this practice may indirectly encourage the 'Malaysian syndrome' of

spoon-feeding. Spoon-feeding is defined as the aim for students to memorise teaching content (Zubir, 1988; Raja Musa & Nik Yusoff, 2000), and students are discouraged to have independent thoughts and are reluctant to ask questions and argue (Kaputin, 1988).

In 1999, the 'Sekolah Bestari' or 'The Smart School' was trialled with 90 pilot schools. The Smart School is an extension of the KBSR/KBSM curricula. However, it is only by 2010 that all schools in Malaysia will be converted into this new system. In an article by Mustafa (2003), Tan Sri Musa Mohamad remarked that there was a need for students to be more analytical and to be equipped with the necessary communication skills and to ensure that the education system was not overly dependent on an exam-oriented culture. In addition, teachers should also do away with the conventional teacher-centred approach to teaching. However, Ahmad (2000) reported that although educators acknowledged the importance of cultivating a thinking and creative learner, teachers were nevertheless pressured to prepare students for the ever important national examination. In order to achieve good pass rates among students, teachers reported that they used past and similar examination questions as drill sessions, rather than encouraging students to achieve higher thinking order skills. Teachers were 'training for the test' rather than 'teaching to the test' (Ahmad, 2000, p.471). The teachers further commented that the examination questions did not encourage students to use higher thinking ability.

On the other hand, it has been suggested that students are unable to answer questions requiring critical thinking and that they tend to speculate on the type of questions that will appear in the examination without fully analysing what is required (Nalliah & Thiyagarajah, 1999). In an article by Leong (2000, p.4), Professor Khoo Kay Kim was quoted as saying that there is 'hardly any practical importance placed on the needs for students to learn to self-educate to ensure that throughout their lives the process of education, rather than pure book learning, never stops'. Ahmad (2000) cautioned that there seems to be an incongruence between what is aspired to and aimed at by the KBSR/KBSM curricula, with what is implemented and executed within the learning context of learners.

Perhaps as a consequence of the above, Malaysian tertiary students are described as passive and are taught to reproduce the experts and that students still come from a secondary school system that provides spoon-feeding (Kaputin, 1988). Tan (1990) conducted a study comparing the effectiveness of learning through specially prepared video simulation versus a conventional teaching mode, for a group of medical students in a public university in Malaysia. There were no significant differences in achievement outcomes of the two groups even though the video simulation group was given specially structured learning modules. Tan concluded that the video simulation group of students did not make a full effort in actually reading or studying the modules given in detail or with understanding. Tan stated that:

> The students appeared to have become accustomed to the traditional method of teaching which induces teacher dependency, passive reception of knowledge and rote learning. They were not familiar with self-learning techniques and appeared unable to accept responsibility for their own learning. (p.87)

Zakaria (2000) suggested that students have not been encouraged to be more confident in undertaking reference work and in maximising the use of self-instructional modules. Smith (2001) found that Chinese Malaysians at a tertiary level Australian campus, lacked independent thoughts, were incompetent in their approach to learning, disorganised in their study habits, and unable to distinguish relevant from irrelevant materials. There was little evidence of a capacity to think independently and critically.

Wan Ali (2000) categorised five learning conceptions of tertiary students in a Malaysian public university. Students in categories A and B were defined as remembering and increasing knowledge to satisfy academic demands. Category C was defined as applying knowledge, and knowing what to do with it. Categories D and E were defined by learning in terms of obtaining a new perspective of what is learning and being able to form conceptions of one's own. He found that almost 80% of the participants were grouped under categories A and B. He proposed that the phenomenon shown thwarted the effort of the government towards the desired learning practices of tertiary

students. Wan Ali suggested that one of the reasons such phenomenon existed was the strong emphasis on examinations which stressed strongly aspects of memorisation and regurgitation.

However, tertiary students in PHEI are introduced to a curriculum that is derived from aims of higher education of the 'importer'. Stated aims of tertiary education from Australia and the United Kingdom reflect an important relationship between teaching and learning, i.e. teachers' perceptions of the aims of student learning and students' perceptions of their learning (Edwards, 1999). The Australian Vice Chancellors' Committee Guidelines for Effective University Teaching (1993) states that 'Generally, university… aims to enable students to reach their highest possible learning during their time of enrolment, and to prepare them for life-long learning. (p.2)

The Australian Vice Chancellors' Committee Guidelines for Effective University Teaching (1993) outlined a learning environment that should be created by those responsible for providing education. In a broad sense, students should be confident to be independent in their own learning. They must also posses skills to evaluate their own work and that of their peers critically. In addition, they must be critical and analytical thinkers, as well as being able to work within a group as a team, and at the same time be proficient in their communication skills. Tertiary learning is seen as an active transfer of knowledge to students by their educators. Tertiary learning is not viewed as passive involvement of students towards their new knowledge and situations. It must be a place that can alter thinking and understanding. Therefore, an environment for the students needs to be created so that meaningful learning can take place.

## Research Problems

It is probable that PHEI students may encounter problems adapting to a 'western culture' – where the curriculum would expect the students to

engage in more open academic endeavour. The discussions in earlier sections indicate that students in Malaysia tend to experience a different teaching and learning practice within the Malaysian culture. Obtaining facts and regurgitation are significant in the Malaysian education system due to the strong emphasis on examinations. Therefore, would tertiary students undertaking a twinning programme in PHEI achieve a change in their learning related to the tertiary aims of the 'importer', largely because of the way the students perceive their new learning experiences and approach their learning? For these reasons, would their learning experiences affect their learning outcomes?

Furthermore, in the call for Malaysia to have quality education and to be a 'centre of educational excellence', there is a need to create learning environments that can foster both the aims of the 'importer' and also that of the country. In the economic cost efficient climate of PHEI in Malaysia, the cost of providing learning environments that can satisfy those aims is a major consideration. In an era of rapid technological development and change, there are increasing numbers of students of divergent age, experience, and ability entering PHEI. Educators in PHEI are thus pressured into providing students with interesting and innovative learning environments that can influence and motivate the use of appropriate learning approaches and consequently towards the possession of 'real understanding'. What then are the factors that comprise an ideal learning environment, how evident are they, and how does the learning environment influence the way students go about their studying? In addition, are students' approaches to their learning and their learning outcomes related to the academic environment provided for PHEI students?

The present study attempts to shed light on the above problems by investigating the associations among particular aspects of students' individual characteristics, students' perceptions of their learning environments, approaches to learning, and their learning outcomes, especially in the climate among PHEI in their need to balance their pursuit of quality, revenue, and prestige. Through this study, I sought to contribute

to the theoretical knowledge concerning those factors that influence student learning approaches from PHEI students' perspectives.

## Summary and Conclusion to Part 1 of Portfolio 1

Part 1 has provided an overview of the changes and innovations in the Malaysian educational system that has been taking place since independence in 1957. What is certain is that the government has made concerted efforts and introduced reforms towards these changes and development. Education has evolved into a national system, from a fragmented and diversified system of schooling, working within the framework of the National Philosophy of Education.

Current reforms and changes made in education have human resource development as one of the integral components of Malaysia's drive for nation building. Education is to enable Malaysia to remain competitive in the world's economic activities and towards high socio-economic attainment. The demand for skilled and well-educated people, and the desire to raise participation rates in higher education have resulted in a shortfall in the number of places in the public sector of higher education. To overcome this shortfall, private corporations have been encouraged to establish private institutions of higher learning to offer the 'Twinning Programme' in collaboration with western institutions mainly from Australia and Britain.

Major changes were also made to the Malaysian school KBSR/KBSM curriculum towards the development of critical and creative learners prior to tertiary education. Changes and reforms were needed in the light of the strength and weaknesses of the present system and have culminated in the creation of the new Smart School curriculum. However, the national aspirations for real learning and to think critically and creatively may have been impeded, as teachers still tend to adopt a conventional mode of teaching, and students tend to take the stance of passive learners. Studying towards examinations tends to take priority.

A possible consequence of the current schooling system is that students undertaking overseas western curricula in PHEI may encounter problems in their learning, both in how they go about their learning task, and in accommodating to their new learning context.

The present study is intended to investigate the associations among background characteristics, perceptions of learning contexts, learning approaches, and the learning outcomes of PHEI students as they accommodate to western tertiary curricula.

In Part 2, I present a review of the relevant literature related to my study. It begins by examining the paradigms on which research on learning has been developed. I then examine studies of learning approaches, investigate those factors related to those approaches, and explore the relations between approaches and the quality of learning outcomes. Both qualitative and quantitative investigations are reviewed. The review of relevant literature serves to build the conceptual framework that was used to guide the study.

# PORTFOLIO 1

## Part 2

# APPROACHES TO LEARNING, PERCEPTIONS OF LEARNING ENVIRONMENTS, AND LEARNING OUTCOMES

## Introduction

The aim of the present study was to examine Malaysian private higher educational institutions (PHEI) students' experiences of their courses from overseas western universities from a student approaches to learning (SAL) position, and to investigate factors related to the way the students approach their learning.

Part 2 provides details of the origin of the SAL position; describes and discusses the ways it has been used in various investigations; and provides an assessment of the approach in relation to the present study. The first section of Part 2 briefly assesses the different perspectives of learning that have been used to develop the SAL perspective. Subsequent sections will look at approaches to learning both from a qualitative and quantitative perspective.

### The Different Perspectives of Student Learning

There is no single theory of student learning that can describe all aspects of learning. Various learning theories have provided a basis for understanding student and teacher interactions and students' learning processes. Schuell (1986) stated that all theoretical frameworks that are used to understand student learning are characterised by changes in behaviour. There is a possibility that this change will be permanent. Schmeck (1988) portrayed learning as behavioural, neurological, and phenomenological.

From a behavioural perspective, it is a change in behaviour as a result of responding to outside stimuli. A student contemplates a change to his/her learning behaviour as a reaction to a specific learning situation. One of the most effective ways of encouraging learning is to manipulate or modify the situation in which learning takes place, and individual differences have no part to play. The stance adopted is that an increase in learning is through situational manipulations (Biggs & Kirby, 1984).

Another form of learning is examined from a neurological perspective. Learning occurs as a result of a change in activity of the neurones in the brain caused by the processing or understanding of information (Atkinson & Shiffrin, 1968; Schuell, 1986).

From a phenomenological perspective, importance is placed on the learners and how they process or change knowledge. Different learning outcomes are dependent on how students experience their learning, conceive their learning, and how they interpret their learning situations. The approach examines the aspects of what is learned and how it is learned, and emphasis shifts from the teacher or the researcher to that of the learner (Marton, 1981).

In the following sections, I deal with those three perspectives.

### Early Perspectives on Student Learning

At the turn of the 20th century to around the 1960s, much educational research into student learning tended to be concentrated on the relationships between memory, oral, and visual teaching methods (Keefe, 1979), with very little attention directed at individual differences or changes in learning that might take place (Richardson, 1987). Empirical studies were largely concentrated on memory investigation. Most of the research on learning was carried out in laboratory situations and in most cases, devoid of real educational context (Richardson, 1987). Under the influence of behaviourism, little effort was made to study how understanding took place, or to explain the more sophisticated and complex learning necessary to

acquire language, rather emphasis was placed on trying to quantify behavioural responses (Wittrock, 1992). Learning was seen as mechanistic and little attention was given to higher cognitive processes where cognitive processes were relegated to mere 'connectionistic conception' (Cowman, 1998, p.900).

By the late 1960s, cognitive psychology began to examine how individual students receive and process information (Richardson, 1987). In contrast to behaviourist theory that believes that humans react to outside conditions and stimuli, cognitive psychologists propose that learners internalise their environment by processing information from outside. Cognitive psychologists began to recognise the importance of the learner being active, the content of learning, and the method of learning (Watkins, 1996a). Learners discard aspects that are not relevant to them and actively construct knowledge for themselves by forming their own representation of the material to be learned as a way of increasing the complexity of their understanding (Biggs & Telfer, 1987; Dart, 1998).

In the 1970s, information processing became progressively popular in describing the complexity of learning. Nevertheless, information processing came about as part of cognitive psychology. Information processing focussed on the processes of student learning such as rehearsing, elaborating, and imaging. However, there was no consideration given to either students' contexts or content of learning. The Information processing approach was criticised as focussing 'too narrowly on the study processes of students as if that studying took place in a vacuum…' (Entwistle & Waterson, 1988, p. 264). Schon (1987) cautioned that education does not exist in a laboratory but rather education and learning is likened to a 'soft, slimy swamp' (p.3). The complexity of student learning cannot be experimentally 'controlled' without including the motivational and affective aspects of learning (Watkins, 1996a).

Phenomenography arose from the dissatisfaction of the early learning theories and information processing approach. One of the aims of student

learning from a phenomenographic point of view is an exploration of the 'what of learning' i.e. the quality of learning outcomes.

### Phenomenography

The impetus for phenomenography to examine student learning was research at the University of Gothenburg. Phenomenographic perspective stresses the importance of looking at learning processes that happen in the natural situation of learning within everyday learning tasks, for example, reading text materials. According to Marton and Säljö (1976a, 1984), phenomenography focuses on the learner's experience of learning. It seeks to discover the different ways in which learners experience phenomena. It puts an emphasis on three dimensions of this experience. First, between the perceptions of the learners' contexts, that is, their conceptions about learning. Second, on students' motivational objectives, and third, on how students approach the learning. The three dimensions, if positive, should be related to optimum learning outcomes.

Marton and Booth (1997) succinctly described phenomenography as 'a change in someone's capability for experiencing something in certain ways' (p.208). The phenomenographic view of learning developed because it was considered that earlier psychological methods of research did not provide insights into how students '…experience, conceptualise, perceive and understand various aspects of, and phenomena in, the world around them' (Marton, 1986, p.31). In this regard, the phenomenographic perspective rejects a quantitative view of learning and portrays quantitative research as too 'detached, objective observer' (Entwistle, 1984, p.13). Instead, learner and learning are seen from a qualitative view, likened to the changing of the individual perspective about the world or a 'second order perspective' (Case, 2000), which is differentiated from most perspectives used in traditional research, i.e. from the perspective of the researcher.

## Approaches to Learning from a Phenomenographic Perspective

Marton's work at the University of Gothenburg, represents one of the most significant pieces of research on approaches to learning. Over the last 25 years, much research has contributed to supporting, advancing, and in some cases modifying the conclusions of the aspects of approaches to learning. Some of the contributors towards this work have included Marton and Säljö (1976a, 1976b), Svensson (1977), Dahlgren and Marton (1978), Entwistle and Ramsden (1983), Pask (1976), Biggs (1987), Laurillard (1979), Kember and Gow (1990), and Kember (1996).

In this section, I review research that has examined approaches to learning from phenomenographic perspectives. On the basis of the early phenomenographic perspective, a well-established body of research has contrasted two forms of approaches to learning - deep and surface approaches to learning. I discuss these approaches and then examine the influence of the learning context on approaches to learning. Finally, I discuss differences between learning approach and learning style.

### Early Research on Approaches to Learning

Research by Marton adopted the phenomenographic methodology, focussing on information processing by university students on what was learnt, rather than previous studies in cognitive psychology which placed emphasis on how much was learnt. An investigation by Marton and Säljö (1976a) involved 30 university students reading selected academic texts and examined the way they went about learning the text. Upon completion of the reading task, the students were given questions based on their readings, and were asked to describe how they set about the task of reading the text, and how they set about tackling their normal academic studies. The same students were again called in after five weeks, and asked to recall the substance of the text and to answer similar questions on how they went about the task of reading the text and their general approach to academic studies.

Findings suggested two qualitatively different 'levels of processing'. Students who expected questions to be asked on factual knowledge tended to use learning strategies that concentrated on detail and memorisation. They tended to overlook the overall meaning of the readings or the writer's intention, thus providing answers based on the text that contained the right 'signs' and they failed to provide a true understanding of their reading. These students focussed on the separate words and sentences of the text, rather than what the words and sentences were intended to convey. The students were not involved in the task. As a consequence, these students were not able to distinguish between principles and examples, and were not able to differentiate between main points and secondary facts. Such strategies employed by students were termed as surface level processing which Marton and Säljö (1976a) defined as:

> In the case of surface level processing the student directs his attention towards learning the text itself (the sign), i.e. he has a 'reproductive' conception which means that he is more or less forced to keep to a rote learning strategy. (p.7)

In contrast, students who were able to grasp the underlying meaning of the text, and understood the actual significance of the text showed a deep level processing. They were not dominated by the requirement to answer questions later. Marton and Säljö (1976a) defined it as:

> In the case of deep level processing, on the other hand, the student is directed towards the intentional content of the learning material (what is signified), i.e. he is directed towards comprehending what the author wants to say about, for instance, a certain scientific problem or principle. (p.7)

From their investigation, all those students who showed deep level processing produced the two highest levels of outcome and those who demonstrated surface level processing produced the two lowest levels of outcome.

**Deep and Surface Level of Processing**

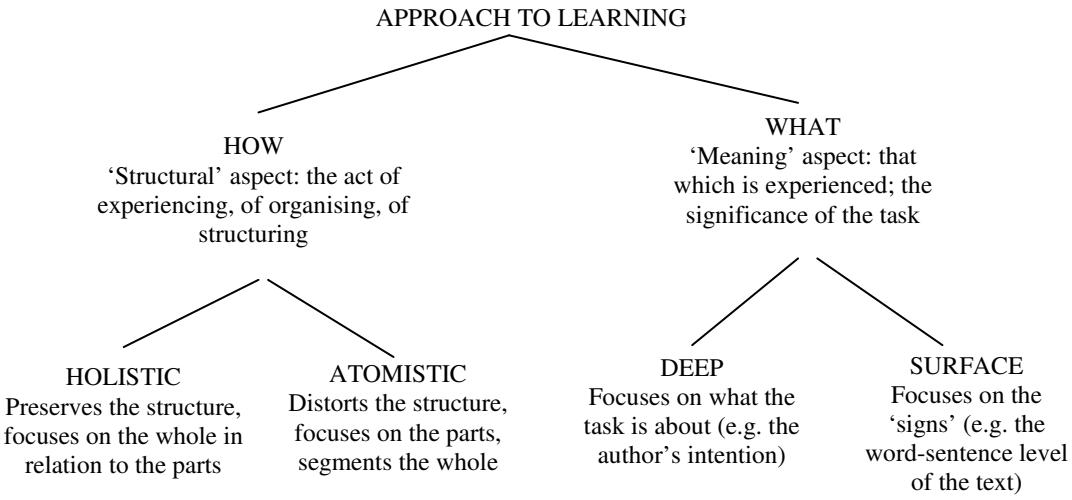
Further evidence that supported the idea of deep/surface level of processing was provided by Svensson (1977). Svensson replicated the works of Marton and Säljö (1976a), but he focussed on the qualitatively different organisational skills of strategies and outcomes. Marton and Säljö concentrated on the 'what' aspects of learning, while Svensson looked at the 'how' aspects of learning. Svensson compared two levels of processing which were labelled 'holistic' and 'atomistic' approaches. The definition of Svensson's (1977, p.238) approaches were:

> The atomistic approach was indicated when students described their activities as involving: focusing on specific comparisons, focusing on the parts of the test in sequence (rather than on the more important parts), memorising details and direct information indicating a lack of orientation towards the message as a whole.
>
> In contrast the holistic approach was characterised by students' attempts: to understand the overall meaning of the passage, to search for the authors' intention, to relate the message to a wider context and/or to identify the main parts of the author's argument and supporting facts.
>
> These two types of activity were also apparent in students' reports on how they tried to remember the texts. 'Atomists' relied on remembering the introductory sentences, visualising the tables, parts of the text of the outline structure of the text, and/or a general orientations to details. 'Holists' mentioned their attempts to remember the main message, what the author had been trying to say, the basic steps in the argument, and the message in a wider context.

Entwistle and Marton (1984) argued that there is a link between the two components of deep/holistic and surface/atomistic, even though the components were looked at from two distinct aspects of learning. In some literature on student learning, the terms 'deep-holistic' and 'surface-atomistic' are sometimes used to describe the same concept. The structure of the categories is summarised in Figure PF1.1.

**Figure PF1.1**

**The Structure of Approaches to Learning**




*Source*: Ramsden (1992, p.43)

Svensson (1977) examined 30 university students, and found a strong relation between their levels of processing and academic performance. Of the 19 students who were categorised as atomists, only seven passed their first year examinations, but of the 11 who were categorised as holists, ten passed their examinations. In the investigation, further data were collected from those students who failed and passed the examination. Accounts from the students such as the number of hours spent each day on study; the amount of revision; and whether they used techniques such as synopsis, underlining, and how they used their lecture notes in studying were collected. Svensson showed that students' level of processing was related to their everyday academic work.

The investigations by Marton and Säljö (1976a) and Svensson (1977) were concerned with how students go about reading academic texts in a relatively artificial experimental situation. Nevertheless, Marton and Säljö (1976a) have argued that the 'experiment' was able to show interconnectivity between intent, learning process, and outcome. Marton and Säljö (1976a) concluded:

> It would appear that a decisive factor in non-verbatim learning, both in experimental settings and in everyday academic work, is the learner's approach to learning. Those who succeed best (both qualitatively and quantitatively) seem to have an approach that aims beyond the written or spoken discourse itself towards the message the discourse is intended to communicate. These students feel themselves to be the agents of learning; they utilise their capacity for logical thinking in order to construct knowledge. (p.37)

Thus the term 'approaches to learning' or 'learning approaches' was coined to better reflect all three aspects of intent, process, and outcome. Deep level processing became better known as deep approach to learning, and surface level processing became surface approach to learning.

### Deep and Surface Approaches to Learning

Biggs (1993b, 2001) suggested that Marton and Säljö (1976a) used approach to learning to refer to students' strategies when reading academic text material or to mean 'the processes adopted prior to, and which directly determine, the outcome of learning' (Biggs, 1993b, p.6). Biggs (1993b) suggested that approach to learning can also be referred to as students' 'predispositions to adopt particular processes' (p.6). Entwistle (1988) referred to the latter as 'orientations' to learning. However, Richardson (2000) argued that in fact Marton and Säljö (1976a) used the expression 'approaches to learning' to refer to the different ways in which students typically went about their academic studies, and intended to use the expression in a predispositional sense rather than in a strategic sense. Ramsden (1992) similarly described learning approaches as a 'relation' between the students and the learning he or she is doing.

Nevertheless, approaches to learning are associated with qualitatively different outcomes (Marton & Säljö, 1976a). Surface approach to learning is seen as an approach driven by extrinsic motivation, and extrinsic to the real purpose of the task (Biggs, 2001). The intention is to meet requirements with as little effort and time as possible. One of the methods is to rote learn. Rote learning does not automatically mean that a student is adopting a surface

approach, because rote learning can be acceptable when verbatim recall is needed. It becomes a surface approach if the student rote learns answers to previous examination questions. According to Ramsden (1992), surface approaches 'are uniformly disastrous for learning… they may permit students to imitate authentic learning and to bamboozle their teachers into thinking that they have learned… the snag is that you may survive the exam but you will almost certainly forget everything you memorised for it after a few days' (p. 45). An outcome of surface learning is that the underlying meaning tends to become lost or without integration. There is no analysis of the learning material. Biggs (1987) has suggested that students who continue to use a surface approach, not only have poor performance outcomes, but they tend to terminate their higher education after a first degree.

On the other hand, deep approach is based on an intention to engage in the task meaningfully (Biggs, 2001). There is an attempt to understand what is learned and to relate it to both their previous knowledge and previous experience. The aim of deep learning is to engage in a task with learning processes that are appropriate to completing it satisfactorily (Biggs, 2001). Marton and Säljö (1984) stated 'We are not arguing that the deep/holistic approach is always "best": only that it is the best, indeed the only, way to understand learning materials' (p.46). Resultant outcomes are high quality learning, including the development of analytic skills (Biggs, 2001; Gordon, Simpson, & Debus, 2001). Defining features and characteristics of the deep and surface approaches to learning are indicated in Table PF1.1

**Table PF1.1**

**Defining Features and Characteristics of Deep and Surface Approaches**

| Features | Actions |
|---|---|
| **Deep Approach**<br>**Intention** – to understand ideas for yourself<br><br>Relating ideas to previous knowledge and experience.<br>Looking for patterns and underlying principles.<br><br>Checking evidence and relating it to conclusions.<br>Examining logic and argument cautiously and critically.<br><br>Becoming actively interested in the course content. | A student:<br>• is interested in the academic task and derives enjoyment from carrying it out;<br>• searches for the meaning inherent in the task (if a prose passage, the intention of the author);<br>• personalises the task making it meaningful and to the real world;<br>• integrates aspects or parts of task into whole (for instance, relates evidence to a conclusion), see relationships between this whole and previous knowledge; and<br>• tries to theorise abut the task and forms hypothesis. |
| **Surface Approach**<br>**Intention** – to cope with course requirements<br><br>Studying without reflecting on either purpose or strategy.<br>Treating the course as unrelated bits of knowledge.<br>Memorising facts and procedures routinely.<br><br>Finding difficulty in making sense of new ideas presented.<br>Feeling undue pressure and worry about work. | A student:<br>• sees the task as a demand to be met, a necessary imposition if some other goal is to be reached (a qualification for instance);<br>• sees the aspects or parts of the task as discrete and unrelated either to each other or to other tasks;<br>• is worried about the time the task is taking;<br>• avoids personal or other meanings the task may have; and<br>• relies on memorisation, attempting to reproduce the surface aspects of the task (the words used, for example, or a diagram, or mnemonic). |

*Source*: Entwistle (1998, p.74); Biggs (1987, p.15)

The nature of the differences of what students are trying to do when they approach their learning is illustrated in the following excerpts from interviews collected by Laurillard (1984, pp.134-135). The first three describe typical characteristics of deep approaches, and the last three demonstrate a traditional case of surface approach.

Deep Approach

*Subject matter: geography, essay preparation*
Well, I read it, I read it very slowly, trying to concentrate on what it means, what the actual passage means. Obviously I've read the quotations a few times and I've got it in my mind what they mean. There's a lot of meaning behind it. You have to really get into it and take every passage, every sentence, and try to really think, 'Well, what does this mean?' You mustn't regurgitate what David is saying, because that's not the idea of the exercise. I suppose it's really original ideas in this one, getting it all together.

*Physics, practical work*
I suppose I'm trying to imagine what the experiment is talking about, in a physical sense, sort of get a picture of what it's about. This one says an ultra-violet lamp emits one watt of power; it says calculate the energy falling on a square centimetre per second. I'm just thinking of the light and the way it spreads out, so therefore I know it's the inverse square law.

*Engineering, problem solving*
It's an operation research exercise, a programme to find a minimum point on a curve. First I had to decide on the criteria of how to approach it, then drew a flow diagram, and checked through each stage. You have to think about it and understand it first. I used my knowledge of O.R. design of starting with one point, testing it and judging the next move. I try to work through logically…I chose this problem because it was more applied, more realistic. You can learn how to go about O.R. You get an idea of the different types of problem that exist from reading.

Surface Approach

*Computer Studies, lecture notes/revision*
Learning in this course is getting enough facts so that you can write something relevant in the exam. You've got enough information so you can write an essay on it. What I normally do is learn certain headings. In an exam I can go: 'Introduction' and I'll 'look' at the next heading, and I know what I've got to write about, without really thinking about it really. I know the facts about it. I go to the next heading and regurgitate.

*Physics, examination revision*
Formulae. You just have to go into the exam with as many formulae as possible. So you learn those parrot-fashion. And approaches to the way you work out problems, techniques

involved in maths. I seem to remember these just sort of one day or two.

**Engineering, problem solving**

This problem is not be handed in… I know how I'd do it from looking at it; it practically tells you what equation to use. You just have to bash the numbers out. I know how to do it before I started so I didn't get anything out of it. There's not really any thinking. You just need to know what you need to solve the problem. I read through the relevant notes, but not much because you don't need to look at the system.

## Influence of the Learning Context

Marton and Säljö (1976a) suggested that surface and deep approaches marked a qualitative difference between different kinds of students and are related to qualitatively different outcomes. In a further study (1976b), they found that deep or surface processing was influenced by the students' expectations of the learning exercise. When students were asked surface level questions, they responded with surface processing strategies. However, when students were given deep level questions, the investigation found that there was one group of students who used a deep processing strategy. Another group approaching the deep level task, did not engage in a deep manner but used 'technified' responses to what they understood from the readings. Marton and Säljö (1976b) used the term 'technified' and 'technification' to describe answers that used the correct jargon but did not reveal a real sense of understanding to the reader. Marton and Säljö (1976b) concluded that 'students adopt an approach determined by their expectations of what is required of them' (p.125). They further stated that students are capable of using deep or surface strategies, but the demands of school assessment can be interpreted by students as requiring mostly factual recall at the expense of deep understanding.

Dahlgren and Marton (1978) conducted a study involving economics students, and they found that many of them failed to acquire a sophisticated understanding of concepts of 'price' in economic terms because they were forced to adopt memorisation in order to cope with the demands of a heavy syllabus. Based on this idea, Laurillard (1979) interviewed 31 students of

science and engineering about how they coped with the problems they encountered in different courses. She found that 19 of the 31 students exhibited both deep and surface approaches depending on the situation, and the rest showed only a deep approach. Laurillard argued that the different approaches to learning adopted by students were characteristic not of individual students but of students in relation to a particular learning context.

Ramsden (1979) carried out a similar study where he interviewed 57 students from six academic departments from one university. He asked the students how they tackled academic tasks which formed part of their normal studies. He also asked them about the context in which they had carried out those tasks and about the main department in which they were based. Ramsden found that those students who had shown a deep approach obtained better degrees than those who had shown a surface approach. In the investigations by Laurillard (1979) and Ramsden (1979), they were able to show through students' accounts from interviews that students' approaches to learning were in response to their learning context. Ramsden's investigation referred to learning environmental factors such as the relationships with members of the teaching staff and the demands of different assessment tasks in explaining the differing learning approaches adopted by students.

Some of the students' interviews in Ramsden's (1979) study that reflected the environmental influence are given below. The first interview describes the influence of assessment in final examinations on the student's approach to learning. The second and third interviews describe the influence of teachers.

> *Natural science student*
> I look at the topic and I think to myself, 'well, I can do that if I can be bothered to hunt through the hundreds of textbooks and do the work' – and you sort of relate that to the value of the work in the course, which is virtually zero because it's so much exam assessment… I just don't bother with it until the exams come around… my revision is basically for the exams, purely and simply aimed at passing the exams without

> bothering too much about studying the subject. (Ramsden, 1979, p.420)
>
> *Arts student*
> I find that the courses I do most work on are the courses where I get on with the tutors best and enjoy the seminars, because … a tutor can put you off the subject… some of them don't like students, so they're not interested in what students have to say unless it's relevant to their approach. (Ramsden, 1979, p.421)
>
> *Social science student*
> My criticisms will be very closely aligned to… the lack of empathy that some of the staff have about the ability levels of students relative to their subject… In some of the areas we're talked at a very high level. So you can't attach anything that you've been told to something you already know, which of course is a very important point in learning… they've gone so far into their own area that they've forgotten that we know nothing, essentially, compared with them. (Ramsden, 1979, p.421)

In more recent studies, Case and Gunstone (2002, 2003) found that students often referred to contextual factors, such as the demands of assessments and time pressure affecting their learning. They analysed interviews of 11 students in relation to their awareness of time pressure in a second year chemical engineering course. The chemical engineering course had been restructured to reflect the aim of instilling 'conceptual understanding' (deep approach) to learning. In the restructuring, the main change was a 25% reduction in course content. It was replaced with more active teaching methods, and more subjective 'conceptual type' questions which began with 'What if…' or 'Explain why…'. Such questioning formats were introduced into tests and examinations. Furthermore, one of the class tests had an 'unlimited time' condition. The student interviews in Case and Gunstone (2002) illustrated that teaching and assessment procedures that were supportive, encouraged a 'conceptual approach' to learning for those who were already familiar with the approach. On the other hand, those students who were attempting to shift from an 'algorithmic approach' (surface approach) reported that the unlimited time tests compelled them to consider the deeper meanings of each the test questions. Case and Gunstone

(2003) showed that a time-pressured learning environment influenced the ways students approached their learning. Students felt that they were not able to risk or to spend additional time in trying to understand, in a time-pressured learning environment. Some interview excerpts that demonstrated this are:

> And I don't think I have the time. I don't know – one thing looks like an exercise – I might do that as practice. But to sit and think, at the moment I don't have time to do that. (Case & Gunstone, 2003, p.63)

> I knew last semester that material balances was like, it was the first section that we did. That was my major downfall. And I was just too scared to actually go into it, because I felt I didn't have time and if I actually start and I realised how much I did know, that would just make it all the more worse. (Case & Gunstone, 2003, p.63)

In an investigation carried out with 57 students in six academic departments, Ramsden (1979) claimed to have identified a third learning approach in reference to a study by Miller and Parlett (1974). Miller and Parlett (1974) described a group of final year physics students as 'cue seekers'. Cue seekers made attempts to seek out academic staff in an attempt to discover information about their examination questions, or who their oral examiners were, what the academic staffs' interest were, and deliberately attempted to make a good impression on staff. Ramsden devised a more general concept of 'strategic approach'. A strategic approach involves a predilection towards maximising performance and achieving high grades. These are attained through systematic actions such as efficient time organisation, planning, and efficient resource allocation, be it intellectual or situational. Although strategic approach is not the focus of the current study, it is noteworthy that it has not been as consistently shown to be present as the deep and surface constructs (Meyer & Parsons, 1989). Moreover, some research has failed to confirm the existence of a separate strategic approach to learning (Richardson, 2000).

A possible fourth approach, termed as a 'narrow approach' was found among Asian students. In an interview of 20 university students from Hong Kong and mainland China, Kember and Gow (1990) showed that many students indicated a deep or surface approach to learning, but there were others who demonstrated a 'narrow approach', using systematic step-by-step processing of information. Characteristics of a narrow approach are that students used a stepwise approach, first to understand the learned materials and then assigning them to memory - there is an intention to both understand and memorise (Kember, 1996). The following interview illustrates the approach:

> I read in detail section by section. If I find any difficulties I try my best to solve the problem before I go onto the next section… If you don't memorise important ideas when you come across them then you will be stuck when you go on. You must memorise and then go on – understand, memorise and then go on – understand, memorise and then go on. That is my way of studying. (Kember & Gow, 1990, p.361)

Subsequent research has shown that the 'narrow approach', which combines memorising with understanding, is fairly common among Asian students.

Marton, Dall'Alba, and Tse (1996) interviewed 18 teacher-educators from mainland China about their ideas of learning, memorising, and understanding. The teacher-educators were asked to give examples of something they had learned and to describe how the learning had taken place. They also described what learning meant for them and how they learned. They were asked to compare learning in and out of school. Following this, they were asked to discuss memorising and remembering, and to relate these ideas to understanding. Marton et al. (1996) found that the teacher-educators were able to differentiate between mechanical memorising and memorising with understanding. These two forms of memorising are illustrated from an interview extract:

> Mechanical memory means something is memorised through a mechanical process, not much thinking or understanding involved. An understanding memory involves thinking in your mind. You try to make clear the relationship between things then remember them. (Marton et al., 1996, p.75)

The teacher-educators reported that they would first understand what was learnt and then assign it to memory, that is, understanding precedes committing to memory. Memorising was used as a strategy to achieve greater understanding. This view was expressed in the interview as '…if you understand something, really understand it, you will have a very strong impression and can memorise it without much effort' (Marton et al., 1996, p. 73). Marton et al. (1996) showed that participants reported that they would repeat learning materials many times while deepening their understanding of what they were reading. They found that memorisation can facilitate understanding. The teacher-educators explained that the process of repetition contributes to understanding and can be differentiated from the mechanical memorisation that characterises rote-learning. The following interview transcript provides such a description:

> Take an article, I wanted to learn it by heart so I repeated again and again, but I often stopped at a certain place, I had to read it more. Maybe I had some problem, maybe there was something wrong with the structure of the article, you would feel as if there was a gap between two sentences. I had this feeling, so did others or two or three had the same feeling, that showed it was a difficult point. Maybe the topic changed suddenly, or the connection of the sentences. You should pay more attention to the place. I think the best method is repeating. In the process of repetition, it is not a simple repetition. Because each time I repeat, I would have some new idea of understanding, that is to say I can understand better. (Marton et al., 1996, p.81)

The study by Marton et al. (1996) suggested that the traditional Asian practices of repetition and memorisation can, perhaps, have different purposes. The authors advised that it is necessary to exercise caution when making assumptions about students' learning from Asian cultures, or for that matter from other cultures.

Watkins (1996b), in an investigation in Hong Kong, interviewed secondary school students and found that they had four stages of processing information. The stages can be depicted as: stage 1 - memorise everything; stage 2 – selective memorisation; stage 3 – memorise important things; stage

4 – understand then memorise. At the fourth stage, students were able to discern the importance of combining understanding and memorising, but found that they needed to reproduce for the sake of assessment demands. Entwistle (1998) argued that time constraints and competing pressures from assessments often prevent students from completing the learning processes which can prevent full understanding, even if the intention is deep. Tang and Biggs (1996) observed that rote learning is not exclusive to Asian students, but is also practiced by students in all countries for examination purposes. For most part, the information memorised is often forgotten as soon as the examination is over. However, Entwistle (1998) stated 'for some purposes memorisation is a necessary precursor to understanding, and for other purposes it is a way of reinforcing understanding' (p.216).

Biggs (1993b) described a student who reproduced without understanding as exhibiting rote-learning. However, a student who recalled already understood material could be showing a deep approach. He cautioned that it is frequently assumed that memorising implies a surface approach. Biggs pointed out that the presence of memorisation can also be an important aspect of deep learning (deep memorising). According to Kember (2000) and Marton et al. (1996), memorisation could be accompanied by an intention to seek understanding, and that it can be prevalent in certain cultural contexts.

The basic difference between the constructs of deep and surface approaches has been confirmed in research carried out in higher education in western countries as well as from an Asian perspective. From the original study by Marton and Säljö (1976a, 1976b), the objective has been to provide an explanation for different learning outcomes. Ramsden (1992) and Case and Gunstone (2003) advocated a deep approach, where students study with the intention to understand which is associated with more sophisticated and higher quality learning outcomes and better grades than is a surface approach. Ramdsen (1992) further added that deep approaches to learning are more enjoyable and more satisfying. However, the approach that students adopt, whether it is a deep or surface approach in their daily academic learning can be somewhat helped or hindered by their learning

context. Ramsden used 'orientations to studying' to describe students who may use different approaches depending on different learning situations. He pointed out that students adopt a particular approach in relation to the different demands of their courses and their previous educational experiences.

It is important at this point, to distinguish briefly between learning approaches and learning styles. Much confusion has arisen over the use of the terminology and it is therefore important to demonstrate that learning approaches and learning styles are distinct from each other.

### Learning Styles

Pask (1976) used comprehension learning style and an operation learning style to describe his two major learning strategies. The strategies were derived from a study in which participants were given a series of cards. The series of cards had information about imaginary beings and the participants were required to classify them. Participants were observed to use different strategies to arrive at an understanding of the material. Those participants who arrived at an understanding of the problem using a step-by-step hierarchical method to formulate simple assumptions for each card selected were called 'serialist,' and used an operation learning style. He found that a serialist student is more concerned with details and procedures and the logical association of things being investigated. Those participants who were able to picture the whole problem from the beginning were called 'holist' and used a comprehension learning style strategy. In contrast, a holist student will use analogies and personal experiences. In other words, the holist student searches for broad meaning while a serialist student uses rules and strategies.

Pask's contribution was initially seen to support the work of the holistic/deep and atomistic/surface construct. However, according to Newble and Clark (1986) the two learning styles better describe both aspects of a deep approach to learning rather than two separate dimensions of the deep/surface dichotomy. Furthermore, Biggs (1989, 1994) argued that

learning style does not explain aspects of the learning context and refers more to the learner's personality. Learning style implies a reasonably stable, trait-like preference for particular learning strategies, whereas learning approach implies a motive or intention to learn by the student and the use of learning strategies to fulfil these motives. Ramsden (1988) suggested that learning style and learning approach should be considered as two different constructs as they describe different learning processes.

Although learning approaches and learning styles are different constructs as suggested by Ramsden (1988), they nevertheless share some common features. They both seek to develop and increase our understanding of the differences in the ways students learn and to provide a conceptual framework for evaluating differences in student learning and ultimately towards improving student learning outcomes. Learning styles refer to stable individual differences in the way students view the world and tackle learning tasks. Students apply their preferred strategies consistently in most learning situations and are regarded as being reasonably stable. On the other hand, learning approaches are summarised as referring to those strategies adopted by students to cope with their expectations of their learning situation. The adoption of strategies is determined by the students' intentions to learn. Both intentions and strategies used will affect the learning outcome.

In this study, it is the relationships among learning approaches, learning situations, and learning outcomes that are examined.

**Concluding Remark**

From Marton and Säljö's (1976a) phenomenographic study, students who were asked to read and recall academic text exhibited different levels of outcomes. From the point of phenomenographic study, students showed two levels of processing which were later termed as deep approach and surface approach. Deep approach was identified as learning with an attempt to extract meaning from what is learned, while surface approach was identified as memorising facts. These approaches were subsequently shown to be related to learning outcomes, where deep approaches were linked to more

effective learning whereas surface approaches were more strongly linked to poor learning. However, studies from a qualitative perspective have also shown that students use surface approach for one task and yet can use a deep approach for another task, because of the interpretations the students have of the nature of the task, and of the teaching and learning environment.

The next section reviews literature on approaches to learning from a quantitative perspective. Quantitative perspectives are typified by large sample sizes, structured questionnaires, and they use multivariate techniques for analysis (Biggs, 1987; Entwistle & Ramsden, 1983). I also review an important aspect embedded in the approaches to learning construct that I use in the present study, namely, students' perceptions of their learning environments.

## Approaches to Learning from a Quantitative Perspective

Phenomenography research is basically qualitative in nature. Research using this method involves students' approaches taken to learning, and their perceptions of specific learning situations in certain manufactured conditions. Data are collected through interviews and analysed qualitatively. An important contribution of phenomenographic investigations was that they moved away from the assumption that student learning was a stable personality characteristic. In addition, the studies emphasised the choices made by students in selecting approaches to their learning task, and indicated that the way students learn is a result of how they interpret their learning context.

The basic principle behind phenomenographic research is that 'learning should be seen as a qualitative change in a person's way of seeing, experiencing, understanding, conceptualising something in the real world' (Marton & Ramsden, 1988, p.271). Learning approaches used by students can be taken as an indicator of whether or not meaningful learning has occurred (Kember, Charlesworth, Davies, Mckay, & Stott, 1997). Although

phenomenographic research is more descriptive than prescriptive, the research approach and its findings have shown that the learning approaches students adopt are related to different teaching qualities and learning outcomes (Ramsden, 1992; Watkins, 2001).

However, Richardson (1994a) argued that phenomenography was not able to provide tangible empirical evidence of student approaches to learning. Moreover, Meyer (1998) proposed that it lacks methodological and theoretical consistencies. As a result, a number of learning inventories were developed to assess the distinctions between the different learning approaches. The main function of these inventories is to operationalise the various constructs that have emerged from the qualitative investigations and to generate quantitative scores on specific dimensions or scales that can show the different aspects of learning (Richardson, 2000).

Two well known questionnaires are the Study Process Questionnaire (SPQ) designed by Biggs (1987), and the Approaches to Studying Inventory (ASI) developed by Entwistle and Ramsden (1983). Although the two questionnaires have undergone many modifications, students are asked to agree or disagree with items about their approaches to learning. Examples of the type of questions found in the two questionnaires of the deep and surface approaches are found in Table PF1.2.

**Table PF1.2**

**Indicative Items of Deep/Surface Approach Questions in the SPQ and ASI**

| General Approach to Learning | Indicative Items |
|---|---|
| **Deep Approach** | • I usually set out to understand thoroughly the meaning of what I am asked to read.<br>• In trying to understand new ideas, I often try to relate them to real-life situations to which they might apply.<br>• I spend a lot of my free time finding out more about interesting topics which have been discussed in classes. |

| | |
|---|---|
| **Surface Approach** | • I find I have to concentrate on memorising a good deal of what we have to learn.<br>• I usually don't have time to think about the implications of what I have read.<br>• I tend to choose subjects with a lot of factual content rather than theoretical kinds of subjects. |

*Source*: Ramsden (1992, p.52)

In the following sections, I examine research that has used the SPQ and ASI scales.

### Research in Learning Approaches at Secondary School Level

Watkins and Hattie (1990) investigated the learning approaches of students at the secondary level using the LPQ (Learner's Process Questionnaire is a version of the SPQ specifically for secondary level students). Data were provided by 1,274 students from different levels of secondary education ranging from forms 7, 9, and 11, from 18 high schools in the state of New South Wales in Australia. Watkins and Hattie also set out to examine if deep approach to learning increased as the students progressed through secondary school. Their study indicated that deep approach to learning was related to a higher level of academic self-esteem and a learning environment which provided opportunity for worthwhile learning and at the same time, seen to be enjoyable. It was suggested that deep approach to learning is linked to an environment where a teacher inculcates a positive feeling that interests a student in the learning task. However, the study found no evidence that students were more likely to adopt a deep rather than surface approach to learning as they progressed through secondary school, nor were there any gender differences in approaches to learning.

In an almost similar study carried out by Watkins and Ismail (1994), LPQ data were collected from 301 14-15 year-old, and 301 16-17 year-old Malaysian students. First, the learning motivations and strategies of the students were compared. The procedure allowed the researchers to

investigate the influence of the Malaysian education system on these students. Student characteristics were compared with those of a random sample of like-age Australian and Hong Kong students. Their second study set out determine if there were any differences in approaches to learning used by these high school students from three rather different cultures. They found that similar learning motivations and strategies were reported by the Hong Kong and Malaysian 14-15 year-old students. Asian students reported less use of superficial learning strategies than the Australian students. Further, both Asian groups were more likely than the Australians to report using approaches that enhanced their understanding such as reading widely, debating issues, and reflecting on what they were learning. Watkins and Ismail concluded that when students study in their own country and in their own first language, Malaysian students, like Hong Kong students tend to report using deeper approaches to learning than do Australian students. The study served to challenge the anecdotal stereotype of Asian learners, and supported an earlier study by Watkins, Regmi, and Astilla (1991) that showed Filipino and Nepalese 14-16 year-old students had higher deep approach scores when compared to similar age group Australian students. Similarly, in a later study by Watkins and Mboya (1997), responses were gathered from 126 male and 201 female 14 and 15 year-old Black South African secondary school students using the LPQ. Results of the investigation did not show that Black South African students were more prone to use superficial learning processes, especially when the students were compared to like-aged students from Hong Kong and Australia.

In the study by Watkins and Ismail (1994), the authors also found that a deep approach to learning declined as the students became older. The more senior Malaysian students reported adopting more surface strategies to learning and fearing failure more often than did younger students. They commented that this could possibly be due to the seniors impending major public examination which might influence their career prospects. Gender effects varied somewhat in the three countries compared, nonetheless, males tended to report deep level approaches more often than did females. The authors suggested that it could be due to the different subjects the students undertake, where males are more likely to study science and mathematics in

all three countries. However this seemed to contradict findings by Watkins and Hattie (1981) and Biggs (1987), that science students are more prone to surface approaches, at least in higher education. Watkins and Ismail (1994) suggested that the gender issue warranted further investigation.

## Research in Learning Approaches at Higher Education

### *Findings on gender differences and academic strands*

Watkins and Hattie (1981) conducted two studies in a university in Australia using the SPQ, to explore the relationships between study methods adopted by students and whether there were gender differences. Their first study included 518 students, while the second study had 249 students, and they were from various faculties of the Arts, Science, Rural Science, and Economics. The studies suggested that in all faculties, male students were more likely to exhibit a reproducing approach (surface approach) which was negatively correlated with academic success. Students from more science based strands, in which the majority of the students were enrolled, were shown to adopt more reproductive study methods (surface approach). The authors explained that this could be because students were not adopting the study methods that were most likely to lead to academic success in the particular courses they were studying. Furthermore, Watkins and Hattie (1981) indicated that this could be because science students tended to be more motivated by vocational concerns and thus likely to adopt surface approach study methods. In addition, science students also tended to have stronger utilitarian motives given the professional relevance of their course. However, the study suggested that students in the later years of their degree program exhibited deeper approaches than did students in their earlier years of the program. Watkins and Hattie concluded that as students mature, they are more likely to use those study methods most conducive to academic success. Nevertheless, they cautioned that there are other contextual variables that may interact between students, faculty, and study methods which can be important, but were not considered in this particular study such as methods of instruction and type of assessments.

Biggs (1987) conducted an analysis of the responses to the SPQ questionnaire of 2,365 students in five universities and ten Colleges of Advanced Education in Australia. Selection of students in these institutions was restricted to those who were taking subjects that were taught in both universities and colleges. Academic subjects were placed under three broad headings of arts, education, and science. The study found that university students had higher scores on deep approach and lower scores on surface approach than did students in Colleges of Advanced Education. Similar to the study by Watkins and Hattie (1981), science students tended to lean towards a more surface approach in comparison to students from the arts and education strands. In addition, Biggs found that men produced higher scores than women on surface approach.

Miller, Finley, and McKinley (1990) used the SPQ in the United States to examine whether there were gender differences in how students approached their learning. The instrument was administered to 1,119 students undertaking a general psychology undergraduate course. There were no differences between men and women on deep and surface approaches. Results from Miller et al. (1990) were supported by Richardson (1993), who used the ASI in a study of 99 students taking degree courses in either psychology, sociology, and social anthropology courses. Richardson's study showed no evidence of gender differences in terms of students' learning approaches or learning orientations.

To examine if gender issues might be affected by the co-educational nature of higher education, Hayes and Richardson (1995) used the ASI at three Oxbridge colleges. The first college consisted of all female academic staff and female students, while the second college had an equal number of male and female students, taught by male and female lecturers. College number three was initially a men's college, but had admitted both male and female students in a proportion of 2:1, with the academic staff made up entirely of male lecturers. Their study found that gender and context had little overall effect, but students taking science courses obtained higher scores on surface approaches than students taking arts courses.

Similar results were obtained by Wilson, Smart, and Watson (1996) in their investigation of two groups of first year psychology students in a university in Australia, with the first group consisting of 119 female and 46 male students, while the second group consisted of 83 female and 35 male students. Both groups were administered the SPQ and ASI. No gender differences were found on the deep and surface approaches with either instrument.

Duff (2003) examined gender differences in learning approaches of 75 postgraduate management (MBA) students in a university in the UK using a revised version of the ASI. He found that female students tended to employ surface approaches to learning and supported an earlier study by Sadler-Smith (1996) with 245 business studies students in the UK. Despite the differences in learning approaches, Duff (2003) found no differences between gender and their academic performance.

***Findings on age differences***

Gow and Kember (1990) administered the English and a Chinese translated version of the SPQ to students in the first and final years of degree level study at an institution of higher learning in Hong Kong. They obtained a total of 1,043 responses to their questionnaire, and found that students' scores on the deep approach declined with their year of study. That is, students' use of a deep approach tended to decline as they progressed through a programme of study. Gow and Kember concluded that this may not be in tandem with the government's and academic staff's aim of promoting independent learning among students.

Gow and Kember (1990) pointed out that Biggs (1987) had obtained similar results from 2,365 Australian students. Biggs (1987) found that while deep approach tended to decline with year of study, scores on deep approach to learning increased when learners were about 29 years of age, and stabilised at around 40. Biggs put this down as a fear of failing among younger students and the need to obtain good grades to secure a job. Another possible explanation was provided by Harper and Kember (1986), who showed that mature age students were more likely to adopt deep approaches

to learning than were young students. They indicated that this could be due to the greater interest mature age students had towards their studies, and mature age students were also more likely to relate their life experiences to their studies and were more motivated. Richardson (1994b) also supported the idea of life experiences contributing to a deep approach to learning. He argued that mature age students' sacrifice in terms of quality of life, and costs for studies may contribute to their intrinsic motivation. Other factors that might contribute to mature age students' deep approach to learning are the possibility that they may have employment and better financial security, and are therefore less fearful of failing (Gibbs, Morgan, & Taylor, 1984).

***Cross-Cultural Differences in Approaches to Learning***

In a study by Kember and Gow (1991), the authors set out to challenge the anecdotal stereotype that Asian students, Hong Kong students in particular, were prone towards rote learning and memorisation in their academic studies. It aimed to determine that approaches to learning, as elsewhere, were more a function of the learning and teaching environment. The questionnaires used were similar to that of Gow and Kember (1990). Students were from degree level courses at a Hong Kong Polytechnic selected from various classes from first to final year, and data were collected from 2,143 students. Scores obtained from the questionnaires were then compared with those obtained by students from Australian Colleges of Advanced Education in the study conducted by Biggs (1987). Kember and Gow found that the scores from the Hong Kong students were higher in deep approach and lower on surface approach than those of the Australian students. From this study, the authors concluded that Hong Kong students' tendencies to rote learn were due to variables such as heavy workload, surface assessment demands, or over-lecturing rather than an inherent characteristic of the students. In a separate study using the SPQ, Watkins and Regmi (1990), found that Nepalese students had higher scores in deep approaches to learning than did a similar age group of Australian students. The study further called into question the assumption that students from non-western countries are much more prone to memorisation than western students.

To examine further, if other variables may affect approaches to learning in Asian students, Gow, Kember, and Chow (1991) conducted a survey of Polytechnic students during the third or fourth week of the academic year. Their study set out to examine if English language used as a medium of instruction encouraged a predominantly rote learning approach. Self ratings in reading, writing, and speaking in English were requested together with the students' grades in two English language examinations. Although Gow et al. (1991) found that ability in the language did not generally affect the motivation of the students to adopt a surface approach, nevertheless, those students who were weaker in the language were more likely to adopt surface learning strategies. The findings suggested that although students were no more likely to rote-learn if they had limited English ability, the students might be compelled to employ surface strategies when confronted with English reading or writing assignments. This was true if the students were trying to understand the language and were more likely to memorise sections which had to be interpreted rather than see the whole reading globally and to seek understanding. Because of students' lower ability in the command of the language, students in the writing task might rely on verbatim copying rather than on original interpretation. These findings seemed to contradict earlier findings by Biggs (1987) and a later study by Johnston (2001), where the two studies found that students who come from Asian backgrounds (English was a second language) in Australian universities reported higher on deep approach than did native English speakers. Nevertheless, Gow et al. (1991) cautioned that even if Asian students have a satisfactory command of the English language, they might be discouraged from employing a deep approach by the nature of the task and of the learning context.

To assess cross-cultural differences in approaches to learning, a short-term longitudinal study was conducted by Volet, Renshaw, and Tietzel (1994). They used a shortened version of the SPQ and administered it to 434 students identified as 'local Australian' and 120 students identified as 'South East Asian' who were undertaking a first-year economics unit in an Australian university. Altogether 63 pairs of students were identified to have completed the questionnaire twice and were matched in terms of age,

gender, and prior study of economics. They found that South East Asian students had much higher scores on the surface approach than did the Australian students. Although there were no significant differences in the scores on deep approach, they found that at the end of the semester of 13 weeks, the learning approaches of South East Asian students became more similar to the Australian students. Volet et al. (1994) suggested that the phenomena was not due to cultural differences, but rather that the South East Asian students were experiencing a different and unfamiliar educational environment.

Despite research such as that by Kember and Gow (1991), and Watkins and Regmi (1990) that refutes the contention that Asian student rote-learn and are passive learners, there is still a tendency of western lecturers to rely on anecdotal evidence and generalised statements about Asian approaches to learning. According to Ramburuth (2000), this is because there is a lack of cross cultural studies on approaches to learning in western universities, especially in Australia. Ramburuth (2000) investigated the approaches to learning of 166 Australian postgraduate students and 102 postgraduate international students (of Asian background) using the SPQ. Verification of students' background was made through the faculty's student data base. He found that the international students had a much higher mean score for the deep approach to learning than did the Australian students. The study helps to dispel the myth that students from Asian backgrounds are essentially rote-learners. Importantly, the study showed the existence of learning diversity in tertiary classrooms in Australia. However, international students require a certain period of time to adapt to their new learning experiences and environment.

***Importance of Learning Environment***

Edwards (1999), Volet and Ang (1998), and Watkins and Biggs (2001) indicated that students' learning and teaching environment is an important factor in influencing students' approaches to learning. They noted that students are able to change from surface approaches to deep approaches to learning in teaching and learning environments that are different from those that students have experienced or have been accustomed to before. The

insight was supported in a study by Matthews (2003) where she found Chinese students from Confucian heritage cultures, who studied in Australian universities, were able to achieve deep approaches to learning because of the 'western' environment which appeared to encourage deep approaches. Similarly, Watkins and Biggs (2001) pointed out that Asian students who may be surface learners can adopt deep approaches to learning because of the learning environments they encountered.

In a study of medical students, Tooth, Tonge, and McManus (1989) used a modified SPQ in a postal survey of candidates who applied for admission to a medical school. They then administered the same questionnaire to students who had actually been admitted, towards the beginning and again at the end of their first year of study. They found that students' scores on deep approach tended to decline over the three different periods of administration and also that their surface approach scores tended to increase over the same period. In addition, they found that the students' performance at the end of year examination varied inversely with their scores on surface approach, but there was no association with their scores on deep approach. The authors inferred that this could be due to students' perceptions of their learning environments, in this case the students perceived that their assessments would have excessive recall of factual knowledge at the expense of understanding.

Watkins (1996a) stated that 'the ways students learn is a function of how they perceive the learning task and the learning environment' (p. 6). Laurillard (1984) indicated that whether students use deep or surface approaches, they concentrate on what they perceive the learning requires of them rather than on the task itself.

The idea of the importance of students' perceptions of the learning environment arose in response to the common situation that often students do not adopt deep approaches to learning, despite the espoused aim of instilling critical thinking and conceptual understanding in higher education learning. Ramsden (1984) suggested that students often practiced surface approaches because:

> university teaching contexts might have unintended consequences for learning…they might discourage students from coming to grips with the fundamentals of their subject and encourage them to use tricks and stratagems to pass examinations. (p.145)

According to Ramsden (1984), students are able to react and respond to situations they perceive, which can be quite different to those defined by university lecturers. Although lecturers might set high level aims for learning, to the students it might be a simple set of rules for what has to be done in order to pass a course or an examination. In practical terms Ramsden (1987) stated 'the major concern is with changes between students and their world rather than within students' (p.283). The emphasis is on students' perceptions of the learning process and of the context in which learning takes place.

In the following section of this part of the Portfolio, I review research that has investigated the important relationships between perceptions of learning environments and students' approaches to learning.

## Perceptions of the Learning Environments

Early research on students' perceptions of learning environments was carried out by Fransson (1977], who investigated the effects of extrinsic and intrinsic motivation on quality of learning, and the effect that some of these issues had on the students' learning approaches. His study included 81 university students from education and psychology strands, with the students being divided into two groups, one of which was placed under anxiety-promoting conditions and the other supportive conditions. Students were given reading materials that were related to education. Fransson found that there were strong associations between students' perceptions of their interest in the course and anxiety. Deep learning approach was employed by students who found academic text reading which was intrinsically interesting, whereas those who were motivated by extrinsic demands to read

a text had little interest and tended to adopt surface approaches. Students' surface approaches were also further reinforced by their perceived anxiety and feelings of irrelevance.

Laurillard (1984) investigated how students approached and carried out problem-solving tasks, and demonstrated the important role of students' perceptions of the learning environment. She found that problem-solving tasks may not necessarily elicit their espoused aim of helping students understand the subject matter, because students use either a surface or deep approach based on what they perceive the teacher to require, rather than on the task itself.

***Perceptions of students' teaching environments and learning approaches***

The work of Entwistle and Ramsden (1983), focussing on students' perceptions of the teaching environment found that there were important factors that impinged on students' choices of learning approaches. In their study of 2,208 university students across the United Kingdom, they found that if students perceived that there was an openness to the teaching environment, such as the opportunity to interact with the learning and choices offered in terms of learning contents, students were more likely to be encouraged towards a deep approach to learning. In addition, educators who were perceived as enthusiastic, as demonstrating pastoral care and empathy, being a motivator of students, as possessing good subject knowledge, and providing clarity of presentation, contributed towards students' choices of approaches to learning.

Similar results were obtained by Trigwell and Prosser (1991) in their investigation of 55 final year nursing students at an Australian university. They found that there was an association between deep approaches to learning and students' perceptions of good teaching, providing clear goals, and an emphasis on independence. They noted that high quality learning outcomes were associated with this relationship.

The importance of focussing on providing clear goals and learner independence comes from the work of Eley (1992), who examined students

undertaking pairs of second year course units in an Australian university. One course unit demonstrated a more reflective nature which allowed for possible student variation and the way the content of the course was interpreted, while the other course unit was more defined in nature with a fixed content. Some 152 students in the study were asked to complete the SPQ questionnaire in relation to each unit separately. Eley found that the course unit that provided a reflective nature tended to elicit higher scores on deep approach, but lower scores on surface approach than the more defined course unit. The main conclusion from the study was that deep approach to learning was reported if a student perceived the course unit to be supportive of student learning such as providing clear goals and structure and also allowing independent learning, or in other words in how they perceived the nature and the demands of each specific course. According to Eley (1992) 'academic performance is seen to be partly a function of the study approaches adopted, which in turn are partly a function of a student's perception of course unit's teaching' (p.249). His study showed a correlation between deep approaches and higher marks, while surface oriented approaches correlated with lower marks.

Studies conducted by Kember and Gow (1994), Dart (1994), Kember and Wong (2000), and Leung and Kember (2003) found similar associations between deep approaches and perceptions of the teaching context. Teaching factors most associated with a deep approach to learning by students were pastoral care, being a motivator, encouraging interactive learning, and using facilitative teaching methods. Students who believed that they had the potential to succeed were likely to display deep approaches to learning, which can be encouraged through student independence, control over learning, subject relevance, and the ability to work with peers (Dart, 1994). In addition, deep approach was encouraged in an environment where students were given the opportunity to reflect on what they had done, for instance to think back on a project that they had undertaken, reflect upon situations they had gone through, or to explore the understandings of a certain issue (Leung & Kember, 2003).

The findings reviewed above suggest that a teaching environment that is positive, has an organised approach by teachers, has clear presentation of lessons, is empathetic and understanding, provides independent learning, and offers student control over content, encourages a deep approach to learning. However, the particular types and styles of assessment have a bearing on students' choice of learning approaches.

***Perceptions of students' assessment and learning approaches***

Entwistle and Ramsden (1983) proposed that the perceived effect students felt examinations had on them can produce an increase in surface approaches to learning, because students were more pressured towards passing the examinations than understanding. Tang (1994) investigated the effects of assessment on students' approaches to learning for 158 Hong Kong students in a physiotherapy program using the SPQ. The study indicated that students tended to employ surface approaches when they were confronted with assessments which involved tests. Tests in the study consisted of four short essay type questions. Students indicated that systematic rote learning of specific parts of the course content was the most effective way to get through a test. On the other hand, instead of being disadvantaged, students who indicated they were deep approach learners were also able to adapt to the perceived demands of the test by employing a 'deep-memorising' strategy and hence were able to do well in the test. Tang pointed out that if students perceived that the test only involved assessing information, they would use rote-learning, memorising, and reproducing. Furthermore, if assessments do not provide students the opportunity to think through issues asked in the questions, surface learning approaches are promoted.

Scouller (1998) asked 206 university students from education, social work, home economics, arts, and music faculties in Australia, how they prepared and perceived two different methods of assessment of the same course. One of the assessments was an assignment essay and the other an end of course multiple choice question (MCQ) examination. The SPQ questionnaire was used to gauge learning approaches, with extra items added to assess the intellectual skills and abilities being measured by a particular assessment

method. Students were also asked to indicate their preference for either the assignment essay or MCQ examination, and indicate the reason for their choices. Scouller found that students were more likely to adopt a deep approach in preparing their essays if they perceived the assignment essays were assessing a higher level of intellectual processing based on their understanding of the curriculum. Conversely, students were likely to adopt a surface approach in preparing for their examinations if they perceived that MCQ examinations were assessing a lower, knowledge-based level of intellectual processing. The study established that better assignment marks were positively related to the use of deep learning approaches and negatively associated with surface approaches. Further, the findings suggested that perceived demands of assessment were related to the type of approaches to studying a student employed.

It would seem from the research reviewed, that assessment type and practice have an influence on the learning approaches students employ. Assessments that provide an opportunity for students to integrate materials and problem-solve, in the form of open-ended questions, essays, and research-type projects, seem to encourage deep approaches to learning. On the other hand, assessments that have factual recall such as those found in short-answer questions and multiple-choice questions tend to encourage surface approaches to learning. Nevertheless, other factors such as workload level and hours of study might also impinge on students' approaches to learning.

***Perceptions of students' workload and learning approaches***

Two studies involving 174 mechanical engineering students at a university in Hong Kong were carried out by Kember, Ng, Tse, Wong, and Pomfret (1996) and Kember and Leung (1998a). They focussed specifically on the impact of workload on student learning. Students who participated in both studies were from the first, second, and third year of studies, and they were asked to complete a study diary, which was divided into hourly periods, for one week. In the diary, students were asked to fill in the subjects they were studying and to indicate and describe the nature of the activity. Kember et al. (1996) found that whether or not students felt pressured by the workload depended upon their interest in the work, the nature of the work, and the

way they studied. They inferred that how students perceive workload is a function of their individual characteristics, their approaches to learning, and perceptions of the learning context. Kember and Leung (1998a), found a positive relationship between a surface approach and perceived heavy workload. Importantly, they found that although perceptions affect learning approaches; learning approaches also affect perceptions.

Kember, Jamieson, Pomfret, and Wong (1995) investigated the relationships between study time and approaches to learning of 34 engineering students from a Hong Kong university. Students were asked to note their hours of study in a log over a set period. Kember et al. (1995) found that long study time combined with surface approaches, was an inefficient way of learning, resulting in poor academic achievement. They suggested that surface approaches and long study time were due to the amount of memorisation that needed to take place. Kember et al. (1995) cautioned that weakness in the English language might have contributed to the extra stress and therefore the need for more study hours in the quest by students to understand.

Lizzio, Wilsons, and Simons (2002), in a survey of 646 students from a university in Australia found that perceptions of a good teaching environment influenced both the acquisition of a deep approach and also influenced better learning outcomes. Their study established, however, that teaching environments may have an impact on students' learning outcomes but not necessarily affect their learning approaches. In addition, they indicated that perceived heavy workload and inappropriate assessment directed students towards surface approaches to learn. They observed that students' perceptions of quality teaching, and appropriateness of assessment were the strongest predictors of whether students used deep approaches to learning. Quality teaching was defined as an academic environment where staff:

- show an interest in students' opinions and attempt to understand the difficulties students may be having;
- express positive expectations and seek to motivate students to do their 'best work';

- provide clear and useful explanations of ideas;
- work to make subjects interesting;
- provide feedback on progress. (Lizzio et al., 2002, p.50)

The results of the studies reviewed in this section suggest that students' learning approaches are influenced by how they perceive their learning environment. Deep approaches to learning are encouraged if students perceive the learning environment as interesting and motivating, and if courses allow some freedom of choice in learning, methods, and assessment; where the workload is not perceived as too heavy; where there are more regular study time patterns; and where academics are enthusiastic, present well structured lessons, and have empathy for the students.

Such findings are seen to be consistent with the conclusion found from the phenomenographic-based research, that students' approaches to learning can be affected by elements of the learning context, which can come under a teacher's control, and thus can influence both the ways students approach their study and the learning outcomes they may achieve.

**Concluding Remark**

As previously discussed, the work by Marton and Säljö (1976a, 1976b) was obtained from students' perceptions of and approaches used in specific learning situations given to the students by the researchers in a controlled situation. Subsequent qualitative studies, mostly from a phenomenographical perspective, provided greater understanding of students' learning approaches and their perceptions of the learning context. However, based on the conceptual work of Marton and Säljö (1976a, 1976b), instruments were being developed which could quantitatively measure the two main constructs of approaches to learning. The instruments elicited responses from students about their most commonly adopted approach or predisposition to studying. Two of the more widely used instruments are the Study Process Questionnaire (SPQ) (Biggs, 1987), and the Approaches to Studying Inventory (ASI) (Entwistle & Ramsden, 1983). The present section

looked at studies conducted through a quantitative methodology using SPQ and ASI questionnaires for data collection and analysis.

Age has been shown to effect learning approaches, with younger learners in high school and tertiary education reporting surface approaches. However, surface approaches decrease as learners mature into adults. Gender differences using quantitative methods have shown to be less definitive. Science students tend to exhibit higher scores than do arts or humanities students on surface approaches to learning. Studies of Asian students have helped dispel the myth that they are more prone to surface approaches, but in fact, it is the differing learning contexts that might be related to less desirable learning approaches in Asian students.

The present section also examined studies that investigated factors thought to be related to, or to influence, students' approaches to learning. The review found that (i) factors present in the learning and teaching environment such as good teaching, openness to students, freedom in learning, teaching methods, assessment styles, appropriate workload and study time, an understanding staff, and (ii) personal characteristics such as age, gender, language ability, motivation, perceived self-ability; all are related to students' approaches to learning. These factors and learning approaches combine to be associated with learning outcomes.

## Summary and Conclusion to Part 2 of Portfolio 1

The two terms 'approaches to learning' or 'learning approaches' which arose from the phenomenological studies of Marton and Säljö (1976a) have been reviewed both from a qualitative and a quantitative perspective. A learning approach is described as 'congruent motive-strategy packages' by Biggs (1986), in that it 'reflects the interaction between a student's current motivation and the teaching context…' (Biggs & Moore, 1993, p.314). It refers to a set of strategies employed by students to cope with their perceptions of the needs of a specific learning task and the learning outcomes that follow.

Students should progressively be encouraged to abandon surface approaches to learning and to employ deep learning approaches. The implication of this is that students who have adopted a deep approach would finish their course having obtained higher quality learning than those who continuously relied on surface approaches. Furthermore, students with deep approaches to learning have been shown to achieve better learning outcomes than those who maintained their dependence on surface approaches. Students with a predilection towards surface approaches to learning are seen as reproducing reading or academic text without synthesising the underlying meaning, thus leading to low quality learning outcomes. On the other hand, students who adopt deep approaches have the intention to understand the material being studied and are able to integrate new information with previously met information or with information derived from elsewhere. Higher quality learning outcomes, including the possession of other process skills such as analytic skills and problem-solving skills are expected from students with a deep approach, and the students also tend to be more satisfied with the course. However, the interaction of students and their learning environment is important in influencing students' adoption of particular learning approaches. Students' perceptions of their learning environments are important, since their perceptions form part of the attributes that differentiate the approaches.

From the review of the literature, five important points have emerged. First, the deep/surface paradigm has been shown to be both a reliable and a significant construct to describe the different ways students go about their learning. It was seen to be an appropriate framework for the present study as the two constructs of deep and surface approaches have strong implications for the understanding of student learning. In addition, the construct of surface approach identifies an area that is perceived to be prevalent among Asian students, that of relying on memorisation for examination.

Second, the study of learning approaches and perceptions of the learning environments is important in education, especially from a PHEI perspective. PHEI learning environment is a unique and a complex setting, as students

are required to function within a context which advocates ideals of their partner overseas universities, but remain within the boundaries and constraints of a local private college. Students in PHEI are sometimes required to adjust between being taught by local and overseas deliverers. Therefore, as in any learning environment, many aspects of the PHEI environment may affect the approaches and quality of PHEI students' learning.

Third, many of the studies have been carried out within a campus environment, where the teaching, learning, and curriculum come from the university where the study was conducted. However, there are other ways in which higher education is being delivered, and one of alternatives is through the 'twinning programmes' (as defined in Part 1). Despite all the research examined, there is a dearth of examples which have examined the learning approaches students adopt in an undergraduate context, specifically from a 'twinning' perspective. Moreover, the review could not find research conducted on the twinning programme mode of educational delivery looking at learning environments, learning approaches, and learning outcomes, specifically in Malaysia.

Fourth, the construct of approach to learning, has been shown to be a powerful construct in describing the different ways students go about their learning. Nevertheless, there is a possibility that students operating from a different mode of educational delivery, the 'twinning' mode in particular, and coming from a different social and educational environment may exhibit different approaches to learning. Meyer (1998) has argued that the learning processes may be exhibited differently in various cultures and that there are 'dangers of assuming a culture-free interpretation of basic learning processes…' (p.55).

Fifth, I consider that it is timely that the present study examines the learning of students in PHEI (from a SAL perspective) undertaking an overseas western curricula from a twinning mode, as it seems a much neglected area. The study is unique, as it is involves students from PHEI in Malaysia and simultaneously looks at the complexities of different variables

that are related to student approaches to learning and their relationships with different learning outcomes. Moreover, it will enable those responsible for maintaining the integrity and quality of the twinning mode to make better informed judgements about teaching and learning issues on internal (e.g. academic development) and external (e.g. National Accreditation Board of Malaysia or the Quality Assurance Authority of Australia and Britain) matters.

The next part, Part 3 contains a description of the theoretical model that was developed to examine relationships among individual characteristics, perceptions of learning environments, learning approaches, and learning outcomes. In general, the research model for the study was derived from the '3P Model of Learning' (Biggs, 1987, 1993b). Importantly, Part 3 presents the major research problems and propositions that I investigate in this study.

# PORTFOLIO 1
## Part 3

## RESEARCH MODEL AND MAJOR RESEARCH PROPOSITIONS

### Introduction

Part 3 elaborates on the theoretical concepts of Biggs' '3P Model of Learning' (Biggs, 1993b, 1999) that forms the basis of this study. The discussion is used to generate the theoretical framework and research model for the present study to examine the associations among individual characteristics, perceptions of learning environments, learning approaches, and learning outcomes.

Part 3 begins by briefly examining the historical background of Biggs' model of learning that has resulted in the conception of the '3P Model of Learning', which was re-conceptualised for use in this study.

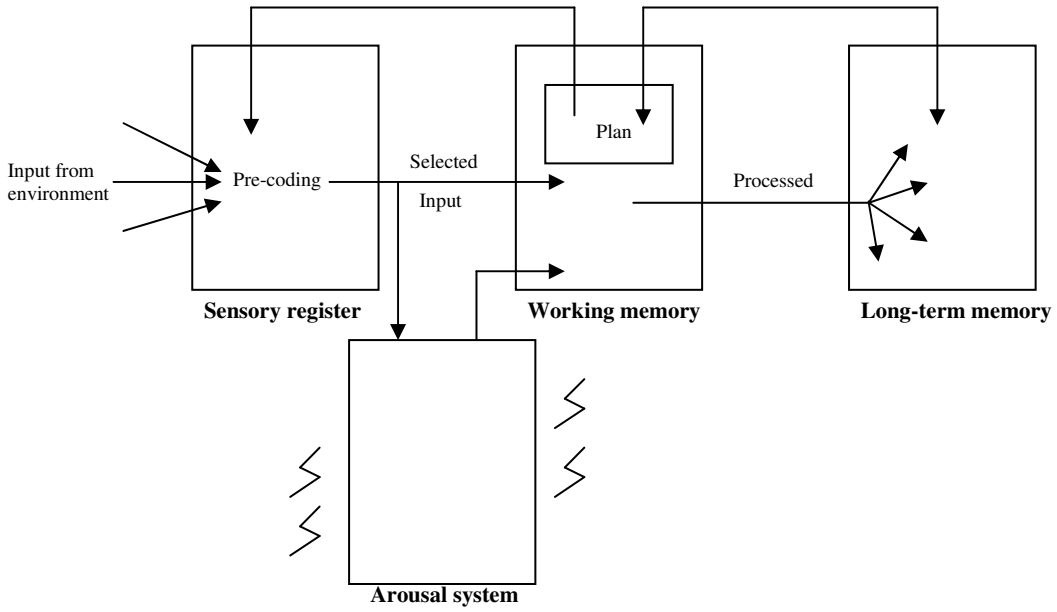
### Biggs' Model of Learning

Prior to 1966, Biggs was interested and involved in studies related to the problem of predicting tertiary students' performance. It was only in the late 1960s that he became increasingly interested in working on study processes, based on the concept of the Information Processing model. The early Information Processing model largely originated from Atkinson and Shiffrin (1968) and it provided a theoretical framework to examine cognitive processes thought to be involved in learning. Biggs (1987) used the information processing model together with his own version of information processing framework (Biggs, 1968) as a foundation for his model of student learning.

Biggs and Telfer (1987) and Biggs and Moore (1993) depicted the Information Processing model as four separate memory systems as shown in Figure PF1.2.

**Figure PF1.2**

**The Relationship between Arousal and Information Processing Systems**




*Adapted from*: Biggs and Moore (1993, p.207 & p.238)

The model assumed that sensory input from the environment continuously enters the system through the sensory register, where the inputs are selected and pre-coded. Pre-coded inputs remain in the system for up to about one second, and information that has been selected as important is passed to the working memory. Important information is processed in the working memory, so that it can be retained in long term memory. They believed that processing occurs through the use of imagery, recycling, rehearsing, coding, and re-coding. The process of imagery, recycling, and rehearsing generally involves memorisation, whereas information that is passed to long term memory through these processes might be forgotten more quickly than knowledge that is processed through coding. Coding, and

re-coding involves remembering through linking materials to previously known knowledge, or the individual has the relevant background knowledge to make use of structure (e.g. able to use chunking of numbers, or use of schematic system), which is known to lead to meaningful learning, and it can be more enjoyable than total rote learning. The main aim in meaningful learning is to know the meaning of the word, passage or theme (deep structure), in contrast to rote learning the word itself (surface structure) (Biggs & Moore, 1993). Further, material learnt through the process of coding may be retrieved in different forms. Materials learnt through memorisation cannot be reproduced in many changed ways, whereas material learnt through understanding can be transformed.

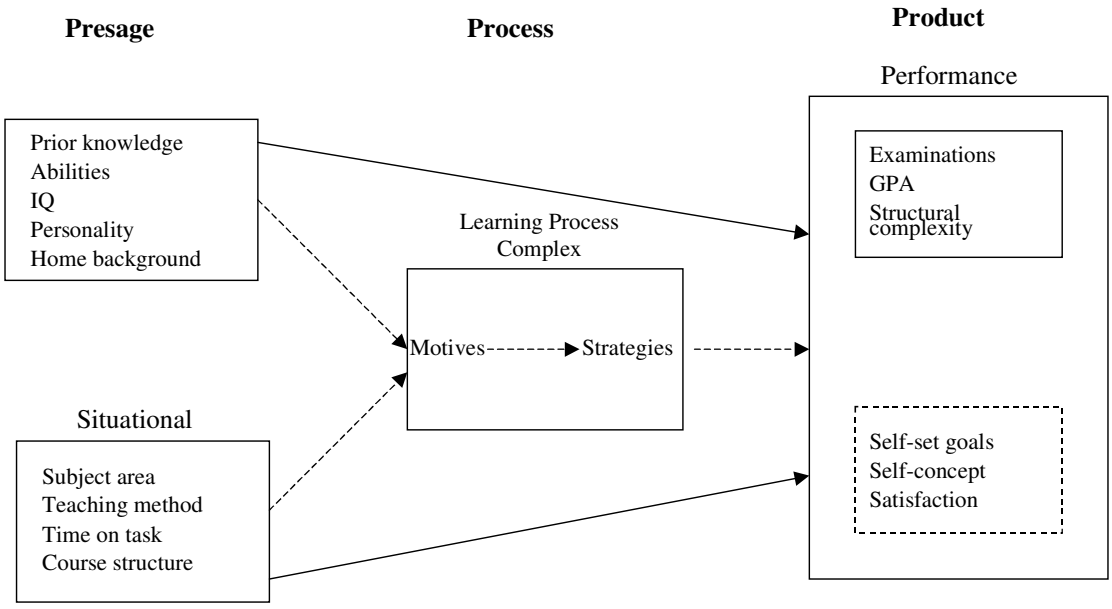
Biggs and Telfer (1987) and Biggs and Moore (1993) explained that a fourth system known as the arousal system linked both the sensory register with working memory. The arousal system acts as an 'orienting response' to inform the system that something threatening is on the way, activating the body into fight or fright mode. In a learning context, heightened anxiety within a learning situation will distress the body of the learner and interfere with other workings of the working memory (short term memory). When the short term memory is unable to cope with this stress, performance will be affected. Simple tasks require little working memory and complex tasks more. Any way of reducing the working memory load during a complex task will minimise the effects of anxiety.

Biggs (1987) used this information processing model as the basis for his General Model of Student Learning which contained a progression from the presage stage, the process stage, to the product stage (refer to Figure PF1.3). He likened the presage, process, and product as the input, processing, and storage of information through the sensory register, working memory, and long term memory. However, as research into the area of learning approaches intensified and greater understanding of how students approach their studying became known, Biggs' early model of student learning was modified into what is now a widely accepted model of student learning known as the '3P Model of Student Learning' which incorporated a systems approach. Before delving into the structures within the 3P Model, it is useful

to briefly discuss what a systems approach entails as it makes up the components found in the 3P model.

**Figure PF1.3**

**General Model of Student Learning**



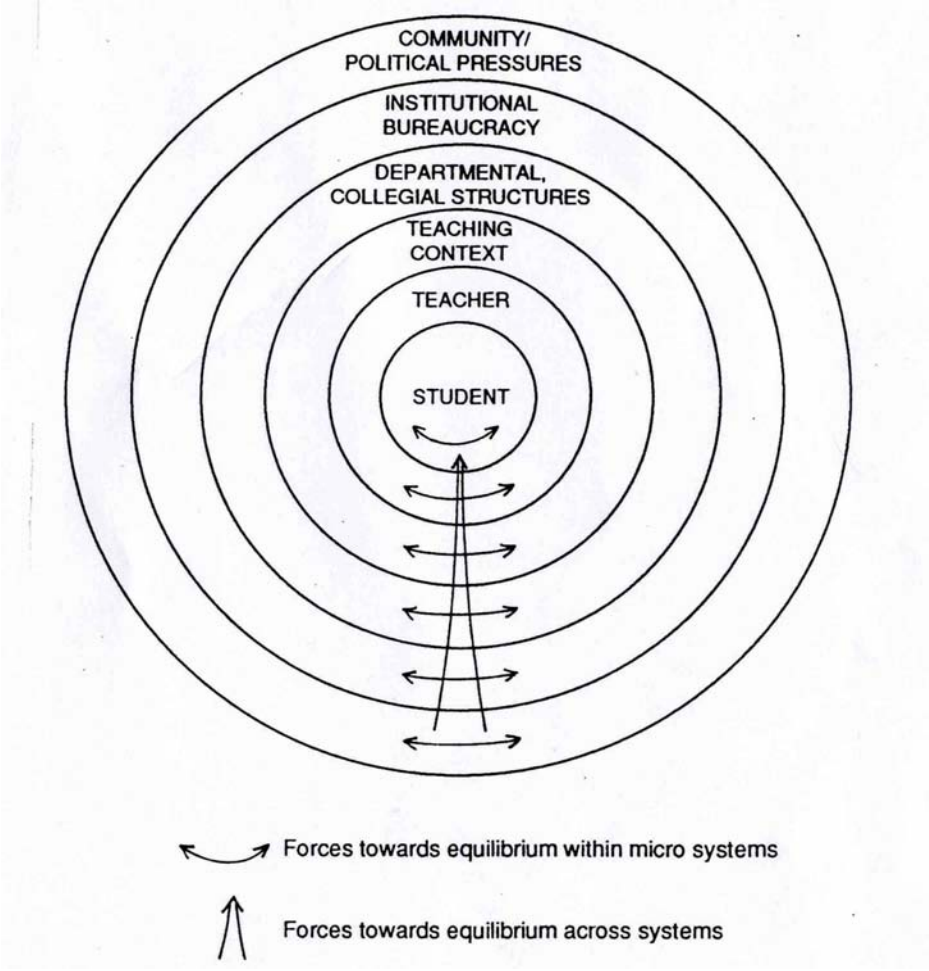

*Source*: Biggs (1987, p.9)

## Systems Approach

Biggs (1993a) explained that tertiary education is likened to a macro system that is composed of four main micro systems (see Figure PF1.4). First, is the individual student. Second is the classroom system, comprising the teacher, classroom, and teaching context. Third, the institutional system is composed of the various departments and faculties. Each of the subsystems within the institutional system is able to impede or enhance student learning. Finally, the community system is seen as potentially capable of imposing its own constraints on higher education and will subsequently affect the classroom system. Each of the micro systems attempts to maintain equilibrium, not only between its own subsystems, but also with other super ordinate

systems. For example, a teacher is concerned within his/her own subsystem, but he or she has to operate within the institutional system (with the Head of Department). Biggs (1993a) believes that for good learning and teaching to happen, there must be equilibrium between and within each micro system.

**Figure PF1.4**
**Macro and Constituent Micro-systems in Tertiary Education**




*Source*: Biggs (1993b, p.78)

As can be seen from Figure PF1.4, changes within a system tend to be top-down, but it may not necessarily reach the very people that the change is intended to help. Biggs (1993a) cautioned against just concentrating on problems which exist within a single micro system, and not relating it to the other adjacent system. Biggs (1993a) proposed:

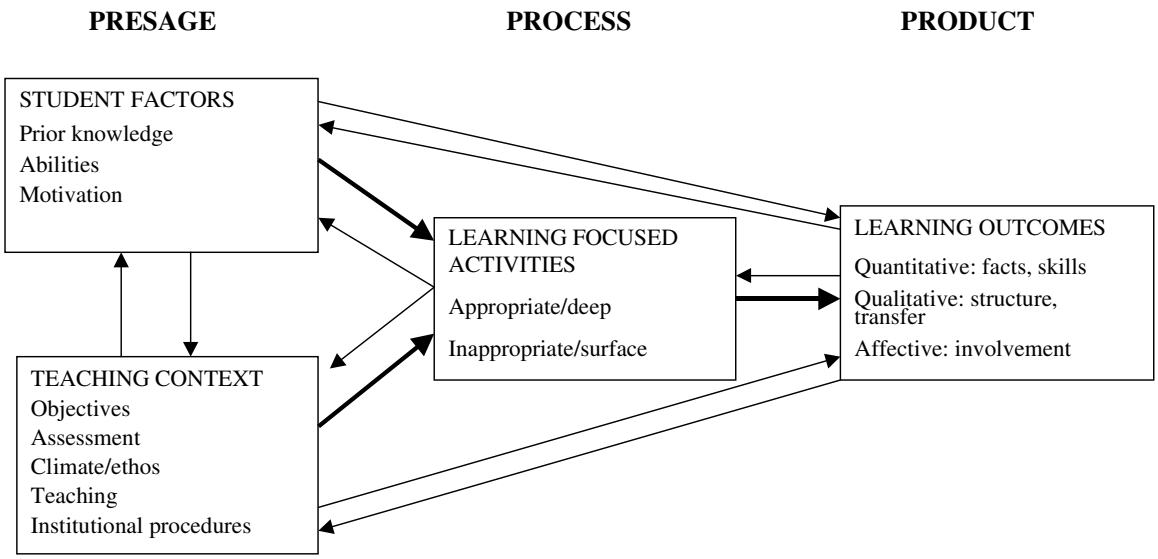
> Cognitive psychologists focus on the student subsystem, the sociologically inclined on the institutional subsystem, leading in either case to decisions based on a deficit model. Blaming students for processing at a low cognitive level, and therefore providing them with high level strategy training when the teaching does not call for high processing, is worse than a waste of time because it relieves teachers of the responsibility of looking at possible improvements in delivery and assessment. By the same token, staff development that focuses only on teaching and lecturing skills, training teachers in hi-tech delivery when effects on student learning remain unexamined is equally at fault. (p.83)

Therefore, Biggs (1993a) suggested that implementation of changes should be made across at least two micro systems. Problems can then be addressed within the total context of the situation rather than trying to solve a problem within a single micro system.

### 3P Model of Student Learning

Biggs' '3P Model of Student Learning' or '3P model' (Biggs, 1993b, 1999) involves the premise that students' adoption of a particular learning approach appears to be affected by a number of internal characteristics interacting with various contextual factors within an educational eco-system. The choice of whether students adopt a deep approach or a surface approach can be interpreted within the context of the 3P model (refer to Figure PF1.5).

**Figure PF1.5**
**3P Model of Learning**




*Source*: Biggs (1999, p.18)

The model involves the interrelationships among personal student characteristics, the learning situation in which they are immersed, their approaches to learning, and the outcomes of their learning. The components within the model tend to be in equilibrium. However, changes to any component can affect the whole system. The 3P model is made up of three sets of variables: presage (students' characteristics and learning context), process (students' approaches to learning), and product (the learning outcomes). Generally, what is proposed in the model is that a change in the personal or situational context may result in a change in approach to learning and ultimately to the learning outcome itself. In addition, it is suggested that the presage variable, for example students' perception of their learning context, can also directly influence learning outcomes.

***Presage***

Presage factors are categorised into two. The first factor involves those that are characteristics of the individual student. According to Biggs and Telfer

(1987), it includes students' information processing abilities, personality characteristics, age, prior knowledge that exists before commencing the learning situation, and their preparedness to put in effort in the learning situation. According to Biggs and Moore (1993), students also come into the learning situation with certain preconceptions and motivations about the nature of learning, their expectations of success, and whether there is relevance and enjoyment within the learning situation. Students also have different preferences in how they would like to engage in the learning processes.

The second factor involves situational characteristics which define the learning environment. Learning environment is characterised as the curriculum content, course structure, the methods of teaching, assessment procedures, and institutional provisions and restraints (Biggs & Moore, 1993; Tang, 1994). Furthermore, teachers' conceptions about the process of learning and how it might be conveyed, their experience, and the perceptions of teaching efficacy also form part of the situational characteristics (Gordon, Simpson, & Debus, 2001).

***Process***

Student and situational characteristics from the presage stage will feed into the process stage, which describes how students approach their learning (deep approach or surface approach). Here, the learning processes will be determined by the balance found between the teacher, student, and the institution. Students will interpret the teaching context from their own preconceptions, motivations, and obtain their learning processes through metalearning, and their ability to monitor, plan and evaluate (Biggs & Moore, 1993).

However, whether students adopt a deep approach or surface approach to learning at this stage is also determined by how they perceive the demands made by their learning environment. Gordon, Simpson, and Debus (2001) pointed out that teaching practices that teachers adopt can also lead to modifications of the students' perceptions of the learning environment and thus determine the employment of their approaches to learning. According to

Meyer and Muller (1990), students use a context-specific 'study orchestration' or as Biggs (2001) termed it 'study orientation', in response to the perception of the requirements of their learning environment. Gordon et al. (2001) cautioned that students' approaches to learning are also influenced by their past successes and failures. If an environment is perceived to be similar to those that the students have encountered before (in their high school), and they have succeeded in that environment, it is more likely that they will repeat those behaviours that they found useful and which have helped them, when they enter the new learning context.

In addition, students experience conflict between aspects of the learning and their perceptions of their learning environment especially when there is an element of difficulty in their adjustment to a changed learning environment. Similarly, conflicts may be apparent when students experience a transition from school to tertiary based learning. Students are influenced by the current learning environment and adopt appropriate learning approaches to cope in the demands of tertiary learning (Meyer, 2000). Ramsden (1991) argued that it is the students' perceptions of their learning environment, with regards to their expectations and motivations, which determine how presage factors (especially situational characteristics) influence their approaches to learning.

***Product***

Product refers to the learning outcomes achieved (cognitive or affective), and according to Biggs and Moore (1993), outcomes are in part determined by the approaches taken by students. Learning outcomes can be categorised by how much is learned (quantitatively), how well it is learned (qualitatively), and institutionally (relating to either quantitative or qualitative or both, leading to the awarding of grades). Affective outcomes refer to how students feel about their learning (expressed satisfaction or specific perceptions of particular skill development), especially in situations of student evaluations (Lizzio, Wilson, & Simons, 2002). Such felt outcomes will remain with the students and are likely to affect their future learnings for a long time to come (Biggs & Moore, 1993). It is suggested that students' perceptions of their learning experiences feed back into the system (into the presage and process

area) and that they can modify and change their perceptions of future learning experiences in a continuous cycle. Thus the 3P model describes a cycle of events (Biggs, 1993a).

Biggs (2001) pointed out that approaches to learning are an important component of the teaching-learning system that the 3P model attempts to represent. Therefore, approaches to learning can be used as a quality indicator at all three levels - at the process level where students engage in the task with a deep or surface approach; at the product level as an outcome of a learning situation, when poor teaching induces a surface approach and good teaching a deep approach; at the presage level, when students are able to develop study orientations appropriate to the context (e.g. what works and what does not for each teaching context).

> Approaches to learning thus tell us when the system is working (when orientations, processes, and outcomes are predominantly deep) and when it is not (when orientations, processes, and outcomes are predominantly surface). The key is at the process level, where the learning-related activity produces or does not produce the desired outcomes. (Biggs, 2001, p.88)

However, Biggs (1993b) pointed out that the 3P model is not a 'theory' rather it is

> a descriptive framework which helps order the components of a particular system in a coherent way. Using such a framework, student learning is clearly seen to take place in a teaching context that affects both the nature of the learning, and the outcome. (p.15)

Although the 3P model is not 'the one big' theory that will magically fix every teaching-learning situation in the educational environment, it has provided a useful model of learning which is able to demonstrate the various factors that might account for the way students approach their learning. From the review of literature in Part 2, it was suggested that students prefer a learning environment that they perceive as interesting, satisfying, and which can promote intrinsic motivation. Good teaching, independence in learning, and

clear goals and structure would appear to be closely associated with the use of deep learning approaches by students. Styles of assessment, certain examinations, fear of failure, deficit language competency, workload, and inappropriate study hours have been shown to discourage a deep approach.

The review of literature in Part 2 also suggested that if the encouragement of deep approaches in student learning is to be successful and to reflect the aims of higher education learning, then many factors need to be changed within a student's learning environment. Certainly, the review has helped to define those factors that are thought to influence the approach students take to their learning. The 3P model, however, provides a guide to show that those factors are all related and do no operate in isolation, but rather form complex and dynamic associations with students' learning environments that are able to bring about changes in learning outcomes.

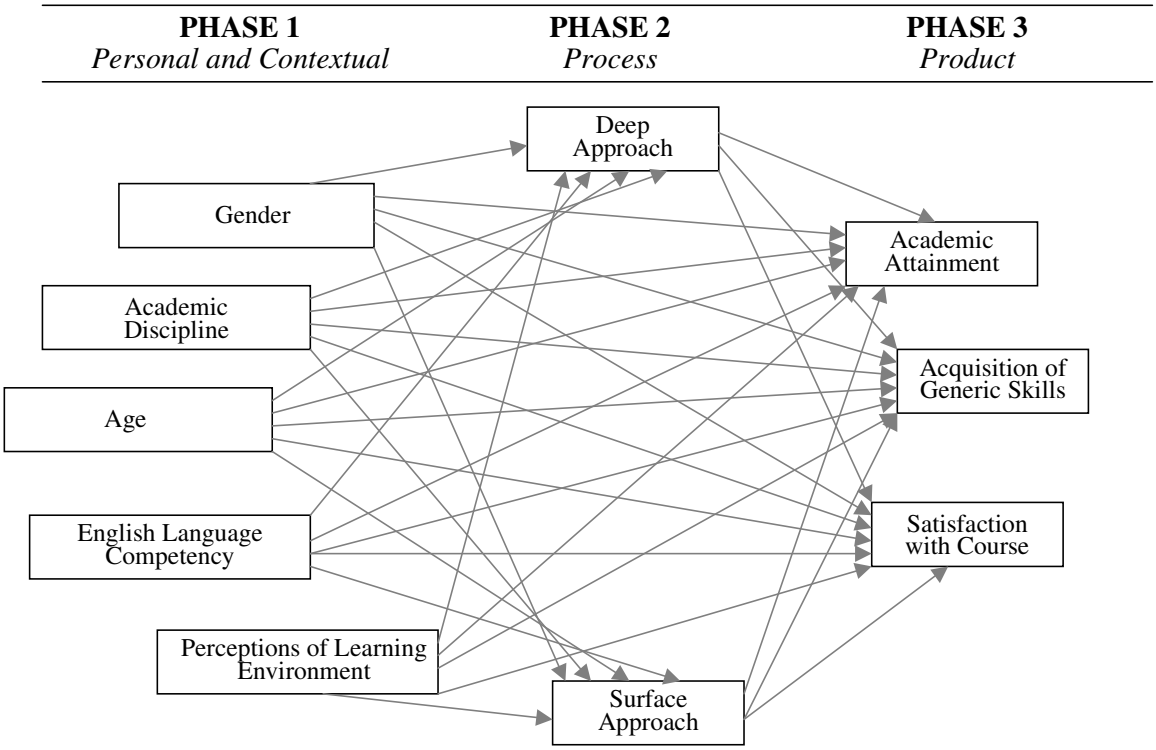
The present study, based on the construct of approaches to learning (Marton & Säljö, 1976a) and the conceptual framework derived from Biggs' 3P model (Biggs, 1993b, 1999), examines the associations among individual characteristics, perceptions of the learning environment, student approaches to learning, and the learning outcomes of students of undergraduate twinning programmes at PHEI. It was considered that a better understanding of the learning environments that PHEI students operate in, would result in actions taken to encourage appropriate approaches to learning and towards better quality of learning among PHEI students.

## Design of the Model to Show Associations of Student Learning at PHEI

To examine the associations among individual characteristics, students' perceptions of learning environments, approaches to learning, and students' learning outcomes, I propose the model as shown in Figure PF1.6.

**Figure PF1.6**

**Proposed Research Model in Learning for PHEI**




It is a re-conceptualisation of the 3P model of learning (Biggs, 1993b, 1999), and is presented to help structure the system of associations between variables. The model suggests that students' gender, age, academic discipline, English language competence, and perceptions of their learning environments are related to students' learning approaches which in turn are associated with the learning outcomes. In this study the learning outcomes refer to students' academic attainment, and outcomes that have received very little attention in learning approach research: acquisition of generic skills and students' overall satisfaction.

## Major Research Propositions

To examine the associations proposed in the model, the following general research propositions were investigated.

**Proposition 1**: Students' individual characteristics (gender, academic discipline, age, and English language competency) are related to the students' perceptions of their learning environments, to the approach they adopt to learning, and to their learning outcomes.

**Proposition 2**: Deep approach to learning is associated with more positive perceptions of the learning environment while a surface approach to learning is associated with less favourable perceptions of the learning environment.

**Proposition 3**: Deep approach to learning is related to more positive learning outcomes then is a surface approach to learning.

**Proposition 4**: Students' individual characteristics, positive perceptions of learning environments, and deep approach to learning combine to have large associations with students' learning outcomes.

**Proposition 5**: Students' approaches to learning mediate the relationships between individual characteristics, perceptions of learning environments, and learning outcomes.

In the analysis, these general propositions are considered in greater detail with, for example, relationships being investigated that include each of the individual characteristics and different dimensions of learning environments.

## Summary and Conclusion to Part 3 of Portfolio 1

In the preceding sections, an overview was provided of Biggs' 3P model of learning which evolved from the conceptual basis of information processing, systems approach, and approaches to learning. The 3P model is likened to a

continuous ecological system with many interdependent components that impinge on, and affect the way students approach their learning and their subsequent outcomes. In addition, Biggs' model proposes that on the basis of the complex interaction of its various components, students will choose to approach their learning using either a deep approach or surface approach, based on their perceptions of the learning situation.

Based on the overview, my theoretical framework for the present study rests on the conceptual framework of the 3P model of learning. First, it focuses on areas of the teaching-learning situation that are steeped in practical concerns. Second, it incorporates and draws upon the construct of approaches to learning, which has been shown to be related to students' perceptions of the learning environments. Third, it offers an understanding of the many interdependent components that can impinge and affect the way students approach their learning and their subsequent outcomes. The relationships of the theoretical framework influenced the ideas that were used to form my eventual research model, which examines the associations among student individual characteristics (gender, academic discipline of choice, age, English language competency), perceptions of the learning environments, student approaches to learning, and learning outcomes.

Part 3, concludes Portfolio 1. In the course of Portfolio 1, I have presented my research problem; described and discussed the learning constructs that were related to the study; established a theoretical stance appropriate for the present study; designed a research model for the investigation, and formulated my major research propositions. In the next Portfolio, Portfolio 2, the study design, methods, analyses, and findings of the study are presented.

# PORTFOLIO 2

## METHODS, DATA ANALYSIS, AND FINDINGS

Portfolio 2 outlines the research design, provides a justification for the choice of research methods used, and presents the findings of the study. Given that the purpose of the study was to examine associations among students' individual characteristics, perceptions of learning environments, learning approaches, and learning outcomes, and that very little is known of PHEI students' learning, both quantitative and qualitative methods were adopted to maximise our understanding of these matters.

Portfolio 2 consists of the following four parts:

**Part 1** outlines the overall design of the research study and the sample selection, and provides descriptions of the quantitative and qualitative methods that were used.

**Part 2** describes the results of the analysis of the research questionnaires and the statistics used to decide whether the questionnaires were reliable and suitable instruments for this study.

**Part 3** reports results from the use of the various questionnaires in investigating the five research propositions.

**Part 4** analyses the interviews gathered from the students who volunteered to participate in this part of the study. It presents the data in which students reflect and explore on their perceptions of their learning environments, approaches to learning, and learning outcomes in the context of PHEI.

# PORTFOLIO 2
# Part 1

## METHODOLOGY

### Introduction

In Part 1 of Portfolio 2, the research design is presented, followed by a discussion of the quantitative and qualitative methods employed in the study. I then provide a description of participant PHEI and of the student sample, and discuss ethical issues of the study. The measures, administration of the instruments, and the nature of the interviews are then described.

### Research Design

The purpose of this study was to examine the relationships in the research model proposed in Part 3 (see Portfolio 1, Part 3, p.80). From the model the following major research propositions were suggested:

**Proposition 1**: Students' individual characteristics (gender, academic discipline, age, and English language competency) are related to the students' perceptions of their learning environments, to the approach they adopt to learning, and to their learning outcomes.

**Proposition 2**: Deep approach to learning is associated with more positive perceptions of the learning environment while a surface approach to learning is associated with less favourable perceptions of the learning environment.

**Proposition 3**: Deep approach to learning is related to more positive learning outcomes then is a surface approach to learning.

**Proposition 4**: Students' individual characteristics, positive perceptions of learning environments, and deep approach to learning combine to have strong associations with students' learning outcomes.

**Proposition 5**: Students' approaches to learning mediate the relationships between individual characteristics, perceptions of learning environments, approach to learning, and learning outcomes.

A research design combining quantitative and qualitative approaches was adopted to examine the relationships in the research model. These two methods are considered to be complementary, as they are able to provide data to supplement, expand, and inform the study, where in some instances, using one method alone would not be sufficient. Both methods provide a more comprehensive understanding of PHEI students' learning. The following section presents a brief overview of the debate regarding quantitative and qualitative methods, followed by a discussion of how both methods contributed to the present study.

### Quantitative and Qualitative Methods

The acceptance of the use of both qualitative and quantitative methods in educational research only came about in the 1960s when it was questioned whether an empirical-quantitative method was sufficient to capture the process and essence of education (Neumann, 1987). Prior to that, staunch advocates of quantitative methods such as Campbell and Stanley (1966) stated that quantitative methods were 'the only way of establishing a cumulative tradition in which improvements can be introduced without the danger of a faddish discard of old wisdom in favor of inferior novelties' (p.2). Riecken, Boruch, Campbell, Caplan, Glenan, Pratt, Rees, and Williams (1974) claimed that 'experiments not only lead to clearer causal inferences, but the very process of experimental design helps to clarify the nature of the social problem being studied' (p.12). On the other hand, Weiss and Rein (1972) stated that qualitative methods were 'in general to be superior to experimental design as a methodology for evaluating broad-aim programs'

(p.243). Parlett and Hamilton (1976) supported Riecken et al. (1974) adding that:

> Characteristically, conventional approaches have followed the experimental and psychometric traditions dominant in educational research. Their aim (unfulfilled) of achieving fully "objective methods" has led to studies that are artificial and restricted in scope. We argue that such evaluations are inadequate for elucidating the complex problem areas they confront and, as a result, provide little effective input to the decision-making process. (p.141)

Other opponents of a purely empirical-quantitative research method questioned the technique as providing a 'slender slice of educational reality' (Eisner, 1979, p.185). Proponents of approaches such as case studies, interviews, observations, and field work wanted a 'rich, thick description' (Merriam, 1988, p.11) of educational practices. Neuman (1987) stated that a strictly quantitative method restricts a theoretically interesting question to strict empirical and statistical inquiry without the opportunity of interaction and communication which can take place in areas of educational reality. Krathwohl (1993) provided a succinct definition to these methods when he proposed that qualitative research 'describes phenomena in words instead of numbers or measures…' while quantitative research is 'research that describes phenomena in numbers and measures instead of words' (p.740).

As can be seen from Krathwohl's definition, the differences in these two techniques are quite marked. Quantitative methods in education seek to examine associations, effects, and causes through statistical methods (Wiersma, 1995). Because quantitative data focus on the relationships of variables and factors, this method addresses the problems that arise with regards to reliability, internal validity, and the external validity of measures and procedures. According to Cohen, Manion, and Morrison (2000), 'the attractions…lie in its appeal to generalisabilty or universality within given parameters, its ability to make statements which are supported by large data banks and its ability to establish the degree of confidence which can be placed in a set of findings' (p.171). On the other hand, qualitative research

methods occur in more 'naturalistic' settings and data are collected by respondents where it naturally happens (Bogdan & Biklen, 1998), while De Lansheere (1985) stated that 'they take into account the multi-faceted aspects of human behaviour and all its environment bound subtle nuances' (p.1589). Qualitative method 'marks a move away from seeing human subjects as simply manipulatable and data as somehow external to individuals, and towards regarding knowledge as generated between humans, often through conversations' (Kvale, 1996, p.11). Qualitative methods have sometimes been criticised as being unable to generate broad generalisations or to provide objective benchmarks for the verification of theory (Bogdan & Biklen, 1998).

Although the two methods differ in their approach, Eisner (1981), Firestone (1987), and Rennie (1998) stated that they are not incompatible with each other. Neuman (2000) observed that the combination of the two methods has different, complementary strengths, and in some cases are overlapping thus, enabling research which is more comprehensive. Similarly, Krathwohl (1993) supported the use of the two methods, as each method in its own right has its strengths and weaknesses. The combination of quantitative and qualitative methods is able to overcome some of the weaknesses, biases, and limitations of only using a single method (Mathison, 1988; Patton, 1990). Greene, Caracelli, and Graham (1989) succinctly pointed out that 'a study that aims for scope and breadth by including multiple components' (p.260) uses both quantitative and qualitative methods.

In the present study, a combination of quantitative and qualitative methods sought an enrichment of interpretations through the collection of data using questionnaires and interviews. Quantitative methods in the form of questionnaire surveys enabled the ease and economy of gathering multiple information using various types of instrumentation. The instruments provided responses focused on the various dimensions considered important to students' perceptions of learning environments, learning approaches, and learning outcomes. According to Ramsden (1979), however, an investigation of the associations between students' learning environments and students' learning approaches cannot be effectively carried out by questionnaire

surveys alone. Therefore, interviews of students were also conducted to investigate whether students' perceptions of their learning context interacted with the different ways they approached their learning. Data from the questionnaire surveys were initially analysed to provide a guide to improving and re-structuring the interview questions. The refinement of specific interview questions would not have been possible had quantitative methods not been used. Interviews were able to shed light on numerous areas not possible with questionnaires alone, and provided a clearer understanding of the physical environment as well as student involvement in their learning environments. Importantly, the interview data allowed much information to be obtained which could not have been possible by statistical methods alone.

The questionnaire survey together with interviews provided a quantitative-qualitative method for this study. Both data sets were used to provide a better understanding of the associations among PHEI students' learning environments, learning approaches, and learning outcomes.

## Student Sample and Selection

The population of students that the current study was interested in were students undertaking the 3+0 twinning programmes from either Australian or British universities. However, the target population was second and third year undergraduates taking degrees in business and business-related programmes, computer science, or engineering.

Business degrees and science (technology/engineering) degrees were selected as business and computing/engineering programs were the first courses to be granted approval to conduct a 3+0 structure. It was hoped that there would be a sufficient number of students in their 2nd and 3rd year, compared to other more recent courses.

It was considered important that students who participated in the study were mature enough to make valid and careful judgements of their learning and studying at PHEI to ensure careful responses to the questionnaire items

and to the interviews. Furthermore, I considered that students should be established in their place of learning and have formed a certain learning habit. These were reasons second and third year students were chosen for the study.

The PHEI that participated were selected based on their accessibility and the willingness of the Principal or the President of the PHEI to participate in the study. Willingness to participate was important as, in some instances, the lecturers in some of the participating PHEI were required to administer the questionnaires. PHEI with 3+0 twinning programmes in business, technology, and engineering degrees, and that indicated a willingness to participate in the research were listed, contacted by telephone, and invited to participate in the study. Eventually six colleges were chosen and a brief description is given below.

***College A***

College A is situated in the north-western state of Peninsular Malaysia, Penang, and was established in the late 1980s. The 80 students who participated in the study were in their second year of a 3+0 Bachelor of Commerce from Australia.

***College B***

College B is also situated in the north-western state of Peninsular Malaysia, Penang, and was established in the early 1980s. College B concentrates on computing and information technology programs. The 21 students who participated in the study were in their second year of a Bachelor of Computer Science from Australia.

***College C***

College C was founded in the early 1980s, and had its first campus in Petaling Jaya, which is situated in the south-western state of Peninsular Malaysia - Selangor, the most populous state in Malaysia. Selangor also contains the federal territory of Kuala Lumpur (capital city of Malaysia) and Klang Valley. In the late 1990s, it established two other campuses, one situated in Penang, and other in the state of Sabah (East Malaysia). The

three campuses offer a variety of 3+0 twinning degree programmes in areas of business, engineering, and computing from universities in Australia and the United Kingdom. A total of 127 students who participated in the study were from Penang. Out of the total, 61 were in their third year of a 3+0 Bachelor of Science in computing studies, and 66 were in their third year of a 3+0 Bachelor of Engineering (electrical and electronics) from the United Kingdom.

***College D***

College D was established in the late 1980s, and was one of the first to offer tertiary twinning programmes in a variety of specialist streams within a business degree. It is situated in Klang Valley. The 28 students who participated in the study were in their third year of a 3+0 Bachelor of Commerce from Australia.

***College E***

College E was founded in the early 1980s, and is situated in the capital city of Kuala Lumpur. The 18 students who participated in the study were in their third year of a 3+0 Bachelor of Science in computer science from Australia.

***College F***

College F is located on the south-west corner of Peninsular Malaysia, in the state of Negeri Sembilan. It is about 64 km south of Kuala Lumpur, and it was established in the late 1990s. The 94 students who participated in the study were in their second year of a 3+0 Bachelor of Business from Australia.

Table PF2.1 provides a breakdown of participant colleges with regards to programs, gender, and age.

**Table PF2.1**

**Breakdown of Sample by College, Programme, Gender, and Age**

| PHEI Colleges | 3+0 Twinning Degree | No. of Students | | Age | |
|---|---|---|---|---|---|
| | | *Male* | *Female* | *<=21* | *>=22* |
| College A | B. Commerce | 24 | 56 | 46 | 34 |
| College B | B. Computer Science | 19 | 2 | 15 | 6 |
| College C | B. Science (Computing) | 29 | 29 | 17 | 41 |
| | B. Engineering | 63 | 6 | 9 | 60 |
| College D | B. Commerce | 8 | 20 | 14 | 14 |
| College E | B. Science (Computer Science) | 7 | 11 | 8 | 10 |
| College F | B. Business | 34 | 60 | 59 | 35 |
| Total | | 184 | 184 | 168 | 200 |

Out of the participants (368), 166 were doing Engineering and Computer Science programs, while the other 202 were in business, commerce, accounting, finance, or management programmes. They were made up of equal numbers of 184 males and 184 females. Some 168 students were 21 years of age and younger. The ethnic divide of the total sample included 82% Chinese, 10% Indians, 5% Malay, with the remaining coming from other indigenous races of Iban and Kadazan.

## Ethical Issues

Confidentiality was the major ethical issue of this study. Assurances were given to all six PHEI that:

- published results arising from the study would not identify any individuals or colleges;
- participants could withdraw themselves or any information they provided at any time;
- interview participants would be asked whether they would allow the interview to be audio-taped;
- all transcriptions of interviews would be completed solely by me, and pseudonyms would be used to preserve confidentiality.

The opportunity to ask questions and to receive feedback on the outcome of the study at its conclusion was also assured. Ethical approval was given by College A's President, the Academic Manager of College B, the Chief Executive Officer of College C, the Academic Directors of College D and F, and the Registrar of College E.

## Quantitative Methods

This section describes the instruments used, details the properties of each type of instrument, provides a rationale for their selection, and indicates modifications that were made. The data collection included gathering information on: individual characteristics, perceptions of learning environments, approaches to learning, and learning outcomes.

### Individual Characteristics

#### *Student background*

Prior to responding to the learning environment and approach to learning questionnaires, the survey required the students to supply their personal information. The students' background section provided space for student identification number, gender, academic discipline, ethnicity, and age. The student identification number was important as it provided access to students' data regarding their academic attainment. Gender was coded as (1) male and (0) female. Academic discipline was coded as (1) science students and (0) business students. Ethnicity was coded as (1) Malay, (2) Chinese, (3) Indian, and (4) Others. Because the sample did not have a satisfactory number of students from each ethnic group (refer to page 91), ethnicity was not used eventually as one of the measures in the study. Age was coded in terms of two subgroups: (1) 21 years of age and below, and (0) 22 years of age and above. The majority of students who entered PHEI would have completed their Pre-University studies by 18 years of age, and entered the first year of a PHEI degree course by 19, and would have completed their 3 year degree course by 21 years of age. Therefore, mature students in this study were defined as students who started to attend PHEI tertiary studies

at the age of 22 and older. Taking students above 22 years of age as mature, 54.3% of the sample included mature age students, while 45.7% of the sample included younger students.

***English language competency***

A Perceived English Language Competency Questionnaire (PELCQ) was developed to explore students' perceived competency in the use of the English language in various learning situations. It gathered data relating to students' perceived competency in the use of English in areas of writing, reading, understanding, discussion, and in conversation. The questions used a five-point self-rating response scale ranging from a value of 5 ('Very Good'), 4 ('Enough'), 3 ('Only Just Enough'), 2 ('Uncertain'), and 1 ('Definitely Not Enough'). Students' English language competency was assessed by the combined scores from their self-reporting of their competency in using the English language in the five areas. Students were divided into high, medium, or low competency groups on the basis of their total score on the five-item scale of the PELCQ. The low competency group included 20% of the total sample, while 40.8% made up the medium competency group, with 39.1% of students in the high competency group.

## Perceptions of Learning Environment and Generic Skills

To measure students' perceptions of their learning environment, and their generic skills development and acquisition, the present study used the revised Course Experience Questionnaire (revised CEQ) developed by Wilson, Lizzio, and Ramsden (1997). The CEQ is a self-report questionnaire, and in this section, I briefly describe the nature of the original CEQ and explain the modifications and additions made to form a revised version.

The original CEQ

The Course Experience Questionnaire (CEQ) began as the Course Perceptions Questionnaire (CPQ) designed by Ramsden and Entwistle (1981) in the United Kingdom. The CPQ was developed from an analysis of open-ended student feedback, and contained eight different aspects of students' learning environments as presented in Table PF2.2. It was found that

students were likely to learn more effectively if those eight characteristics were present positively in their learning environment.

**Table PF2.2**

**Subscales Contained in the Course Perceptions Questionnaire**

| Scale | Meaning |
|---|---|
| Formal teaching methods | Lectures and classes more important than individual study. |
| Clear goals and standards | Assessment standards and ends of studying clearly defined. |
| Workload | Heavy pressures to fulfil task requirements. |
| Vocational relevance | Perceived relevance of course to careers. |
| Good teaching | Well-prepared, helpful, committed teachers. |
| Freedom in learning | Discretion of students to choose and organise own work. |
| Openness to students | Quality of academic and social relationships between students. |
| Good social climate | Quality of academic and social relationships between students. |

*Source*: Ramdsen and Entwistle (1981, p.371)

Using both the theoretical and empirical basis of the CPQ, a variation to the CPQ was developed by Ramsden (1991) who renamed it the Course Experience Questionnaire (CEQ). The questionnaire was developed in Australia at a time when quality and accountability in higher education became increasingly important. Further, there were a limited number of robust instruments that could evaluate higher education students' learning environments at a course level. Course level refers to a full course of study (for example, a degree programme), rather than student ratings of a particular subject or teacher (Byrne & Flood, 2003). Evaluating at a course level was seen as less threatening to academics who might fear that ratings at the individual level may lack objectivity.

The CEQ offered reliable and useful feedback on students' learning environments, and it can also be used to evaluate teaching effectiveness at a course level (Byrne & Flood, 2003). It was developed to be used by students in higher education to report perceptions of their learning environment and contained 30 questions divided into five scales: Good Teaching (8 items), Clear Goals and Standards (5 items), Appropriate Workload (5 items), Appropriate Assessment (6 items), and Emphasis on Independence (6 items). Several items were reworded to provide a balance of 'positive' and 'negative' statements. Students' responses were recorded on a five-point scale of 1 ('Strongly disagree') to 5 ('Strongly agree'). Summing the scores on the appropriate items provided scores on the five scales, with a high score corresponding to a perception of a good learning environment. Table PF2.3 shows the characteristics of the five scales. Preliminary investigations of the CEQ confirmed the internal consistency of the scales and demonstrated its ability to discriminate between courses (Ramsden, 1991). Based on the strength of preliminary studies, the Australian Higher Education Performance Indicators Research Group (PIRG) recommended that the CEQ be trialled nationally.

In 1990, the CEQ was distributed to final year students of different academic disciplines across a range of higher education institutions in Australia. A total of 3,372 valid responses were collected (Ramsden, 1991). The internal consistency of the five scales was examined using Cronbach alpha coefficients and was found to be satisfactory. Validation was conducted through factor analysis, which confirmed the five-scale structure (Ramsden, 1991; Matthews, Brown, & Jackson, 1990).

Replication of the original study (Ramsden, 1991) was conducted by Trigwell and Prosser (1991) using a sample of 55 final year Australian nursing students, and they reported a scale structure broadly similar to Ramsden (1991). Richardson (1994c) validated the use of the CEQ with a sample of 95 undergraduate students in a variety of social science courses in a university in the United Kingdom, while another British study by Broomfiled and Bligh (1998) validated the use of the CEQ for medical students, and further confirmed the basic scale structure of the instrument.

**Table PF2.3**

**Example of Scale Characteristics of the CEQ and Generic Skills**

| Scale | Defining item |
|---|---|
| Good Teaching | Teaching staff here normally give helpful feedback on how you are going. |
| Clear Goals | You usually have a clear idea of where you're going and what's expected of you in this course. |
| Appropriate Workload | The sheer volume of work to be got through in this course means that you can't comprehend it all thoroughly (negative) |
| Appropriate Assessment | Staff here seem more interested in testing what we have memorised than what we have understood (negative) |
| Emphasis on Independence | Students here are given a lot of choice in the work they have to do. |
| Generic Skills* | This course has helped me to develop my problem-solving skills. |

*Adapted from*: Wilson et al. (1997, p.53)
* For economy of presentation, the Generic Skills Scale which was developed for the revised CEQ is included in Table PF2.3.

***Revised CEQ***

While the CEQ in its original form was well accepted and endorsed for use by the Graduate Careers Council of Australia (GCCA), it was proposed that a revised form was needed that took into account an awareness that higher education needed to produce graduates who were not only competent academically, but who also possessed process skills relevant to employability (Wilson, Lizzio, & Ramsden, 1997). Most of the original items and scales from Ramsden's (1991) CEQ were retained with the exception of Emphasis on Independence. The Emphasis on Independence subscale was omitted due to its weaker scale structure, and in its place a new Generic Skills scale was introduced (refer to Table PF2.3 for scale characteristics) (Wilson et al., 1997). The revised form has 23 items made up of a Good Teaching Scale (6 items), Clear Goals and Standards Scale (4 items), Appropriate Workload Scale (4 items), Appropriate Assessment Scale (3 items), and Generic Skills Scale (6 items). Scoring remains the same, and in Table PF2.4 the meanings of the five scales are presented.

The coefficient alpha values for the revised form demonstrated acceptable levels of internal consistency (Wilson et al., 1997), although they were lower when compared to the original CEQ. Bryne and Flood (2003) reported that the alpha values for three scales (Good Teaching, Appropriate Assessment, and Generic Skills) of the revised CEQ were lower than those identified by Wilson et al. (1997), however, they were nevertheless satisfactory with moderate to high levels of internal consistency (refer to Table PF2.5). Eley (1998) used the revised CEQ with 352 business and engineering students in Australia, and noted that the reliability and validity of the revised CEQ was acceptable and in line with those reported in the studies described above.

**Table PF2.4**

**Meanings of the Scales of the revised CEQ**

| Scale | Meaning |
|---|---|
| Good Teaching | Addresses teaching practice such as providing useful and timely feedback, providing clear explanations, able to motivate students, effort in making the course interesting, and able to understand students' problems. |
| Clear Goals and Standards | Addresses course quality as measured by clear aims and objectives, and providing clear expectations of the standard of work expected from students. |
| Appropriate Assessment | Addresses the extent to which assessment practices measure higher order thinking and understanding rather than simple factual recall. |
| Appropriate Workload | Addresses students' perceptions of the reasonableness of the workload. The scale looks into the extent to which a heavy workload interferes with student learning. |
| Generic Skills | Addresses the extent to which students' learning has fostered the development of generic skills identified as being a valuable outcome of university education. |

*Adapted from*: Lyon and Hendry (2002, pp.342-346)

**Table PF2.5**

**Cronbach Alpha Values from Ramsden (1991), Wilson et al. (1997), and Byrne and Flood (2003)**

| CEQ scale | Ramsden (1991) 30-item CEQ n = 3372 | Wilson et al. (1997) revised CEQ n = 1362 | Byrne and Flood (2003) revised CEQ n = 204 |
|---|---|---|---|
| Good Teaching | 0.87 | 0.88 | 0.76 |
| Clear Goals and Standards | 0.80 | 0.76 | 0.78 |
| Appropriate Workload | 0.77 | 0.69 | 0.73 |
| Appropriate Assessment | 0.71 | 0.70 | 0.69 |
| Emphasis on Independence | 0.72 | - | - |
| Generic Skills | - | 0.77 | 0.66 |

*Adapted from*: Wilson et al. (1997); Byrne and Flood (2003)

The revised CEQ scales, namely Good Teaching, Clear Goals and Standards, Appropriate Assessment, and Appropriate Workload appeared to be suitable to assess PHEI students' perceptions of their learning environments as their application had been developed and tested for use across many academic disciplines. In addition, as the CEQ was initially developed to evaluate courses in British and Australian higher education, it seemed appropriate that it be used to monitor students' perceptions of the learning environment within a twinning programme that uses British and Australian higher education curriculum and syllabus. For ease of reference, the revised CEQ (Wilson et al., 1997) used in this study will be referred to as the CEQ for future discussion.

The present study also used the Generic Skills Scale from the CEQ as an appropriate measure of PHEI students' development and acquisition of their process skills relevant to employability and lifelong learning, such as problem solving, analytic skills, teamwork, ability to plan one's own work, written communication, and confidence in tackling new situations.

Permission to use the CEQ was provided by the Graduate Careers Council of Australia.

## Approach to Learning

To measure students' learning approaches, the present study used the newly Revised Two-Factor Study Process Questionnaire (R-SPQ-2F) by Biggs, Kember, and Leung (2001). It is also a self-report questionnaire designed to measure higher education students' approaches to learning and their preferred methods of study. The R-SPQ-2F was revised and modified from its predecessor popularly known as the Study Process Questionnaire (SPQ) (Biggs, 1987).

### The SPQ

The Study Process Questionnaire (SPQ) was modified from earlier versions created by Biggs (1970a, 1970b) known then as the Study Behaviour Questionnaire (SBQ) to evaluate the learning approaches of students in higher education in Australia. The SBQ was constructed within an information processing framework. Although Biggs (1970a, 1970b) developed the SBQ to examine how students went about their academic learning, it also contained items that sought to examine students' beliefs, attitudes, mental processes, and behaviours such as note-taking and group discussion. The SBQ had 72 items and students responded by indicating whether the statements were true of them on a five-point scale from 1 ('This is always or nearly true of me') to 5 ('This is never or rarely true of me'). Responses to the SBQ were coded and then subjected to a factor analysis. This early questionnaire developed by Biggs (1970a, 1970b) revealed six orthogonal factors that were interpreted as:

- study organisation;
- tolerance of ambiguity;
- cognitive simplicity;
- capacity for intrinsic motivation;
- dogmatism;
- independence of study behaviour. (Richardson, 2000, p.62)

In 1973 and 1976, Biggs modified the SBQ questionnaire into an 80-item questionnaire which assessed motivation and strategic aspects of learning with 10 scales:

- Academic aspirations: 'Pragmatic, grade-oriented, university as means'.
- Academic interest: 'Intrinsically motivated, study as end'.

- Academic neuroticism: 'Confused, overwhelmed by demands of course work'.
- Internality: 'Sees 'truth' coming from within not external authority'.
- Study skills and organisation: 'Works consistently, reviews regularly, scheduled work'.
- Fact-rote strategy: 'Centres on facts, details, rote learns'.
- Dependence: 'rarely questions instructors, tests, needs support'.
- Meaning assimilation: 'Reads widely, relates to known, meaning oriented'.
- Test anxiety: 'Very concerned about tests, exams, fear of failure'.
- Openness: 'University place where values are questioned' (Biggs, 1976, p.2).

Biggs (1978) found that students' personal factors (personality, intelligence, and background) and situational variables (academic subject, teaching method, and mode of assessment) were related to achievement outcomes. As a result, a new version of the 80-item questionnaire with 10 scales was developed, which incorporated both the personal and situational aspects (Biggs, 1978). Importantly, this new questionnaire drew upon the '3P' model (presage-process-product) (Biggs, 1978) to operationalise the domain of study processes. This new 80-item questionnaire was later named the Study Process Questionnaire (SPQ).

However, based on extensive testing of the questionnaire, Biggs noted that the SPQ warranted further improvement when it was found that the 10 scales were actually measuring more than one underlying dimension. As a result, Biggs (1979) reduced the 80-item SPQ to 42 items, with a three factor structure of deep, surface, and achieving with each factor having a motive and strategy subscale. There were seven items in each of the six subscales to reflect the respondents' motives and strategies. This version is better known as the 42-item SPQ. Each item within the components was rated by the respondents on a five-point Likert scale with 1 ('This item is never or only rarely true of me') and 5 ('This item is always or almost always true of me'). Each scale and subscale score was calculated by summing up the relevant items. Administration of the 42-item SPQ by Watkins and Hattie (1981) to 249 respondents in an Australian university supported the three factor structure.

Similarly, when Hattie and Watkins (1981) administered the 42-item SPQ to 255 undergraduate students in an Australian university and to 175 first year students in a university in the Philippines, they found that the internal consistency of the six subscales was satisfactory for the Australian sample. They indicated that the study validated the six subscales and the three approaches of the SPQ for Australian students. However, it was not the case for the Philippines' sample, as the factor analysis only showed a two-factor solution differentiating between motives and strategies.

O'Neil and Child (1984) administered the 42-item SPQ to 277 students in the United Kingdom and reported that the responses indicated the existence of two factors rather than a clear three factor structure. They did not find appropriate internal consistency estimates for the surface strategy.

Biggs (1987) administered the 42-item SPQ to 2,365 students in Australian institutions and found that he was unable to extract a three factor structure, but instead obtained a two factor solution, with lower alpha coefficients for the surface scale. Biggs and Rihn (1984) in a study of 2,141 Australian students found that one factor loaded on deep and achieving motives and strategies, and the second loaded on surface and achieving motives and on surface strategy. Biggs (1987) considered that the lower alpha coefficients for the surface strategy and surface motive could be because the subscales shared two motives – to do the minimal amount of work to pass and to avoid failing.

Other cross-cultural research failed to generate three factors, instead finding only two factors. From a study of 342 Nepalese students surveyed using the 42-item SPQ, Watkins and Regmi (1990) showed a two factor solution that was similar to those obtained by Biggs (1987), with the achieving and deep approaches loading on the same underlying dimension. Similar results were obtained by Watkins and Akande (1992) with 352 Nigerian students enrolled in undergraduate level courses. They found that one factor clearly showed high loadings from the deep motive and strategy and achieving strategy subscales, whereas the second factor had its highest loadings on the surface motive and strategy subscales. The achieving motive subscale split between

the two factors. In both studies, the scales of the 42-item SPQ were found to have adequate internal consistencies.

Zhang (2000) examined the learning approaches of students from three different cultures with samples of 67 students from the United States, 652 students from Hong Kong, and 193 students from mainland China (Nanjing). Responses from the three samples generated two factor solutions with clearly defined deep and surface approaches, with achieving subscales loading on the deep subscales for all samples. The alpha estimates of internal consistency for the 42-item SPQ subscales and the three main scales were similar across the three data sets. Zhang's data were consistent with those obtained by Biggs (1987) for the Australian sample. Zhang reported that his data were similar to those obtained by Kember and Gow (1990) using Hong Kong samples; by Watkins (1998) in his assessment of the internal consistency of the 42-item SPQ from 14 independent samples of 6,500 university students from 10 countries; and by Watkins and Dahlin (1997) using Swedish samples.

Burnett and Dart (2000) found strong support for the construct validity and reliability of the scales contained in the 42-item SPQ in an analysis of 1,994 university students from two Australian universities. However, they suggested that studies using the 42-item SPQ should score the items related to approaches rather than the six motive/strategy subscales, as not all items loaded on the factors that they were hypothesised to measure.

Snelgrove and Slater (2003), in their psychometric testing of the 42-item SPQ with a sample of 289 student nurses in the United Kingdom, indicated that the deep and surface constructs remained conceptually distinct, but there was some conceptual overlap between the deep and achieving approaches in particular. However, an important contribution of the study was the suggestion that items within the deep learning construct were able to measure learning that included a combination of material learned and evaluation of the subject under study. They indicated that there might be cohesion between critical thinking and the deep learning construct, and concluded that the deep learning construct may be measuring critical

thinking and be of use in evaluating higher order thinking skills in nursing students.

The similarity between the results of factor analyses of the 42-item SPQ from Australia, China, Hong Kong, Nepal, Nigeria, United Kingdom, and the United States suggest doubt about the existence of a separate 'achieving' approach. The results indicated that the deep and surface approaches were conceptually sound, but there were some conceptual overlaps between the deep and achieving approaches. Using confirmatory factor analysis to examine the dimensionality of the structure of the SPQ questionnaire, Kember and Leung (1998b) used the 42-item SPQ with 4,843 students from a university in Hong Kong. They found that approaches to learning would be better represented by a two factor solution than the three factor solution as originally proposed. Kember and Leung (1998b) considered that the achieving approach was an additional dimension of the surface approach, rather than the deep factor. Nevertheless, they suggested that the achieving subscale served as an indicator of both the deep and surface approaches rather than as a separate third approach as proposed in Biggs' (1987) original version.

***The R-SPQ-2F***

The various studies prompted Biggs, Kember, and Leung (2001) to revise the 42-item SPQ. Biggs et al. (2001) suggested it was timely to make adjustments to the SPQ as 'the student population is more heterogeneous than it was, and on the other hand, with the modularisation of teaching units, students' courses of study are now more programme-based than faculty-based' (p.134). They maintained that the SPQ has an even greater role to play than before in gauging student learning in the light of changing teaching contexts, accountability, and concerns with quality assurance.

Importantly, the revised version considered the approaches to learning from an Asian perspective (Biggs et al., 2001). In addition, the revision was informed by a better understanding of extrinsic motivation. A study by Kember, Wong, and Leung (1999) suggested that intrinsic and extrinsic motivations were not incompatible, for while job motivation appeared to be

an extrinsic motivation, some students who were motivated by job prospects did not essentially exhibit a surface approach. Biggs et al. (2001) suggested that courses which provided a good career preparation provided positive motivation which was compatible with intrinsic motivation, rather than extrinsic motivation.

The R-SPQ-2F consists of 20 items measuring two main scales of Deep Approach (DA) and Surface Approach (SA). DA main scale has Deep Motive (DM) and Deep Strategy (DS) as subscales, while SA has Surface Motive (SM) and Surface Strategy (SS) as subscales. Each of the subscales (DM, DS, SM, and SS) contains five items. Each item within the subscales is rated on a five-point Likert scale: 1 ('This item is never or only rarely true of me') and 5 ('This item is always or almost always true of me'). Subscale scores are calculated by summing up the scores on the relevant items. All items are positively worded so that no recoding is necessary when scoring the questionnaire. Subscale scores range from five to 25 with higher scores indicating those who make a greater use of that approach to learning.

The R-SPQ-2F was validated by Biggs et al. (2001) using a sample of 495 undergraduate students, from various disciplines across each year of study from a university in Hong Kong. Confirmatory factor analysis indicated two higher order constructs, Deep Approach (DA) and Surface Approach (SA). The two main scales, Deep Approach (DA) and Surface Approach (SA) had clearly defined motive and strategy subscales, Deep Motive (DM), Deep Strategy (DS), Surface Motive (SM), and Surface Strategy (SS) respectively. Table PF2.6 presents the meanings of the four subscales.

Permission to use the version of the R-SPQ-2F was given by Professor David Kember (one of the authors of the R-SPQ-2F).

**Table PF2.6**

**Meaning of the Subscales in the R-SPQ-2F Instrument**

| Approach | Motive | Strategy |
|---|---|---|
| Surface | Surface Motive (SM) is instrumental: main purpose is to meet requirements minimally: a balance between working too hard and failing. | Surface Strategy (SS) is reproductive: limit target to bare essentials and reproduce through rote learning. |
| Deep | Deep Motive (DM) is intrinsic: study to actualise interest and competence in particular academic subjects. | Deep Strategy (DS) is meaningful: read widely, interrelate with previous relevant knowledge. |

*Source*: Gow and Kember (1990, p.309)

Table PF2.7 shows the Cronbach alpha values for the R-SPQ-2F (Biggs et al., 2001) as well as those in a study by Leung and Kember (2003), who used the R-SPQ-2F with 402 undergraduate Hong Kong students.

**Table PF2.7**

**Comparison of Cronbach Alpha Values for R-SPQ-2F**

| Scales/subscales | SPQ | |
|---|---|---|
| | Published in 2001 *Alpha* | Published in 2003 *Alpha* |
| Deep Motive (DM) | 0.62 | 0.60 |
| Deep Strategy (DS) | 0.63 | 0.62 |
| Surface Motive (SM) | 0.72 | 0.72 |
| Surface Strategy (SS) | 0.57 | 0.59 |
| Deep Approach (DA) | 0.73 | not available |
| Surface Approach (SA) | 0.64 | not available |

Note: *Source*: Biggs et al. (2001, p.142)
*Source*: Leung and Kember (2003, p.65)

The R-SPQ-2F was considered an appropriate instrument to gauge the learning processes of students in the present study, as the SPQ has been widely used in western and Asian contexts, and the new revised version was developed and tested within an Asian context.

## Learning Outcomes

Three different learning outcomes were measured for the study, including students' academic attainment, students' development and acquisition of their generic skills, and their satisfaction with the course.

### *Academic attainment*

The academic attainment records of students were obtained from the participating PHEI. Academic attainment was the end of session (course work and examination) results in each program of study. For all six PHEI, the fail mark (F) was 49%, pass mark (P) was 50-59% and high distinction (HD) pass was 80-100%. Credit pass (CR) was 60-69 for Colleges B, C, D, E, and F, while college A was 60-74%; distinction pass (DI) was 70-79% for Colleges B, C, D, E, and F, while college A was 75-79%. To divide the sample into contrasting performance groups, a decision was made to standardise the results by rating them into 1 (0-49), 2 (50-59), 3(60-69), 4(70-79), and 5 (80-100). The decision was made to provide a rating that could differentiate between relatively more and less successful students.

### *Generic Skills*

To measure students' development and acquisition of their generic skills, the six items of the Generic Skills Scale were modified from Wilson, Lizzio, and Ramsden (1997). Items within the Generic Skills Scale appeared together with the rest of the CEQ questionnaire, but at the end of all other items for ease of scoring.

### *Course Satisfaction*

Course satisfaction was measured by an item 'Overall I am satisfied with the quality of this course'. The item was rated on a 5-point Likert scale from 1 'Disagree', to 5 'Agree'.

## Field Testing and Modifications to the Questionnaires

To ensure that the various questionnaires were suitable for use in a Malaysian context, it was important to field test the main questionnaires used in the study, namely, the CEQ and the R-SPQ-2F. In addition, the newly developed PELCQ needed to be field tested to ensure that it could be understood by the students.

The adaptation and modification process involved a preliminary field test of the various questionnaires to 12 students in a business degree course in early February 2003 at one of the PHEI in Malaysia. Students were requested to respond honestly to every item found in the questionnaire. They were told to raise their hands if they encountered any problems relating to understanding item statements or any particular words. The students were also asked to comment on the aesthetic layout and format of the questionnaires. The different types of instrumentation were also given to the lecturer of the 12 students who was asked to provide her own comments and suggestions. Insights that emerged from the preliminary field test are presented below.

### *CEQ and R-SPQ-2F*

Based on the preliminary field test of the CEQ and R-SPQ-2F the following issues emerged:

1. A few words were found to be problematical. Therefore, I found it necessary to make modifications to the wording of some of the items in both questionnaires to simplify the language and to make items more suitable for the Asian sample in Malaysia. In all the re-wording, the original word was followed as closely as possible so that the meaning of each item was preserved. Table PF2.8 and PF2.9 depict the original items and their modifications.

2. The response format seemed appealing and was clear to the students. There were no indications of any problems among students in responding to the CEQ and Generic Skills scales which denoted what was true of the

course and the responses from 'strongly disagree' to 'strongly agree'. Similarly, there was no indication of any problems among students answering the R-SPQ-2F regarding choosing from the responses of E = always true or almost always true of me; D = frequently true of me; C = true about me about half the time; B = sometimes true of me; A = never true or only rarely true of me.

3. The space between items was too close and students found that they were marking responses for the wrong items. On the basis of this criticism, to make it clearer and easier for them to mark their responses, boxes were formed for each item and the response format was placed as near as possible to each item.

4. Directions for the CEQ and R-SPQ-2F were simple and straightforward and students were able to understand what was required of them in each of the questionnaires.

**Table PF2.8**

**Illustrations of the Modifications made in the CEQ**

| Item No. | Original Statement | Modified Statement |
|---|---|---|
| 11 | The teaching staff normally gave me helpful feedback on how I was going. | The teaching staff normally gave me helpful feedback on how I was progressing. |
| 16 | The sheer volume of work to be got through in this course meant that it couldn't all be thoroughly comprehended. | The huge amount of work to be got through in this course meant that it couldn't be all completely understood. |
| 19* | The course sharpened my analytical skills | The course improved my logical skills. |
| 21* | As a result of my course, I feel confident about tackling unfamiliar problems. | As a result of my course, I feel confident about overcoming unfamiliar problems. |

** Items for Generic Skills*

**Table PF2.9**

**Illustrations of the Modifications made in the R-SPQ-2F**

| Item No. | Original Statement | Modified Statement |
|---|---|---|
| 2 | I find that I have to do enough work on a topic so that I can form my own conclusions before I am satisfied. | I find that I have to do a lot of work on a topic so that I can make my own conclusions before I am satisfied. |
| 5 | I feel that virtually any topic can be highly interesting once I get into it. | I feel that almost any topic can be highly interesting once I get into it. |
| 8 | I learn some things by rote, going over and over them until I know them by heart even if I do not understand them. | I learn some things by memorising, going over and over them until I know them by heart even if I do not understand them. |
| 9 | I find that studying academic topics can at times be as exciting as a good novel or movie. | I find that studying academic topics can at times be as exciting as a good book or movie. |
| 11 | I find I can get by in most assessments by memorising key sections rather than trying to understand them. | I find I can manage to pass most assessments by memorising key sections rather than trying to understand them. |
| 15 | I find it is not helpful to study topics in depth. It confuses and wastes time, when all you need is a passing acquaintance with topics. | I find it is not helpful to study topics in detail. It confuses and wastes time, when all you need is just enough knowledge to get by in these topics. |
| 16 | I believe that lecturers shouldn't expect students to spend significant amounts of time studying material everyone knows won't be examined. | I believe that lecturers shouldn't expect students to spend large amounts of time studying material everyone knows won't be examined. |
| 20 | I find the best way to pass examinations is to try to remember answers to likely questions. | I find the best way to pass examinations is to try to remember answers to questions that might come out. |

***PELCQ***

Several suggestions were made by the lecturer of the 12 students of the PHEI where the field test of all the instruments was conducted. She suggested that reading, writing, discussion, and in conversation should be made more explicit as to the nature of the task. Furthermore, she suggested that conversation should also include students' friends, rather than restricting it to just staff of the institution. Changes were made based on those suggestions, and the instrument was then field tested. The comprehensibility and clarity of the five items relating to reading, writing, understanding, discussion, and informal talk were satisfactory to the students. Table PF2.10 shows the final version that was used in the present study.

**Table PF2.10**

**Final version of the PELCQ**

| My English Language competency in: | **Very Good** | **Enough** | **Only Just Enough** | **Uncertain** | **Definitely Not Enough** |
|---|---|---|---|---|---|
| Reading - academic text books, materials, handouts, study manuals, printed articles and reading for an essay or assignment. | 5 | 4 | 3 | 2 | 1 |
| Writing - assignments, essays, reports (including science, business or laboratory reports), notes during lectures or keeping up with lecturers in terms of note-taking. | 5 | 4 | 3 | 2 | 1 |
| Understanding lectures and/or seminars. | 5 | 4 | 3 | 2 | 1 |
| Discussion and Presentation during tutorials, seminars, and in class (e.g. giving instructions, explaining ideas, or getting responses etc.). | 5 | 4 | 3 | 2 | 1 |
| Informal everyday conversation with friends and staff (e.g. telling jokes, giving advice, or seeking advice etc.). | 5 | 4 | 3 | 2 | 1 |

The questionnaires used to obtain student background data, CEQ, R-SPQ-2F, student learning outcomes, and the PELCQ, including all the instructions given to the students are presented in Appendix A.

### Administration and Data Collection

Extensive travelling to five PHEI at various locations was required. After agreeing on suitable dates and times with students' lecturers and upon arrival at the college, the lecturers introduced me to the students where I briefly described my study, explained the format of my questionnaires, and also indicated the importance of the students' voluntary responses. However, due to time constrains and difficulty of travelling to College E, a lecturer from College E conducted the administration and collection of the questionnaire for me. The lecturer was requested to say the following prior to distributing the questionnaire:

> Students, this survey is to help us better understand how you approach your studies and also to expand our understanding of your learning environment. However, the survey is strictly on a voluntary basis, therefore, if you do not wish to participate, you may leave the hall/classroom now. Thank you.

College E then sent by post the completed questionnaire to my home address.

The questionnaire was administered to students from the twinning programmes from the British university in late February 2003 when students returned from their vacation break and were already into their sixth week of studies in PHEI. Students from the twinning programmes of Australian universities in PHEI were administered the questionnaire during the first four weeks of the new semester in March 2003. I handed the questionnaire to students forty-five minutes before the end of the class or lectures, and students who volunteered completed the questionnaire before leaving the lecture hall or class room.

Students were given the option to provide their contact details such as name, mobile and telephone numbers, and email addresses if they decided to volunteer for the qualitative part of this study. There was no time limit for the completion of the questionnaires, however on average they took approximately 35 minutes.

After collecting the completed questionnaires from each PHEI, I then keyed in the student identification number into Microsoft Excel spreadsheet, and sent them through email to the respective college's Academic and Examination Department. The academic achievement records of students were similarly sent to me through email. Questionnaires were subsequently sorted, based on their academic disciplines, into Sciences (engineering and computing) and Business (commerce, accounting, and finance) and the data keyed into a computer. Questionnaires were discarded if it was found they were incomplete or when there was more than one choice or answers made to the Likert-scale and self-rating responses.

In Part 2 of this Portfolio, I present an analysis of the reliability and validity of the questionnaires that I used in the quantitative section of the study.

## Qualitative Methods

Qualitative data were collected by means of semi-structured interviews with participant students who volunteered for this aspect of the study. There was initial apprehension that there would be a big concentration of students who volunteered coming from the same PHEI, but fortunately, the sample turned out to be fairly diverse in respect of gender, ethnicity, age, and a good distribution from the six PHEI. There was, however, a larger representation of deep approach learners over surface approach learners. A total of 72 students volunteered for the interviews by providing their names, mobile or telephone numbers, and email addresses. All 72 students were contacted and eventually 52 were interviewed. The remaining 20 either declined, citing lack of time or motivation, or their contact numbers and email addresses

provided were not reachable. The sample breakdown of the interviewees is shown in Table PF2.11.

**Table PF2.11**

**Approaches, Gender, Age, and Ethnicity of Student Interview Structure from the Six PHEI**

| | Learning Approaches | | | Gender | | Age | | Ethnicity | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PHEI | Deep | Surface | EScore* | Male | Female | <=21 | >=22 | Malay | Chinese | Indian |
| A | 6 | 4 | 2 | 3 | 9 | 6 | 6 | 1 | 10 | 2 |
| B | 4 | 0 | 0 | 3 | 1 | 1 | 3 | 0 | 4 | 0 |
| C | 13 | 5 | 2 | 12 | 9 | 8 | 13 | 3 | 12 | 4 |
| D | 3 | 2 | 1 | 2 | 4 | 6 | 0 | 1 | 5 | 0 |
| E | 4 | 2 | 0 | 3 | 3 | 2 | 4 | 2 | 0 | 3 |
| F | 4 | 0 | 0 | 2 | 1 | 1 | 2 | 0 | 2 | 1 |

* equal scores of deep and surface approach

### Interview Plan

The plan followed for organising and conducting interviews with students was as follows:

1. A standardised suite of interview questions was formulated based on two underlying intentions: (i) how students go about reading and preparing for various tasks that were related to their studying, for example, events that happened in class or lectures, the different tasks given, assessments, projects, reports that they had to undertake, examinations that they had to do, etc. and (ii) to gauge perceptions of students' learning environments, with questions planned around the scales of the CEQ. However, all questions were further refined in the light of preliminary findings of the questionnaire surveys.

2. Informal mode of conversation was held with students on an individual basis and conducted away from the students' institutions.
3. The findings which emerged from the interviews were documented and collated.

Students were assured of confidentiality and anonymity. On average the interviews lasted 30 to 40 minutes, and took three months to conclude. With the consent of the students, interviews were audio-taped, and I undertook verbatim transcription, usually fairly soon after the interview had taken place.

**Interview Questions**

The semi-structured interview contained both 'warm up' and main questions to guide the course of discussion. 'Warm up' questions provided the opportunity for me to develop rapport with the interviewees. The main questions were designed with the research propositions in mind and to obtain differing and complementary viewpoints from the students about their experiences of studying their chosen course at PHEI, and to examine if there was a link between how students approached their learning, the perceptions they had of their learning environments, and their learning-related outcomes. In addition, the questions allowed the freedom to prompt, probe, and follow up responses for clarification and elaboration.

Generally, students were asked questions that dealt with:

- the approaches they used in their learning;
- learning differences they might perceive based on gender, ethnicity, prior schooling experiences, course type, and age.
- an exploration of their feelings and perceptions of their learning environment such as the teaching strategies used by their lecturers, influential person/s who facilitated their learning or helped in optimising their learning outcomes, and their overall satisfaction with the course and institution;
- elements they would like to see improved to maximise their learning.

The interview questions were:

*Warm-up questions*

1. Why did you choose the 3+0 twinning programme?

2. What factors determined which 3+0 twinning college you finally enrolled in?

*Main questions*

3. I will give you two words; can you tell me what it means to you? 'learning' and 'understanding'.

4. How would you describe yourself and doing your work?

   Additional prompts:

   i. how would you manage your examinations/tests – what approach do you take?
   ii. how about assignments and small group discussions?
   iii. class presentations/laboratory work – how do you prepare for them?
   iv. reading academic materials, are there any strategies you use?

5. What can you say about good teaching and bad teaching within your program? Are there important issues regarding good and bad teaching that you would like to share.

   Additional prompts:

   i. Are there important issues regarding good teaching that you would like to share?
   ii. Are there important issues regarding bad teaching that you would like to share?
   iii. Are there special events that made you enjoy your learning experiences?
   iv. Talking about learning, do you think I am right if I say men and women learn in different ways? What do you think?
   v. I think you are aware that in twinning colleges, there is a mix of students after pre-university and some who are much older who

have decided to return to study. Do you think it is difficult for you to get along because of the age differences and experiences?

6. What do you think about the assessments given to you? By assessments, I mean examinations, tests, your assignments, and your research projects. Are there aspects about the assessments where you are generally happy or unhappy about what you have to do?
   Additional prompt:
   i. Are you generally satisfied with the amount of work you have to do?

7. Do you feel that doing the whole course in the English language is a barrier to you doing well?

8. Were you aware of what was expected of you as a student when you started the course; or at the start of each new subject? (prompts: syllabus; curriculum; expectations of assignments; marking scheme; policy of partner university).

9. What would you prefer the learning environment to be if you could change it in order to maximise your learning?

10. Are you generally satisfied with the learning environment, the college and your course?

11. Is there anything else you would like to add? or Do you have anything else to say?

12. Is there anything you would like to ask me?

**Interview Procedure**

At the start of every interview, I briefly explained the purposes of my study and discussed ethical issues such as anonymity and stressed the interviewees' choice to withdraw from the interview at any point if they so

wished, and obtained permission to tape the interviews. I then began the taped interviews by asking 'warm up' questions that were not pertinent to the study such as asking reasons why they had chosen 3+0 twinning programmes and how they decided on the final choice of PHEI, after which I began the main interview questions in sequence. At certain points of the interviews, following students' responses, when necessary, I followed up with questions to gauge a better understanding of what was said, or to prompt students to reflect on certain terms they had used. Students were given the opportunity to ask me questions at the end of each interview, as I felt this was only fair given the sacrifice of their time and commitment.

All in all, the interviews generated relevant qualitative data in assessing and differentiating students' perceptions of their learning environments and how they went about their learning.

**Management of the Data**

The interview data consisted of typed verbatim transcripts from 52 student interviews. Data management of the interviews and analyses took place in three main steps. Analysis of the interview transcripts from 52 students were aided by the use of Microsoft Word table format.

Step 1
I began to glean through each set of responses and used a method of 'free' and 'open' coding to gauge an idea of common themes that emerged which pertained to students' approaches to learning and their perceptions of learning environments.

Step 2
A more careful analysis was conducted where each response was again re-evaluated and compared using an 'iterative reading and re-reading of transcripts to establish similarities and differences in the responses made' (Entwistle & Marton, 1994, p.166). Therefore, I began to analyse students' approaches to learning in greater detail based on the theoretical constructs of 'learning approaches' by placing down themes, relating them to the

construct, and thus forming an initial set of categories that described the different approaches to learning students adopted. I decided to classify students into their respective approaches by the score that they had obtained from the R-SPQ-2F. Higher scores indicated those who made a greater use of that approach to learning (Biggs, Kember, & Leung, 2001). I found that in the interviews, students were able to both recognise and refer to their own and other students' approaches to learning. Once satisfied with the framework, I looked through all the data and re-assigned passages or wording that indicated the different approaches to learning to each of the categories and formed new groupings within the categories if necessary. At the end of Step 2, there was a good general description of different students' approaches to learning.

Step 3

The next step was to analyse students' perceptions of their learning environments, and to examine the association between approaches and perceptions. At this stage of the analysis, I noticed that students were reporting about what they felt and thought was happening in their chosen course, and also what their reactions were in response. I carefully looked through the data from each interviewee and retrieved information pertaining to perceptions and matched it to the appropriate categories formulated in Step 2.

It was considered important not to inhibit responses to questions developed around the CEQ scales, but to permit students the freedom to express feelings they felt relevant as it related to their learning environments. As a consequence, interviewees were self-reflective and responded on a much wider range that reflected their perceptions and expectations of their own learning processes. The process in Step 3, therefore, necessitated some reformulation and creation of new groupings within the approaches to learning category. It was also necessary to separate the positive comments from the negative and critical comments, and helpful suggestions for improvement. This was done so that an indication of the representation of opinions for each CEQ scale could be gauged, and also to determine what students perceived as a supportive learning environment and those

characteristics they perceived hindered their learning. Sometimes the comments were a mix of how learning environments influenced their learning outcomes, such as a criticism or a praise of a certain teaching practice or event. For example, the following positive comment indicates how learning outcomes were influenced by learning environments:

> It is important how our lecturers encouraged us, and make us understand, some are very dedicated. They always make sure they have time for everyone. I feel now I get better grades and think better. At first when I started college, I studied alone, mostly memorise teacher's handout, my grades were average. (Student 79)

Other words that indicated a similar association were 'gives me confidence', 'have better self-esteem', 'perform better', 'de-motivated me', 'feel like not studying', and 'I fail'.

Responses to the differences in learning based on gender, age, ethnicity, prior school experiences, and English language competency were intermixed with statements made by students when they talked about approaches and perceptions. Therefore, rather than categorising individual characteristics as separate entities, to avoid confusion, I left them within the approaches to learning categories.

Overall, the analysis permitted possible suggestions to explain further the associations between students' individual characteristics, learning environments, and learning approaches and also differentiated the ways these associations operated in the twinning programme context.

## Summary and Conclusion to Part 1 of Portfolio 2

Part 1 of Portfolio 2 presents the methodology and development of the questionnaires that were appropriate for the study. It also provides a justification for the use of the instruments. In addition, Part 1 covers the

sample selection and examines the validity and reliability of the CEQ and R-SPQ-2F developed by Wilson et al. (1997) and Biggs et al. (2001) respectively. Subsequently, it provides a description of the modifications that were made to these instruments for use in the study.

Part 1 also outlines the procedures that were followed to collect and analyse data. The study also used qualitative data to supplement and complement the quantitative data provided by the questionnaires.

In Part 2, I investigate and discuss the validity and reliability of the modified instruments, namely, the CEQ, R-SPQ-2F, and the PELCQ, as used in my study.

# PORTFOLIO 2
## Part 2

## VALIDATION OF THE INSTRUMENTS

### Introduction

The objective of Part 2 of Portfolio 2 was to validate the modified CEQ and R-SPQ-2F in relation to my own data. Reviews of both the instruments in Part 1 indicated that the original CEQ and R-SPQ-2F possess both acceptable validity and reliability, and were acceptable as instruments to be used in higher education. Part 2 provides a description of the quantitative analysis used to support the validity and reliability of the modified CEQ and R-SPQ-2F, when used in Malaysian private higher education institutions under the twinning mode. In addition, it also provides the reliability for the measures of Generic (Process) Skills and the PELCQ for the same group of students.

### Validity and Reliability of the Modified CEQ

#### Factor Analysis

Validation of the modified Course Experience Questionnaire (CEQ) with the sample of 368 students commenced with principal components factor analysis followed by varimax rotation. The CEQ comprised of 17 items in four scales with six items in the Good Teaching Scale, four items in the Clear Goals and Standards Scale, four items in the Appropriate Workload Scale, and three items in the Appropriate Assessment Scale. A combination of the scree test and eigenvalue greater than one rule was used to determine the number of factors to be extracted. As the sample size was more than 300, a slightly more conservative value of 0.45 was chosen for the factor loadings. Table PF2.12 shows the results of the factor loadings for the modified CEQ

questionnaire for the sample of 368 students, along with the percentage of variance extracted for each scale.

**Table PF2.12**

**Factor Analysis of the Modified CEQ**

| Scales | Item No. | Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|---|---|---|---|---|---|
| Good Teaching | 2 | 0.67 | | | |
| | 5 | 0.57 | | | |
| | 10 | 0.76 | | | |
| | 11 | 0.77 | | | |
| | 12 | 0.75 | | | |
| | 14 | 0.72 | | | |
| Appropriate Assessment | 6 | | 0.53 | | |
| | 7 | | 0.73 | | |
| | 13 | | 0.54 | | |
| Clear Goals and Standards | 1 | | | 0.76 | |
| | 4 | | | 0.69 | |
| | 8 | | 0.61 | 0.40* | |
| | 17 | | | 0.48 | |
| Appropriate Workload | 3 | | | | 0.81 |
| | 9 | | | | |
| | 15 | | | | |
| | 16 | | | | |
| % Variance | | 20.81 | 12.45 | 10.82 | 9.40 |

Factor loading of less than 0.45 not shown (see Appendix B for full matrix)
*To demonstrate the lower loading within its own scale

The principal components resulted in a four-factor structure which explained 53.4% of the extracted variance for the four scales. For the Good Teaching Scale, the a priori factor structure was replicated perfectly. Although the items for Appropriate Assessment loaded as expected, item 8 from Clear Goals and Standards also loaded highly on this scale. Three items from the Clear Goals and Standard Scale loaded well on its structure, although item 8 had a loading of less than 0.45 with its own scale (it loaded with 0.40). The positive loading of item 8 ('it was often hard to find out what was expected of me in this course') on the Appropriate Assessment Scale could suggest that students positively associate their inability to understand what was expected of them in their work with that of using memorisation

and factual recall to get through the course. Based on the high positive loading of item 8 on the Appropriate Assessment Scale and the much lower loading onto its own scale, a decision was made to retain item 8 but include it in the Appropriate Assessment Scale. Items from Appropriate Workload did not load as expected with only one item showing significant loadings greater than 0.45, and as a result I omitted this subscale for the study. The factors that were generated from the varimax rotation were labelled: Factor 1 – Aspects of Good Teaching (six items); Factor 2 – Aspects of Appropriate Assessment (four items); Factor 3 – Aspects of Clear Goals and Standards (three items).

### Scale Correlations

One criterion to validate further the CEQ was to examine the relationships between the CEQ scores and an external criterion. One such external criterion used is overall course satisfaction (Ramsden, 1991; Wilson, Lizzio, & Ramsden, 1997; Bryne & Flood, 2003). There was a question which asked students to state the extent of their overall satisfaction with the course. Based on the three factors that were generated from the varimax rotation, the modified CEQ was correlated with overall satisfaction (Table PF2.13). Aspects of Appropriate Assessment had a significant but small correlation with satisfaction while Aspects of Good Teaching and Aspects of Clear Goals and Standards had high associations with the satisfaction scores. That is, the modified CEQ scales showed significant positive correlation with overall satisfaction, supporting, in general, the validity of the final version of the modified CEQ.

**Table PF2.13**

**Scale Correlations with Overall Satisfaction**

| | Aspects of Good Teaching | Aspects of Appropriate Assessment | Aspects of Clear Goals & Standards |
|---|---|---|---|
| Overall Satisfaction | 0.61** | 0.13* | 0.49** |

*$p < 0.05$ **$p < 0.01$

### Internal Consistency

Cronbach alpha reliability was used as an index of scale internal consistency. Table PF2.14 shows the alpha reliability values for the three different scales. The Cronbach alpha reliability for the Appropriate Assessment before adding item 8 was 0.48, and Clear Goals and Standards with four items was 0.47. After the change over of item 8 into the Aspects of Appropriate Assessment Scale, the alpha reliability increased to 0.55, while Aspects of Clear Goals and Standards with three items increased to 0.52.

**Table PF2.14**

**Reliability (Cronbach Alpha Coefficient) before and after Change Over of Item-8**

| | Reliability | |
|---|---|---|
| | *Before Item-8 Change Over* | *After Item-8 Change Over* |
| **Scale** | | |
| Aspects of Good Teaching | 0.82 | 0.82 |
| Aspects of Appropriate Assessment | 0.48 | 0.55 |
| Aspects of Clear Goals and Standards | 0.47 | 0.52 |
| **Overall Reliability** | | 0.73 |

The value of Cronbach's alpha obtained from the present data for the overall reliability of the 13 items of the final version of the modified CEQ was 0.73, which was well within the level of reliability of 0.70, suggested by Watkins and Mboya (1997). The alpha estimates for the Aspects of Good Teaching, Aspects of Appropriate Assessment, and Aspects of Clear Goals and Standards were 0.82, 0.55, and 0.52 respectively. The reliability coefficients for the Aspects of Appropriate Assessment and Aspects of Clear Goals and Standards were lower than the critical value of 0.60 suggested by Nunnally (1978) and Nunnally and Berstein (1994). This is probably related to the fewer items in the two scales, as Lord and Novick (1968) have indicated that the values of alpha are affected by the number of items in a scale. The

number of items in Aspects of Appropriate Assessment and Aspects of Clear Goals and Standards are on the low side. Wiersma (1995) cautioned that although high reliability coefficients are desirable, the length of the test does affect the reliability, in that shorter tests tend to produce lower alpha coefficients. Another factor that affects reliability relates to the construct being measured. Academic achievement tests tend to achieve higher reliability than other inventories, such as attitude measures (Wiersma, 1995). The CEQ in this study is a perceptual inventory. Schmitt (1996) suggested that if the instrument possesses meaningful content coverage of the required domain or attribute, then low reliability may not be a major obstacle to its use. Furthermore, satisfactory levels of alpha depend on test use and interpretation. Schmitt proposed that the use of any cut-off value (including 0.70) is shortsighted, and argued that an alpha value of 0.50 would not attenuate validity coefficients. Taking the above arguments into consideration and the fact that the full length alpha reliability is high, the alpha values for the Aspects of Clear Goals and Standards, and Aspects of Appropriate Assessment, although modest, were considered to be acceptable. For all subsequent analyses, the 13-item modified CEQ was used with an understanding that it would have been preferable to have had higher subscale reliabilities.

## Validity and Reliability of the Modified R-SPQ-2F

### Factor Analysis

Validation of the modified Revised Two-Factor Study Process Questionnaire (R-SPQ-2F) was conducted with factor and item analysis. A factor analysis was used to examine the internal structure of, first, the 10 items of the motive subscales, and then the 10 items of the strategy subscales. Principal components factor analysis with varimax rotation was used to generate factors for the two data sets. A combination of the scree test and the eigenvalue greater than one rule was used to determine the number of factors to be extracted. Table PF2.15 and Table PF2.16 display the results of the principal components factor analysis for the deep and surface motive

and strategy subscales respectively, together with the percentage of variance extracted for each scale. Both sets of results showed clear support for the two factor deep-surface distinction in the approaches to learning construct. The percentage of variance extracted for the motive subscale varies from 21.91 to 22.40 for the two scales, with the total variance accounted for being 44.31%. The percentage of variance extracted for the strategy subscale varies from 18.90 to 20.10 for the two scales, with the total variance accounted for being 41.00%. The factor loadings of the 10 items in the motive subscale and 10 items in the strategy subscale in the instrument support the two factor deep-surface structure of the modified R-SPQ-2F.

**Table PF2.15**

**Principal Components Analysis: Motive Subscale**

| Subscale | Item No. | Factor 1 | Factor 2 |
|---|---|---|---|
| Deep Motive | 1 | 0.73 | |
| | 5 | 0.59 | |
| | 9 | 0.74 | |
| | 13 | 0.66 | |
| | 17 | 0.56 | |
| Surface Motive | 3 | | 0.66 |
| | 7 | | 0.69 |
| | 11 | | 0.62 |
| | 15 | | 0.71 |
| | 19 | | 0.56 |
| % Variance | | 22.40 | 21.91 |

Factor loading of less than 0.45 not shown (refer to Appendix C (1) for full matrix)

**Table PF2.16**

**Principal Components Analysis: Strategy Subscale**

| Subscale | Item No. | Factor 1 | Factor 2 |
|---|---|---|---|
| Deep Strategy | 2 | 0.54 | |
| | 6 | 0.66 | |
| | 10 | 0.67 | |
| | 14 | 0.74 | |
| | 18 | 0.69 | |
| Surface Strategy | 4 | | 0.50 |
| | 8 | | 0.64 |
| | 12 | | 0.67 |
| | 16 | | 0.52 |
| | 20 | | 0.70 |
| % Variance | | 22.10 | 18.90 |

Factor loading of less than 0.45 not shown (refer to Appendix C (2) for full matrix)

### Internal Consistency

Cronbach alpha reliability coefficient was used as an index of scale internal consistency. Cronbach alpha reliability estimate for the 20 items in the questionnaire was 0.72, indicating an acceptable degree of overall internal consistency (Watkins & Mboya, 1997). Scale Reliability of the four subscales (Deep Motive, Deep Strategy, Surface Motive, and Surface Strategy) and of the main scales (Deep and Surface Approach) of the present data is reported in Table PF2.17. Alpha reliability values for the two main scales of Deep Approach (0.80) and Surface Approach (0.77) were fairly high which suggests that each main scale had adequate internal consistency. The alpha values ranged from 0.57 to 0.68 for the four subscales, with a median of 0.67, which exceeds the threshold of 0.60 set by Nunnally (1978) and Nunnally and Bernstein (1994), as being acceptable reliability for research purposes. In addition, all reliability estimates for the subscales were consistent with those obtained by Biggs, Kember, and Leung (2001) and Leung and Kember (2003) for their Hong Kong samples as discussed in Part 1 of Portfolio 2. In fact, the values for the subscales, Deep Motive and Deep Strategy were generally higher than those reported by Biggs et al. (2001) for the original R-

SPQ-2F. For all analyses in the study, the 20-item modified R-SPQ-2F was used.

**Table PF2.17**

**Reliability (Cronbach Alpha Coefficient) Comparisons for the Four Subscales and Two Main Scales**

| | Present Study (n = 368) | Hong Kong undergraduate students (Biggs et al., 2001) (n = 495) | Hong Kong undergraduate students (Leung & Kember, 2003) (n = 402) |
|---|---|---|---|
| *Subscales* | | | |
| Deep motive | 0.68 | 0.62 | 0.60 |
| Deep strategy | 0.68 | 0.63 | 0.62 |
| Surface motive | 0.66 | 0.72 | 0.72 |
| Surface strategy | 0.57 | 0.57 | 0.59 |
| *Main Scales* | | | |
| Deep Approach | 0.80 | 0.73 | not available |
| Surface Approach | 0.77 | 0.64 | not available |

## Reliability of the Generic (Process) Skills and Perceived English Language Competency Questionnaire (PELCQ)

The present study used the Generic Skills Scale adapted from the CEQ (Wilson, Lizzio, & Ramsden, 1997) to assess the development and acquisition of generic competencies learnt in higher education and applied to the work environment. The Scale measures six modes of competency: problem-solving, analytical skills, working as a team member, confidence in unfamiliar problems, written communication, and planning own work. Each of the six items requires the participants to indicate their agreement on a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). The internal consistency reliability (Cronbach alpha coefficient) for the six items of the Generic Skills Scale was 0.79.

In addition, a PELCQ scale made up of five items was developed. The items are related to students' competency in reading, writing, understanding, discussions, and informal conversation within their academic environment. The development of the PELCQ is discussed in Part 1 of Portfolio 2, page 93 and page 110. The scale reliability (Cronbach's alpha coefficient) for the PELCQ scale was 0.83.

Analysis of the data collected from 368 students to examine the internal consistency (alpha reliability) suggested that the reliabilities of the Generic Skills Scale and PELCQ were acceptable.

## Summary and Conclusion to Part 2 of Portfolio 2

The analysis of the four instruments, namely, the modified Course Experience Questionnaire (CEQ), modified Revised Study Process Questionnaire (R-SPQ-2F), the modified Generic Skills Scale, and Perceived English Language Competency Questionnaire (PELCQ) indicated that they were acceptable measures to be used to examine the research propositions in the present study.

In Part 3, I report the results of using the instruments in an analysis of the research propositions.

# PORTFOLIO 2
# Part 3

## QUANTITATIVE ANALYSIS OF PROPOSITIONS

### Introduction

Validation of the various instruments used in the study was reported in Part 2. Part 3 presents the results of examining the five major propositions of the study.

### Examination of the Propositions

#### Proposition 1

Students' individual characteristics (gender, academic discipline, age, and English language competency) are related to the students' perceptions of their learning environments, to the approach they adopt to learning, and to their learning outcomes.

Proposition 1a:

> There are differences in students' perceptions of learning environments, approach to learning, and learning outcomes for male and female students.

***Mean differences between males and females***

Table PF2.18 presents the means on the scales of the modified CEQ, R-SPQ-2F, and learning outcomes for males and females. The results indicated no significant differences between males and females in their perceptions of learning environments.

With regards to learning approaches, the sub-scale means for males and females differed only on the Deep Strategy subscale, with males scoring significantly higher than did females. There were no differences in either the main scale Deep Approach or Surface Approach means between males and females.

Significant differences in learning outcomes were found in Academic Attainment and Satisfaction with Course. Male students had higher attainment scores than did female students. However, female students tended to be more satisfied with their courses than were male students.

**Table PF2.18**

**Differences between Male and Female Students on Learning Environment, Approach to Learning, and Learning Outcomes Scores**

| | Male (n = 184) | | Female (n = 184) | | |
|---|---|---|---|---|---|
| *Variables* | *Mean* | *SD* | *Mean* | *SD* | *t* |
| **Perceptions of Learning Environment** | | | | | |
| *Scales* | | | | | |
| Aspects of Good Teaching | 18.21 | 4.35 | 19.03 | 4.02 | -1.87 |
| Aspects of Appropriate Assessment | 11.34 | 2.55 | 11.27 | 2.40 | 0.30 |
| Aspects of Clear Goals and Standards | 9.58 | 2.00 | 9.78 | 1.87 | -1.00 |
| **Approach to Learning** | | | | | |
| *Subscales* | | | | | |
| Surface Strategy | 10.09 | 3.15 | 10.61 | 2.96 | -1.66 |
| Surface Motive | 11.61 | 3.69 | 12.00 | 3.61 | -1.01 |
| Deep Strategy | 15.39 | 3.56 | 14.42 | 3.62 | 2.57** |
| Deep Motive | 14.90 | 3.66 | 14.62 | 3.63 | 0.75 |
| *Main scales* | | | | | |
| Surface Approach | 21.70 | 6.20 | 22.61 | 5.98 | -1.44 |
| Deep Approach | 30.29 | 6.53 | 29.04 | 6.74 | 1.80 |
| **Learning Outcomes** | | | | | |
| Ratings of Academic Attainment | 2.93 | 0.96 | 2.67 | 0.96 | 2.59** |
| Acquisition of Generic Skills | 21.22 | 3.96 | 21.33 | 3.64 | -0.26 |
| Satisfaction with Course | 3.25 | 0.88 | 3.44 | 0.87 | -2.19* |

*$p < 0.05$ **$p < 0.01$

Proposition 1b:

> There are differences in students' perceptions of learning environments, approach to learning, and learning outcomes for students in science or business courses.

***Mean differences between students in science or business courses***

Table PF2.19 presents the means on the scales of the modified CEQ, R-SPQ-2R, and learning outcomes for students in science or business courses. With respect to students' perceptions of their learning environments, the analysis revealed that those who were in business courses appeared to be more negative about assessment practices. Business students perceived more than did science students that their assessment tested only recall and that there was a greater dependency on memorisation. Academic discipline differences were not significant for Aspects of Good Teaching and Aspects of Clear Goals and Standards.

As Table PF2.19 indicates, there were significant differences in approaches to learning between students undertaking science courses and students undertaking business courses. Statistically significant differences were observed in the two main scales, and three of the four subscales. The results suggest that business students appeared to adopt more surface orientation as reflected in the higher means for both Surface Strategy and Surface Motive, and lower means for Deep Strategy. The business students on the main scale of Surface Approach had higher mean scores while science students had higher mean scores on the Deep Approach main scale. There was no significant difference for students' responses to the intrinsic motivation subscale (deep motive).

With respect to learning outcomes, there was a significant difference between academic attainment of students undertaking science courses and those taking business courses with science, engineering, and computing students having higher academic attainment. The analysis indicated no other significant differences for the other learning outcomes of science or business students.

**Table PF2.19**

**Differences between Science and Business Students on Learning Environment, Approach to Learning, and Learning Outcomes Scores**

| | Science (n = 166) | | Business (n = 202) | | |
|---|---|---|---|---|---|
| *Variables* | *Mean* | *SD* | *Mean* | *SD* | *t* |
| **Perceptions of Learning Environment** | | | | | |
| *Scales* | | | | | |
| Aspects of Good Teaching | 18.71 | 4.60 | 18.55 | 3.85 | 0.35 |
| Aspects of Appropriate Assessment | 10.95 | 2.26 | 11.60 | 2.60 | -2.54** |
| Aspects of Clear Goals and Standards | 9.56 | 1.96 | 9.77 | 1.92 | -1.04 |
| **Learning Approaches** | | | | | |
| *Subscales* | | | | | |
| Surface Strategy | 10.05 | 3.09 | 10.72 | 3.00 | -2.10* |
| Surface Motive | 11.43 | 3.53 | 12.27 | 3.75 | -2.22* |
| Deep Strategy | 15.64 | 3.94 | 14.30 | 3.22 | 3.52*** |
| Deep Motive | 14.96 | 3.73 | 14.59 | 3.57 | 0.97 |
| *Main scales* | | | | | |
| Surface Approach | 21.48 | 6.01 | 22.99 | 6.12 | -2.38** |
| Deep Approach | 30.60 | 7.14 | 28.90 | 6.15 | 2.46** |
| **Learning Outcomes** | | | | | |
| Ratings of Academic Attainment | 3.12 | 0.92 | 2.41 | 0.89 | 7.46*** |
| Acquisition of Generic Skills | 21.36 | 3.64 | 21.17 | 3.99 | 0.48 |
| Satisfaction with Course | 3.25 | 0.86 | 3.42 | 0.87 | -1.84 |

*$p < 0.05$ **$P < 0.01$ ***$p < 0.001$

Proposition 1c:

> There are differences in students' perceptions of learning environments, approach to learning, and learning outcomes for mature and younger students.

***Mean differences between mature and younger students***

Table PF2.20 presents the means on the scales of the modified CEQ, R-SPQ-2R, and learning outcomes for mature and younger students. The t-tests did not indicate any significant differences in mean scores for mature age and

younger students on the learning environment scales or on the learning approach measures.

With respect to learning outcomes, however, the results indicated that mature age students achieved more success academically compared to their younger counterparts. In addition, mature age students showed more satisfaction with their course than did younger students.

**Table PF2.20**

**Differences between Mature and Younger Students on Learning Environment, Approach to Learning, and Learning Outcomes Scores**

| | Mature (n = 200) | | Younger (n = 168) | | |
|---|---|---|---|---|---|
| *Variables* | *Mean* | *SD* | *Mean* | *SD* | *t* |
| **Perceptions of Learning Environment** | | | | | |
| *Scales* | | | | | |
| Aspects of Good Teaching | 18.31 | 4.32 | 18.99 | 4.03 | -1.57 |
| Aspects of Appropriate Assessment | 11.38 | 2.47 | 11.21 | 2.48 | -0.68 |
| Aspects of Clear Goals and Standards | 9.55 | 2.05 | 9.83 | 1.79 | -1.42 |
| **Learning Approach** | | | | | |
| *Subscales* | | | | | |
| Surface Strategy | 10.30 | 2.97 | 10.41 | 3.18 | -0.35 |
| Surface Motive | 11.91 | 3.50 | 11.69 | 3.83 | -0.56 |
| Deep Strategy | 15.08 | 3.60 | 14.70 | 3.65 | -0.98 |
| Deep Motive | 14.73 | 3.66 | 14.80 | 3.63 | 0.21 |
| *Main scales* | | | | | |
| Surface Approach | 22.21 | 5.83 | 22.10 | 6.42 | 0.16 |
| Deep Approach | 29.80 | 6.68 | 29.51 | 6.65 | 0.42 |
| **Learning Outcomes** | | | | | |
| Ratings of Academic Attainment | 2.98 | 0.98 | 2.65 | 0.95 | 3.36** |
| Acquisition of Generic Skills | 21.36 | 3.36 | 21.21 | 4.14 | 0.38 |
| Satisfaction with Course | 3.45 | 0.88 | 3.26 | 0.86 | 2.17* |

*$P < 0.05$ **$P < 0.01$

Proposition 1d:

> There are differences in students' perceptions of learning environments, approach to learning, and learning outcomes for students with low competency, medium competency, and high competency in the English Language.

***Mean differences between students with low competency, medium competency, and high competency in the English Language***

Table PF2.21 presents the means on the scales of the modified CEQ, R-SPQ-2R, and learning outcomes for students with low, medium, and high competency in the English language. In terms of learning environments, there were statistically significant differences in the students' perceptions. Students with low competency perceived their learning environments less positively than did those with high competency. Significant differences were also present between low and medium competency students for Aspects of Good Teaching and Aspects of Clear Goals and Standards, and between medium and high competency students for Aspects of Appropriate Assessment. In general, students who reported lower competency in the English language had a less favourable perception of their learning environments than did those who reported better competency.

With respect to students' approach to learning, the results in Table PF2.21 indicated that there were significant differences between the means of the three language competency groups for the subscales of Surface Strategy, Surface Motive, Deep Motive, and the main scale of Surface Approach. Students with low and medium competency expressed greater Surface Strategy than did the high competency group, with no significant differences between the low and medium competency groups. The low competency group also showed greater Surface Motive compared to medium and high competency groups, and there were significant differences between medium and high competency students on Surface Motive. Medium competency students indicated lower Deep Motive. Overall, students with lower English language competency tended to have surface approaches to learning.

Finally, for learning outcomes, there was a significant difference between low and high competency groups for Ratings of Academic Attainment. Students who reported lower competency in their English language had lower attainment scores than did those with higher competency. For Acquisition of Generic Skills and Satisfaction with Course, significant differences were found between low, medium, and high competency groups. Generally, those students who had lower competency indicated poorer acquisition of generic skills, and were less satisfied with their course.

**Table PF2.21**

**Differences between Low Competency, Medium Competency, and High Competency on Learning Environment, Approach to Learning, and Learning Outcomes Scores**

| *Variables* | *Mean* | *SD* | *df* | *t* |
|---|---|---|---|---|
| **Perceptions of Learning Environment** | | | | |
| *Scales* | | | | |
| Aspects of Good Teaching | | | | |
| LC | 17.23 | 3.51 | -1.40 | -2.66** |
| MC | 18.63 | 3.78 | | |
| LC | 17.23 | 3.51 | -2.10 | -3.35** |
| HC | 19.33 | 4.75 | | |
| MC | 18.63 | 3.78 | -0.65 | -1.30 |
| HC | 19.27 | 4.73 | | |
| Aspects of Appropriate Assessment | | | | |
| LC | 10.74 | 1.99 | -0.34 | -1.05 |
| MC | 11.08 | 2.37 | | |
| LC | 10.74 | 1.99 | -1.08 | -3.05** |
| HC | 11.83 | 2.70 | | |
| MC | 11.08 | 2.37 | -0.75 | -2.53** |
| HC | 11.83 | 2.71 | | |
| Aspects of Clear Goals and Standards | | | | |
| LC | 8.88 | 1.52 | -0.82 | -3.37** |
| MC | 9.69 | 1.79 | | |
| LC | 8.88 | 1.52 | -1.19 | -4.24** |
| HC | 10.07 | 2.16 | | |
| MC | 9.69 | 1.79 | -0.38 | -1.63 |
| HC | 10.07 | 2.17 | | |
| **Approach to Learning** | | | | |
| *Subscales* | | | | |
| Surface Strategy | | | | |
| LC | 11.35 | 2.81 | 0.79 | 1.90 |
| MC | 10.56 | 2.99 | | |
| LC | 11.35 | 2.81 | 1.73 | 4.04** |
| HC | 9.62 | 3.10 | | |
| MC | 10.56 | 2.99 | 0.93 | 2.61** |
| HC | 9.63 | 3.10 | | |

| | | | | |
|---|---|---|---|---|
| Surface Motive | | | | |
| LC | 13.18 | 3.16 | 1.25 | 2.55** |
| MC | 11.93 | 3.59 | | |
| LC | 13.18 | 3.16 | 2.20 | 4.32** |
| HC | 10.98 | 3.74 | | |
| MC | 11.93 | 3.59 | 0.92 | 2.15* |
| HC | 11.01 | 3.74 | | |
| Deep Strategy | | | | |
| LC | 14.41 | 3.26 | -0.41 | -0.88 |
| MC | 14.82 | 3.37 | | |
| LC | 14.41 | 3.26 | -0.85 | -1.57 |
| HC | 15.25 | 4.01 | | |
| MC | 14.82 | 3.37 | -0.40 | -0.92 |
| HC | 15.22 | 4.00 | | |
| Deep Motive | | | | |
| LC | 14.43 | 3.33 | 0.12 | 0.26 |
| MC | 14.31 | 3.36 | | |
| LC | 14.43 | 3.33 | -0.97 | -1.80 |
| HC | 15.40 | 3.99 | | |
| MC | 14.31 | 3.36 | -1.05 | -2.45* |
| HC | 15.36 | 3.96 | | |
| *Main scales* | | | | |
| Surface Approach | | | | |
| LC | 24.53 | 5.33 | 2.04 | 2.50** |
| MC | 22.49 | 5.95 | | |
| LC | 24.53 | 5.33 | 3.93 | 4.63** |
| HC | 20.60 | 6.22 | | |
| MC | 22.49 | 6.22 | 1.85 | 2.60** |
| HC | 20.64 | 5.95 | | |
| Deep Approach | | | | |
| LC | 28.84 | 5.84 | -0.29 | -0.34 |
| MC | 29.13 | 6.02 | | |
| LC | 28.84 | 5.84 | -1.81 | -1.81 |
| HC | 30.65 | 7.55 | | |
| MC | 29.13 | 7.51 | -1.45 | -1.82 |
| HC | 30.57 | 6.02 | | |
| **Learning Outcomes** | | | | |
| Ratings of Academic Attainment | | | | |
| LC | 2.58 | 0.92 | -0.19 | -1.42 |
| MC | 2.77 | 0.92 | | |
| LC | 2.58 | 0.92 | -0.36 | -2.54** |
| HC | 2.94 | 1.04 | | |
| MC | 2.77 | 0.92 | -0.18 | -1.55 |
| HC | 2.94 | 1.04 | | |
| Acquisition of Generic Skills | | | | |
| LC | 19.50 | 3.15 | -1.76 | 3.70** |
| MC | 21.26 | 3.43 | | |
| LC | 19.50 | 4.14 | -2.70 | -4.92** |
| HC | 22.20 | 3.15 | | |
| MC | 21.26 | 3.43 | -0.91 | -2.05* |
| HC | 22.17 | 4.14 | | |
| Satisfaction with Course | | | | |
| LC | 3.00 | 0.72 | -0.32 | -2.94** |
| MC | 3.32 | 0.79 | | |
| LC | 3.00 | 0.72 | -0.55 | -4.28** |
| HC | 3.55 | 0.97 | | |
| MC | 3.32 | 0.79 | -0.23 | -2.18* |
| HC | 3.55 | 0.98 | | |

**p< 0.05 **p<0.01*

LC - Low Competency MC - Medium Competency HC - High Competency

## Summary of Key Findings for Proposition 1

***Perceptions of Learning Environment***

- Students from business courses had more negative perceptions of assessment practices than did students from science courses.
- Students with higher English language competency had more favourable perceptions of their learning environments than did students with lower competency in the language.

***Approach to Learning***

- Students from science courses had deeper approaches to learning than did students from business courses.
- Students who reported higher English language competency had deeper approaches to learning than did students with lower competency in the language.

***Learning Outcomes***

- Male students had higher academic attainment scores than did female students.
- Female students had greater overall satisfaction with their course than did male students.
- Students from science courses had higher academic attainment scores than did students from business courses.
- Mature age students had higher academic attainment scores than did younger students.
- Mature age students were more satisfied with their courses than were younger students.
- Students with higher English language competency had higher academic attainment scores than did students with lower competency in the language.
- Students with higher English language competency indicated better acquisition of generic skills than did students with lower competency in the language.

- Students with higher English language competency were more satisfied with their course than were students with lower competency in the language.

These initial findings supported, in part, the general proposition that: Students' individual characteristics (gender, academic discipline, age, and English language competency) are related to the students' perceptions of their learning environments, to the approach they adopt to learning, and to their learning outcomes.

**Proposition 2**

Deep approach to learning is associated with more positive perceptions of the learning environment while a surface approach to learning is associated with less favourable perceptions of the learning environment.

Table PF2.22 provides the results of: (i) the simple correlation analysis of relationships between each approach to learning measure and each learning environment scale, and (ii) the multiple regression analyses of the associations between the approach to learning measures and the three learning environment scales.

The results of the simple correlations showed that deep approaches to learning had positive significant associations with Aspects of Good Teaching and Aspects of Clear Goals and Standards. In contrast, surface approaches to learning had negative significant correlations with Aspects of Good Teaching, Aspects of Clear Goals and Standards, and Aspects of Appropriate Assessment. That is, the results indicated that deep approaches to learning were related to learning environments that students perceived as having aspects of good teaching and clear goals and standards, while surface approaches to learning were related to learning environments where students had unfavourable perceptions of aspects of good teaching, clear goals and standards, and appropriate assessment practices.

The multiple correlations indicated that Aspects of Good Teaching and Aspects of Clear Goals and Standards combined to be related to a medium amount (10%) of the variance in deep approach to learning scores. In addition, the multiple regression analysis indicated that perceptions of inappropriate assessment practices were related to surface approaches, after taking into account the other environment predictors.

**Table PF2.22**

**Simple Correlations and Multiple Regression for Relationships Between Perceptions of Learning Environments and Approach to Learning**

| | **Deep Approach** | | **Surface Approach** | |
|---|---|---|---|---|
| **Perceptions of Learning Environment** | *r* | *β* | *r* | *β* |
| Aspects of Good Teaching | 0.24** | 0.14** | -0.25** | -0.10 |
| Aspects of Appropriate Assessment | 0.03 | 0.18 | -0.31** | -0.31*** |
| Aspects of Clear Goals and Standards | 0.29** | 0.23*** | -0.11* | -0.10 |
| Multiple *R* | | 0.32*** | | 0.33*** |
| $R^2$ | | 0.10 | | 0.11 |
| Effect Size | | 0.11[a] | | 0.11[a] |

**p < 0.05 **p < 0.01 ***p < 0.001*

Effect size: [a] medium

## Summary of Key Findings for Proposition 2

- Deep approaches to learning were associated with students' perceptions of aspects of good teaching and aspects of clear goals and standards.
- Surface approaches to learning were associated with students' perceptions of inappropriate assessment practices.

These initial findings provided general support for the proposition that: Deep approach to learning is associated with more positive perceptions of the

learning environment while a surface approach to learning is associated with less favourable perceptions of the learning environment.

**Proposition 3**

Deep approach to learning is related to more positive learning outcomes then is a surface approach to learning.

Table PF2.23 provides the results of: (i) the simple correlation analysis of relationships between each learning outcome measure and approach to learning scales, and (ii) the multiple regression analyses of the associations between approaches to learning and each learning outcome.

The results of the simple correlation analysis indicated that deep approaches to learning had a positive association with academic attainment, acquisition of generic skills, and satisfaction with course. In contrast, surface approaches to learning had negative associations with the three outcome measures. That is, the results indicate that students who adopted deep approaches to learning had higher academic success, better acquisition of generic skills, and were generally more satisfied with their course than were students who adopted surface approaches to learning.

In addition, the findings showed a small multiple correlation between students' approaches to learning and students' academic attainment *($R^2$* = 4%, Effect size = 0.04), a medium association with acquisition of generic skills ($R^2$ = 14%, Effect size = 0.16), and a medium association with satisfaction with course ($R^2$ = 10%, Effect Size = 0.11). The $\beta$ weights indicated that deep approaches to learning were associated with students' higher academic attainment, better acquisition of generic skills, and their satisfaction with the course. In contrast, surface approaches to learning were related to students' poorer acquisition of generic skills and reduced satisfaction with the course.

**Table PF2.23**

**Simple Correlations and Multiple Regression for Relationships Between Approach to Learning and Learning Outcomes**

| | Academic Attainment | | Acquisition of Generic Skills | | Satisfaction with Course | |
|---|---|---|---|---|---|---|
| **Approach to Learning** | *r* | *β* | *r* | *β* | *r* | *β* |
| Deep Approach | 0.16** | 0.15** | 0.32** | 0.30*** | 0.24** | 0.22** |
| Surface Approach | -0.11* | -0.10 | -0.22** | -0.19*** | -0.18** | -0.16** |
| Multiple *R* | | 0.19** | | 0.37*** | | 0.28*** |
| $R^2$ | | 0.04 | | 0.14 | | 0.10 |
| Effect Size | | 0.04[a] | | 0.16[b] | | 0.11[b] |

**p < 0.05 **p < 0.01 ***p < 0.001*

Effect size: [a] small [b] medium

## Summary of Key Findings for Proposition 3

- Deep approaches to learning were associated with students' successful academic attainment, better acquisition of generic skills, and greater satisfaction with the course.
- Surface approaches to learning were associated with students' poorer acquisition of generic skills, and lower satisfaction with the course.

These initial findings provided general support for the proposition that: Deep approach to learning is associated to more positive learning outcomes then is a surface approach to learning.

## Proposition 4

Students' individual characteristics, positive perceptions of learning environments, and deep approach to learning combine to have large associations with students' learning outcomes.

Table PF2.24 presents three regression analyses which examine relations among students' individual characteristics, perceptions of learning

environments, approaches to learning, and the learning outcomes of students' academic attainment, acquisition of generic skills, and satisfaction with the course.

The results indicated that students' choice of academic discipline, high English language competency, and approaches to learning combined to have a medium association with academic attainment scores ($R^2$ = 19%, Effect size = 0.23). For acquisition of generic skills, high English Language Competency, positive perceptions of aspects of good teaching, clear goals and standards, and approaches to learning combined to be related to a large amount of variance ($R^2$ = 39%, Effect size = 0.63). In addition, the three environment scales combined to have a large association with students' satisfaction with course scores ($R^2$ = 46%, Effect Size = 0.85). There were no associations between gender, age, and any of the learning outcomes, after taking into account the other predictors. Similarly, there was no association between perceptions of learning environment and academic attainment. Deep approaches to learning were related positively to academic attainment and acquisition of generic skills while surface approaches had negative associations with these outcomes.

**Summary of Key Findings for Proposition 4**

The predictors combined to have a medium association with students' academic attainment and large associations with acquisition of generic skills and satisfaction with course. That is, these findings supported, in part, the general proposition that: Students' individual characteristics, positive perceptions of learning environments, and deep approach to learning combine to have large associations with students' learning outcomes

**Table PF2.24**

**Results of Multiple Regression Analyses with Individual Characteristics, Perceptions of Learning Environment, and Approach to Learning as Predictors of Learning Outcomes**

| | Academic Attainment | | | Acquisition of Generic Skills | | | Satisfaction with Course | | |
|---|---|---|---|---|---|---|---|---|---|
| *Variables* | *b* | *β* | *t* | *b* | *β* | *t* | *b* | *β* | *t* |
| **Individual Characteristics** | | | | | | | | | |
| Gender (male = 1) | 0.02 | 0.01 | ns | 0.32 | 0.04 | ns | -0.04 | -0.02 | ns |
| Academic Discipline (science = 1) | 0.71 | 0.36*** | 6.80 | 0.42 | 0.06 | ns | -0.12 | -0.10 | ns |
| Age (less or equal to 21 = 1) | 0.13 | 0.06 | ns | -0.29 | -0.04 | ns | 0.06 | 0.03 | ns |
| English Language Competency | 0.05 | 0.15*** | 3.00 | 0.15 | 0.13** | 2.84 | 0.02 | 0.10 | ns |
| **Perceptions of Learning Environment** | | | | | | | | | |
| Aspects of Good Teaching | -0.01 | -0.03 | ns | 0.26 | 0.28*** | 5.99 | 0.10 | 0.48*** | 10.76 |
| Aspects of Appropriate Assessment | -0.02 | -0.04 | ns | -0.03 | -0.01 | ns | 0.04 | 0.10** | 2.47 |
| Aspects of Clear Goals and Standards | -0.02 | -0.03 | ns | 0.58 | 0.29*** | 6.07 | 0.10 | 0.23*** | 4.96 |
| **Approach to Learning** | | | | | | | | | |
| Deep Approach | 0.02 | 0.16** | 2.84 | 0.08 | 0.15*** | 3.16 | 0.01 | 0.06 | ns |
| Surface Approach | -0.02 | -0.10* | -1.97 | -0.07 | -0.11** | 2.50 | -0.01 | -0.04 | ns |
| Multiple *R* | | 0.44*** | | | 0.62*** | | | 0.68*** | |
| $R^2$ | | 0.19 | | | 0.39 | | | 0.46 | |
| Effect Size | | 0.23[a] | | | 0.63[b] | | | 0.85[b] | |

**p<0.05 **p<0.001 ***p<0.001 ns – non significant*
Effect size: [a] medium [b] large

**Proposition 5**

Students' approaches to learning mediate the relationships between individual characteristics, perceptions of learning environments, and learning outcomes.

Multistage regression analysis was used to examine to what extent approaches to learning mediated relationships between students' individual characteristics, perceptions of learning environments, and learning outcomes. In the first stage, relations were examined between individual characteristics, perceptions of learning environments and learning outcomes, while the second stage included the approaches to learning measures. For both models, the unstandardised and standardised regression coefficients are shown. The unstandardised regression coefficients were presented to show possible mediation effects, as Clogg, Petkova, and Haritou (1995) indicated that the appropriate test of attenuation between models is to examine differences in unstandardised weights with adjustments being made to standard errors. Partial mediation would be indicated if the relationships between individual characteristics, perceptions of learning environments, and learning outcomes were reduced but remained significant when associations involving the learning approach variables and outcomes measures are taken into account. Full mediation would occur if initial significant relations in stage 1 became non-significant after adding the approach to learning measures.

The results in Table PF2.25 indicated that the initial relationships for each outcome remained unmediated by the addition of approaches to learning variables. That is, approaches to learning acted independently from the other predictors in the analyses.

**Summary of Key Findings for Proposition 5**

The associations between individual characteristics, perceptions of learning environments, and learning outcomes remained unmediated by the a of approaches to learning variables.

## Table PF2.25

### Unstandardised and Standardised Regression Coefficients for Associations Between Individual Characteristics, Perceptions of Learning Environment, and Learning Outcomes

| | Academic Attainment | | | | Acquisition of Generic Skills | | | | Satisfaction with Course | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Model 1 | | Model 2 | | Model 1 | | Model 2 | | Model 1 | | Model 2 | |
| *Variables* | *b* | *β* | *b* | *β* | *b* | *β* | *b* | *β* | *b* | *β* | *b* | *β* |
| **Individual Characteristics** | | | | | | | | | | | | |
| Gender (male = 1) | 0.04 | 0.02 | 0.02 | 0.01 | 0.36 | 0.05 | 0.32 | 0.04 | -0.03 | -0.02 | -0.04 | -0.02 |
| Academic Discipline (science = 1) | 0.73 | 0.37*** | 0.71 | 0.36*** | 0.39 | 0.05 | 0.42 | 0.06 | - 0.11 | -0.06 | -0.12 | -0.10 |
| Age (less and equal to 21 = 1) | 0.12 | 0.06 | 0.13 | 0.06 | -0.32 | -0.04 | -0.29 | -0.04 | 0.06 | 0.03 | 0.06 | 0.03 |
| English Language Competency | 0.06 | 0.17*** | 0.05 | 0.15*** | 0.17 | 0.15*** | 0.15 | 0.13** | 0.02 | 0.07 | 0.02 | 0.10 |
| **Perceptions of Learning Environment** | | | | | | | | | | | | |
| Aspects of Good Teaching | -0.00 | -0.01 | -0.01 | -0.03 | 0.28 | 0.31*** | 0.26 | 0.28*** | 0.10 | 0.49*** | 0.10 | 0.48*** |
| Aspects of Appropriate Assessment | -0.01 | -0.02 | -0.02 | -0.04 | 0.03 | 0.02 | -0.03 | -0.01 | 0.04 | 0.11** | 0.04 | 0.10** |
| Aspects of Clear Goals and Standards | -0.00 | -0.01 | -0.02 | -0.03 | 0.64 | 0.33*** | 0.58 | 0.29*** | 0.11 | 0.24*** | 0.10 | 0.23*** |
| **Approach to Learning** | | | | | | | | | | | | |
| Deep Approach | | | 0.02 | 0.16** | | | 0.08 | 0.15*** | | | 0.01 | 0.06 |
| Surface Approach | | | -0.02 | -0.10* | | | -0.07 | -0.11** | | | -0.01 | -0.04 |
| Multiple *R* | 0.41*** | | 0.44*** | | 0.59** | | 0.62*** | | 0.67*** | | 0.68*** | |
| $R^2$ | 0.17 | | 0.19 | | 0.35 | | 0.39 | | 0.45 | | 0.46 | |
| Effect size | 0.20[a] | | 0.23[a] | | 0.54[b] | | 0.60[b] | | 0.82[b] | | 0.85[b] | |

*$p<0.05$ **$p<0.001$ ***$p<0.001$

Effect size: [a] medium [b] large

## Summary and Conclusion to Part 3 of Portfolio 2

Part 3 has presented the quantitative analysis of the propositions of the study. In general, the analyses suggest that:

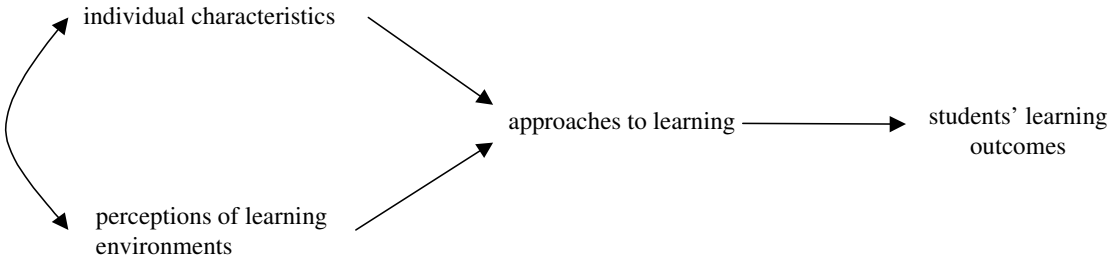
a. Students' individual characteristics are associated with students' perceptions of their learning environments, the approaches to learning they adopt, and to their learning related outcomes.

b. Deep approaches to learning are related to students' perceptions of good teaching and provision of clear goals and standards, and conversely, surface approaches to learning are associated with students' perceptions of poor teaching, the lack of clear goals and standards, and appropriate assessment practices. It would appear that the strongest predictors of students adopting deep approaches to learning are their perceptions of the quality and presence of good teaching, clear goals and standards, and the appropriateness of their assessment practices.

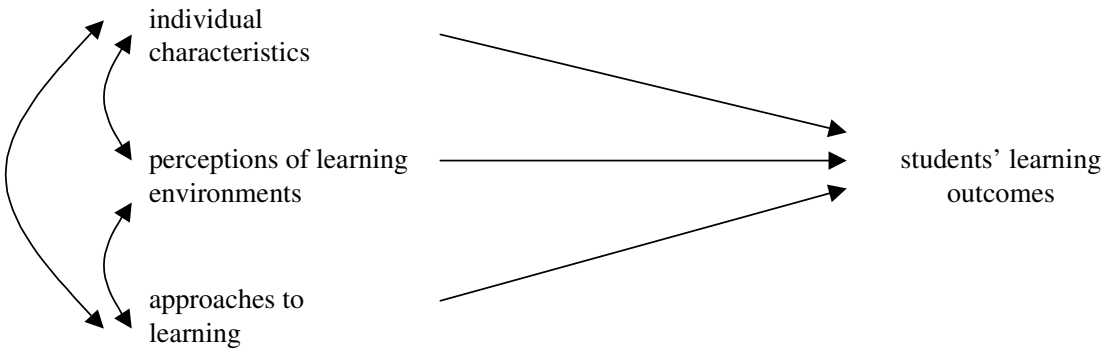
c. Deep approaches to learning are associated with students' positive academic attainment, acquisition of generic skills, and satisfaction with course while surface approaches are associated with lower academic attainment, poorer acquisition of generic skills and reduced satisfaction with course. That is, deep approaches to learning contributed positively to all students' learning outcomes, while surface approaches contributed negatively to students' academic attainment, acquisition of generic skills and satisfaction with course.

d. Students' learning outcomes are associated directly with students' individual characteristics and their perceptions of the learning environments but the relationships are not mediated by their learning approaches.

In Part 3 of Portfolio 1, I suggested a research model which proposed that approaches to learning mediate relationships between individual characteristics, students' perceptions of learning environments, and their learning outcomes. That is, I proposed a research model of the following form:




The analysis that I have just presented suggests, however, that a more appropriate model may be of the following form:




That is, approaches to learning may be considered to be a variable with the same explanatory status as students' individual characteristics and their perceptions of learning environments, and not as a separate mediating variable.

In Part 4, I examine students' individual characteristics, students' perceptions of the learning environments, and students' learning approaches in further detail, reporting results of the qualitative analysis of the data.

# PORTFOLIO 2
## Part 4

## QUALITATIVE ANALYSIS OF PROPOSITIONS

### Introduction

Part 4 contains an interpretation of the qualitative data collected through interviews of students from the six PHEI participating in this study. Details on the collection and analysis of the qualitative data are provided in Part 1 of this portfolio.

As part of the analysis, I began with the premise that approaches to learning are not defined in terms of actions but as students' intentions behind those actions to employ deep or surface approaches (Biggs, 2001; Biggs & Moore, 1993). Two qualitatively different approaches to learning as they relate to students in PHEI were identified based on students' self-reflective data. The student data also provided a description of what the students said they were doing in the context of PHEI learning. There were many cases where students used the word 'understand' and 'cannot understand', however it does not necessarily mean that students who said they 'understand' were adopting deep approaches to learning. Therefore, to determine students' approaches, I looked at statements and discussions made by them which could infer their particular approaches. First, I looked at whether students were able to demonstrate an awareness of a particular process and second, whether they sought to identify a particular strategy towards their eventual approaches.

In addition, because the interview results were related to the CEQ scales, I found that interview responses to the Appropriate Workload Scale reflected elements of the other three CEQ scale structures. This did not come as a surprise as from Part 2, it was found that the Appropriate Workload Scale

did not load according to its structure in the principal components analysis, and was omitted from use in the quantitative analysis. Therefore interview responses of Appropriate Workload Scale were included under the other three scales, thus enabling the presentation of the interview findings to be consistent with the analysis of the questionnaire results.

Data that inform the approach to learning categories are discussed with representative quotes from the interviews. To provide a realistic insight, data from the interview were not edited, but rather presented in verbatim form. However, interviews that were spoken in Bahasa Melayu (Malay language) or the Chinese Hokkien dialect (Fujian province in China) were translated as best as possible so that the original meanings were not lost. There were several cases during the interviews where the English language was interspersed with Bahasa Melayu or Hokkien lingo as a way of expressing a meaning. In such cases, the original transcription was retained and presented with an English translation in parentheses. Therefore, as much as possible, students' responses were presented as they were spoken, to reflect a realistic picture of students' approaches and perceptions.

In the next sections, I present my analysis of the qualitative data to examine my research propositions. However, as explained in Part 1, some of the interviewees responded on a much wider scale that indicated their expectations and awareness of their own learning processes; consequently other issues emerged that went beyond the research propositions. Therefore, discussion of the qualitative data is presented under headings that are wider and broader, but inform the research propositions. It should be noted that Proposition 4 and Proposition 5 were not included in the qualitative analysis. Proposition 4 consists of variables that were examined in Propositions 1, 2, and 3, whereas Proposition 5 was concerned with testing the statistical relationships in the research model.

# PORTFOLIO 2
## Part 4A

## QUALITATIVE ANALYSIS OF PROPOSITIONS

### Students' Individual Characteristics, Perceptions of Learning Environments, Approaches to Learning, and Learning Outcomes

Part 4A reports on the findings related to Proposition 1: Students' individual characteristics (gender, academic discipline, age, and English language competency) are related to the students' perceptions of their learning environments, to the approach they adopt to learning, and to their learning outcomes.

The findings are presented according to four subgroups of students' individual characteristics. The first subgroup dealt with differences between the gender of students and their perceptions of learning environments, approaches to learning, and learning outcomes. This is followed by students' academic discipline, age, and English language competencies. Other aspects that were not directly related to the propositions, that is differences in learning found between students from Chinese schools and those from National schools; and learning perceptions of the different ethnic groups were included as it was considered potentially significant to PHEI learning. This resulted in additional subgroups to represent the students' responses as best as possible.

#### Gender

The interview data did not provide much evidence of differences in how male and female students perceived their learning environments. There was no mention that students were treated differently by their lecturers or tutors because they were male or female. Female students did not report any

alienation in mostly male engineering classes. However, one interesting feature was that mostly female students tended to report greater need for encouragement and support from their friends as reflected by the following responses.

> My friends are very important in influencing me in how I do well or not. I actually didn't really know how to study at that time; I was new in the college. I was tensed up and don't really know people, no friends then. I was stressed up then. Then I met some friends and we got along well, they help me adjust to the new ways in college. (Student 31, DA)[1]

> My friends are an influence in my learning; they will encourage and motivate me. (Student 150.58, SA)

> The one person who encouraged me is my friend, he encouraged me to do the assignments, and at the same time he taught me how to do it. … For this particular subject, my friend is an influence in my learning and very important. (Student 150.56, SA)

> If we hang out with friends who study a lot, like to be in the library, like to do well, I will be motivated to do the same. … We encourage each other, motivate each other to start studying especially when we see if our friends are still playing around. Like say towards the exams and say for example one of us is fooling around, one will go, 'do you want to screw up your exam?' we will be like, okay I think I better start studying for the exam. (Student305, DA)

In relation to how male and female differed in their approaches to learning, male students spoke of their female friends using more memorisation techniques for most of their subjects. However, the interview data did not indicate whether male students preferred a deeper level of understanding towards their subject matter. The following quotes by two male students nicely summarize perceptions made by male students of their female counterparts.

[1] The bracketed data indicate the student's ID and approach to learning as identified from the R-SPQ-2F (DA, deep approach; SA, surface approach; ES, equal scores of deep and surface approach)

> I hate to memorise, like some girls, they are really good at memorising, it gives me a headache. Take for example computer security; it is more challenge to understand how the layers of security work than just remember what is there. It will be more relevant to me later at work. Some students, I find mostly the girls, must remember and memorise everything. They memorise and when they are asked to explain the faults, they cannot, since they only memorise without understanding how and why it works. (Student 39, DA)

> If they [..referring to his female friends..] cannot understand something, they will just memorise, really mug and slog. (Student 26, DA)

References were also made by male students that female students were more hardworking and more particular about their work.

> The girls are very hardworking, they are more careful and fussy. I like to borrow their notes, systematic like, points properly underlined, don't miss anything from lecturer's talk, they sit in front, listen carefully. The boys always choose the back seat. (Student 158, DA)

> It is understood from long time ago; girls are more hardworking and work much harder than us. I think they are careful about everything, we don't see the small things, they do, must be careful with them sometimes, quite sensitive like. They are more affected, take for example, if we fail something, we are not so down, we will laugh, joke a bit. I see it in my girlfriend really feel bad for a long time. (Student 26, DA)

Student 21, a female computer science student appeared to confirm the differences as perceived by male students:

> When we do programming, the guys just go into the actual programming on the computer, experiment a bit with the codes, we will write out the algorithms in paper first, we like to follow the process properly. (Student 21, DA)

In addition, that female students indicated that they enjoyed their tertiary experiences because of the friendships they had cultivated was best expressed by the following female student:

> Learning in private college is pretty good. You're basically on your own and can do pretty much what you like. The different kinds of people I meet is exciting, I enjoy the mixing around. (Student 305, DA)

The analysis of the student interviews with regards to gender did not indicate that being female appeared to overly affect the students. Female students were perceived by the male students to rely on memorisation for their work, as more persevering, more organised, and more cautious. Female students appeared to enjoy their tertiary experiences better than male students possibly because of the friendships cultivated which provided a support structure. There did not seem to be a clear indication of a relationship between gender and learning outcomes from the interview data.

**Academic Discipline**

Many of the interviewees, both from the business and science courses were critical in their comments regarding their learning environments and placed great importance on effective teaching and learning. There did not appear to be any great demarcation between how business or science students perceived their learning environments, in fact their interview responses showed similarity in their perceptions. Therefore, the issue of the influence of learning environments will be taken up in greater detail under Proposition 2.

However, various comments with regards to learning approaches tended to suggest that science students preferred a deeper conceptual understanding of their science or technical related subjects. Possibly science students tended to adopt more deep approaches due to their perceived need to understand concepts in their work environment. In addition, practical sessions in the laboratory encouraged the students to relate what they have learnt in theory into practice. The following quotes are good examples of science students' sentiments to reflect such perceptions.

> Some of the employers have mentioned to my friends that a lot of students who go out to look for jobs are so result oriented that they only try very hard to obtain A's, but it does not mean

> they know what is needed in the work place or how to work the equipments there. They [..referring to students..] should perform in the work place, know how to use what they learn. (Student 138, DA)

> I will apply the theory from what I understand; you cannot remember all that you read, right? …The important things are to fully understand, then rely on our own knowledge to write. It is useful the next time you come face to face with situations that are realistic, like when I start working or something. (Student 189, DA)

> We have an advantage, we get to see what can happen in the labs, so it is more interesting. … The words we read in text book can become more real like. (Student 108, DA)

Business students on the other hand, spoke of relying more on rote-learning because of the numerous amounts of theory and reading materials related to their subjects.

> Most of the time, they do not understand the theories, so better to memorise just in case. … In my course, there are so many theories, it is also confusing, don't know which theory is correct, some are alike, pure memorising is not safe. … Still remember some good sentences can help. (Student 210, DA)

> It is confusing to read so much, and there are times when the definitions are alike from other business subjects, so we can get confused. I know a bit here and a bit there, sometimes I feel. They are very subjective and there are certain theory you don't really understand. But it is important to understand why it is there, still, we must remember terms and remember where comes from what. (Student 291, DA)

Student 30, a science student responded with a similar opinion:

> But in computer science, there is less worry, not like my friend in business. … I took one business paper, so I know what it is like, there are theories for everything and they must try to explain how the theory is used, so sometimes they memorised what to say. (Student 30, DA]

The analysis of the student interviews with regards to academic discipline found that differences were reported in how the two groups approached their studies. The interview analysis appear to suggest that business students

tended to lean towards surface approaches because of the perceived excessive amount of material in their curriculum. On the other hand, science students reported using more deep approaches possibly because they were motivated by employment needs and had opportunities at hands-on sessions in the laboratories.

### Age

Mature age students reported a sense of 'feeling old' and having fewer topics of interest outside lessons with younger students, therefore, preferring to work with students of a similar age group if possible. This was best expressed by one mature age student:

> Small group discussions are usually organised among ourselves, we get to choose who are the members. If the members are bit younger I tend to dislike it because they tend to talk about something else other than the study at hand. I really want to learn things and really stick to the studies at hand, but they talk about movies, where to hang out. … It is okay if it is after the discussion. … Like disturbing me and I feel embarrassed to stop them, you know. Maybe being older is the reason. … But it is okay, does not affect my studies. … It is better to have members nearer to my age, but it is not easy, I think there are more teenagers. (Student 21, DA)

Regardless of age, both mature age and younger students reported that they would not be comfortable to contradict their lecturers in class on subject matters. Respect for their lecturers and 'not to embarrass' their lecturers were perceived to be important. When asked if that would mean they passively accept what was taught in class even if it is incorrect, students reported that they would approach their lecturers after class time and would expect the lecturer to rectify mistakes in the next lesson.

*Younger students*

> I don't think in Malaysian standard this is acceptable, this is disrespectful. I would tell when I meet in canteen or later. Most of them [..referring to friends..] would also see the mistake and like me they won't voice out. We are brought up that way, we must respect as they [..lecturers..] are older no matter how

> wrong they are, we should not say anything on it in class, unlike the westerners. This is the value we learn throughout our lives. (Student 163, DA)

> I think it is rude to interrupt in class, because in our culture lecturers want face, they don't want to lose face. So it might embarrass them (Student 305, DA)

*Mature age students*

> Here the lecturers would prefer if students can contradict or participate more, but we are afraid to do that because we must respect them. It is not our culture to do that [..contradict or challenge..]. I would do it after class (Student 150.62, DA)

> I am a bit conservative, I think lecturer/teacher need to be respected, I will do it after class. (Student 7, SA)

> *(Transcript translated from the Hokkien dialect)*
> Kind of not right, I feel lecturers will not be happy; we are not used to doing it. I would do it later. (Student 86, SA)

Maturity appeared to affect collaboration where younger students reported that the older students were able to better provide organisation in a group, they had more efficient ways of tackling problems, and were able to provide general advice.

> Some of my friends in the group are older than I am, some of them worked before coming back to study. They advised some of us to find different ways of doing problems. … One example is to look at the problem and try to get understanding out of it as much as possible. (Student 79, DA)

> Whereas some of the older friends in the group, they are more systematic like, they tackle questions one at a time, and discuss until everyone agree and know what we are doing. I think I am more impatient. … They are easy to talk to also. … Not selfish to share. (Student 172, SA)

The analysis of the student interviews with regards to age indicated that mature age students felt estranged from the younger students but did not report that it affected their studies. A feeling of esteem and respect towards academic staff was seen to be important to students regardless of age. The

mature age students were reported to be more organised and had better problem-solving skills than the younger students and provided the opportunity for the younger students to learn from their experiences and more efficient approaches to learning.

### English Language Competencies

For most students interviewed, English was not their first language nor was it the main language spoken at home. Nevertheless, many did not express great difficulty studying in English. Studying in English was found to be beneficial as most students felt that it would help them when they sought employment or when they transferred overseas to complete their studies.

> I am glad to be in an English speaking environment as I hope it can help improve my speaking. … I don't think if the subjects are in Mandarin I would do better. (Student 95, DA)

> All the factories use English as the main communication language, it is better for me when I graduate; I am more ready for the environment. (Student 39, DA)

> Main reason I choose a private college is the language of teachings. … They use the English language. I express better in English. I should get used to using English all the time. I intend to transfer to Australia next year. (Student 163, DA)

> Can improve my English compared to local universities. All the terms used in the world are in English, no need to translate from bahasa [..Malay language..] to English (Student 204, DA)

Language was not identified as a barrier to collaborative work since many were able to communicate in their own languages.

> It is not a barrier, but my English is insufficient no doubt as I will need to have a better command for future career. But we [..referring to communications among friends..] have the habit to speak Hokkien or Chinese, so used to it. With Chinese friends, it is automatic. For some who cannot speak well, we will just speak in Chinese. (Student 222, DA)

Yet, for Student 189, who admitted she cannot speak Mandarin coming from a National school, felt isolated and alienated sometimes when her friends in her group discussed in Mandarin. She found it difficult to contribute especially if her peers were not comfortable to speak in English.

> I think I feel left out if I mix with a group of Chinese educated students and they start to speak in Mandarin. I feel that not being able to speak Mandarin is a disadvantage. (Student 189, DA)

Speaking, listening, and writing were viewed as more problematical compared to reading in English. The lack of ability to express well in English contributed towards students' shyness and inhibited their participation in presentations and class discussions.

> As a student, I feel shy because I can't deliver it [..referring to her presentation..] and speak broken English, so I feel shy. (Student 155, SA)

> I see how my classmates perform, some are not good at speaking, not used to, because of their English, they are scared. (Student 305, DA)

Others on the other hand felt listening in English did become easier although in the beginning the lack of competency in listening skills prevented them from fully understanding lectures especially lecturers from overseas partner universities or foreign lecturers. This was best expressed by the following student:

> Sometimes we have 'mat salleh' [..Caucasian..] with their slang which is hard to follow, they go so fast and it is difficult to catch what they say. Sometimes some of us who cannot catch what they are saying - macam tengok tengkok kawan dan bisik apa? apa' [..will look at each other and whisper what? what?..]. … This is true when I first started, agak susah-pun [..a bit hard..], tapi-kan [..but..] after a few semesters, it becomes better. I remember they are so funny, that even when we don't understand the jokes, we laugh also, because they have actions that are so funny. I don't feel bored. (Student 150.62, DA)

Disruption may occur in lectures or tutorials when lecturers had to repeat instructions in the Malay language, especially for issues that were novel, to those with limited listening competency.

> Most of the Malay student can hardly understand in English and find it hard for them to understand. Sometimes even the lecturers will repeat the lesson. They will ask the same question so the other students who understood, we find that we have to waste our time to listen to the same thing. Even the lecturers focus more time on them so they can understand. (Student 150.56, SA)

For some students, they reported that English inhibited their ability to do well in assessments. They felt that if they had better command of the language, they might perform better or have less dependence on memorising.

> English is not a barrier to me at all, but I see in some of my friends, they find it hard to write, so they memorise the important words for exams. But one lecturer told us that grammar is not so important as long as we can get the main facts out. … They also tell us it is better to write in our own words. (Student 286, DA)

> I have no problem with English, but I admit if I have a better command, surely I can do better. Our exam papers are marked by overseas lecturers, so if there are two of us with the same marks, I am sure they will look at grammar? (Student 30, DA]

> English language is not a disadvantage. … I feel I am a B grade student, so if my English was better, maybe I can become a A student, I can express better. (Student 90, ES)

> I need to make extra effort in my studies because of the English. (Student 160, ES)

> The reason why I find the analysis part bit hard is because of English language problem, I cannot understand fully, and find it hard to analyse. I cannot find the words to express. Sometimes I write and write everything in lectures and have to stop and think. (Student 204, DA)

> If English is better my grade would be better, I know the topic well, but I find hard to express in words. (Student 78, DA)

The analysis of the student interviews with regards to English language competency indicated that students did not anticipate English language as the language of instruction to be an issue of concern. However, those who reported poorer competency in the language felt less confident to operate in their learning environment. For those who were weaker in listening skills tended to face greater difficulty in comprehending instructions and course content. Those who had less competence in verbal communication skills reported that they were less comfortable to participate in class or group discussions and that they revert to the use of their own language or dialect. Because of the deficiency in written skills, students indicated concerns about being able to express well in words for examinations, thus they felt that it might affect their chances of doing well in examinations. Generally, students who may not be competent in the language may tend to use surface approaches to learning like memorising sentences for examinations or to do copious writing of lecture content.

### Types of schools

By not inhibiting interviewees from responding to the basic structure of the interview questions, interviewees also spoke about differences between Chinese and National type schools. Their transcripts provided an insight into how these two groups of students viewed learning. For most, the difference was the prevailing notion that students from Chinese type schools practise more 'kiasu'-ism, and hard work. The word 'kiasu' originated from Singapore to reflect a trait that captures a particular aspect of Singaporean society. Literally translated from the Hokkien dialect terminology, it means 'fear of losing out' or 'afraid to lose'. The emphasis is not so much on fear of losing, but to mean that there is a striving to win or making an effort to reduce the risk of failure (Doran & Jose, 1999).

> Difference in how they treat people, see things and learn. … Chinese educated more 'kiasu', need to prove themselves. They really put in effort, study, jot down everything, memorise everything. Kebangsaan [..National school..] and 'Jenis Kebangssan' [..National school..] they can hang out, they can joke, more open, able to mix around better. The Chinese educated ones, they will tend to want to mix within their

> clique, more close minded. Behaviour, in the sense of spending money, very very 'kiamsiap' [..stingy and thrifty..], paper need to Photostat rather than buy a new book. (Student 31, DA)

> *(Transcript translated from the Hokkien dialect)*
> I think those who go to a Chinese type schools face lots of pressure in their studies. They are more 'kiasu'. They always want to compete. (Student 40, SA)

> For the Chinese medium school students, they normally put their best effort to get good results, they don't want other race, I should not use the word race, better use the word people to get better results, something like 'kiasu'. By doing this, it is not good as a student. For Kebangsaan [..National school..], they don't have this attitude. Anything they will try to share. (Student 141, DA)

> Like to study study only, more 'kiasu'. (Student 93, DA)

When I asked what were the reasons to be 'more kiasu', the responses were:

> Want to become number one – very competitive. You ask them something, very selfish, the English educated, more free to help, more friendly, more willing to share, more westernised. (Student 93, DA)

> I was put in Kebangsaan school [..National school..]because my mother feels that all those who go to Chinese schools don't seem to be clever, cannot speak well, quiet, and shy. (Student 189, DA)

I asked Student 189 if she perceived that to be true. She responded:

> Some [..referring to National school students..] seems to have too much confidence, maybe appearance wise, they project a look of more sophisticated image. Not really clever, they are the same. It still depends on how they work and study. (Student 189, DA)

> It is harder to mix with the Chinese medium students, it is harder to join them, But the Chinese from Kebangsaan [..National school..] is more familiar with Indians, so the mentality is different. (Student 141, DA)

> *(Transcript translated from the Hokkien dialect)*
> Chinese from the Chinese medium schools have the biggest difference. We are not good in English, and the way we study relies more on memorising. We need to memorise, maybe because in our primary years we learn China culture and poetry, so there were lots to memorise. I guess we were trained from young, trained from primary school up to secondary school to memorise things. But the students from Kebangsaan [..National school..] behave as if they are Caucasian. Sometimes both groups do not get along especially if the Chinese educated are more hardworking, more competitive, and the English educated ones are more outgoing, like clubbing etc. (Student 131, SA)

The analysis of the interview data appears to indicate that students from different school type have varying perceptions of their primary and high school learning environments. Students from Chinese type schools were portrayed as more hardworking and were associated with the pressure to do well and, for example, threat of 'kiasu'. Memorisation may be a poor strategy but possibly a surer one for students from Chinese type schools who experienced the need to aggressively compete. In addition, a memorisation strategy could also be a response to the demands made by their learning environment in schools. However, whether Chinese students from National type schools were as competitive while at school was not clearly indicated from the interview responses. Neither did students talk about whether being hardworking or 'kiasu' affected their academic performance, although students perceived that students from Chinese type schools to be less extrovert.

### Ethnicity

During the course of the interview, students provided their own perspective of the differences that might exist between the different ethnic groups and their learning habits. The Chinese and Indian students were more vocal, and noticeably, Malay students were reluctant to speak about race issues and generally had very little to say on this topic. The following quotes by Student 108, Student 141, and Student 181 who are Indian; and Student 26 and Student 31 who are Chinese best describe the perceptions each ethnic group has of the other.

> During the first and second semester, my partner is a Malay fellow. But he always dislikes the system, he always compares to local university. In the local university, there will be more Malays, so in a group of Malays, they will mix with a Chinese, so the Malay guys will be at an advantage because the Chinese guy will do all the things, just include the names in the report of whatever. In local university, engineering program don't have many Malays, so whenever there is a group, they must include a Malay student. This also happens if they are in pairs. But now he is in a private college, the Chinese won't do that for him, he has to do his part. (Student 108, DA)

> I find that he does not put in the effort and I have to do everything, I decided to try to avoid him. He asks me to do everything and later he will come and see or check onlylah. This is a like a Malay attitude. I am only saying this in a private college context – and I have seen other Malay students here doing the same things. Some examples like in an assignment, will ask it to be emailed, and they will change a few things and others put in all the effort. In private college, I feel that they see themselves not able to compete, that causes them to just survive there. (Student 141, DA)

> …the mentality of the Indians are just to get through only. Why I say this is because I see this is a few of my Indian friends and that is what happened to them. (Student 26, DA)

> The Indians and Malays will always have the lowest score compared to the Chinese. For those Indians or Malays who score well, they are those few that have real knowledge of the things. But there is such a big difference, the good ones are so high and most others so low. (Student 31, DA)

> I got lucky to be able to mix with Chinese friends, they are interested in their work, and this help me to go through my subjects well. (Student 141, SA)

Student 181 felt that in his learning environment, he was treated differently because of his ethnicity.

> Once when my group handed in our assignments, we were penalised and the reason was that our assignment was too advanced for what is needed… we used too much jargon. Other friends who are Chinese were given higher marks. (Student 181 SA)

Indian students expressed the opinion that Malay students may sometimes lack the attitude to perform in private college environments compared to Chinese students. Chinese students on the other hand felt that the Indians and Malays were lower achievers compared to the Chinese.

## Summary and Conclusion to Part 4A of Portfolio 2

The analysis suggests that there are relationships among gender, academic discipline, age, English language competencies, types of schools, ethnicity, and students' perceptions of their learning environments and learning approaches, with less clearer indications with regards to learning outcomes. Generally, females were more likely to find support from their friends and were perceived to find their learning more satisfying than males, but were more likely to employ surface approaches to learning. Science students were more likely to show intrinsic interest in their learning possibly because they were motivated by the perceived demands of their future work environment and opportunities at practical sessions, whereas business students perceived that they used more surface approaches because of the large amount of work in their course. A sense of respect towards academic staff was prevalent for both mature and younger age students. The more mature age students tended to adopt deeper level approaches to their work. The interview data suggest that students may feel more confident at reading but had problems with speaking, listening, and writing English, thus it affected their overall approach to learning and learning outcomes. Students spoke of their prior learning experiences in primary and high schools and it would appear that students from Chinese type schools were more hardworking and tended to be influenced by the cultural phenomena better known as 'kiasu'-ism. The interview data also showed that students possessed differing perceptions of the different races with regards to their learning attitudes and abilities with Chinese students having better attitudes and were higher achievers compared to the Malay and Indian students.

Based on the findings, the interview data provided partial support for the proposition that: Students' individual characteristics (gender, academic

discipline, age, and English language competency) are related to the students' perceptions of their learning environments, to the approach they adopt to learning, and to their learning outcomes. In addition, the interview analysis raised other student background characteristics such as school type and ethnicity, as predictors of approaches to learning and learning environments.

# PORTFOLIO 2
## Part 4B

## QUALITATIVE ANALYSIS OF PROPOSITIONS

### Perceptions of Learning Environments and Approaches to Learning

Part 4B reports on the findings related to Proposition 2: Deep approach to learning is associated with more positive perceptions of the learning environment while a surface approach to learning is associated with less favourable perceptions of the learning environment.

The findings are presented under the categories of the three CEQ scales, i.e. Aspects of Good Teaching, Aspects of Appropriate Assessment, and Aspects of Clear Goals and Standards. It was considered important not to inhibit nor restrict responses to questions which fitted only the categories of the CEQ scales or approaches to learning dimensions, but to allow students the freedom to express what they saw as relevant and pertinent. As a result, other responses were considered as possibly influential in defining the students' learning environment and how it was related to their approaches to learning. Those responses are presented under Other Aspects of the Learning Environment.

#### Aspects of Good Teaching

Aspects of Good Teaching Scale addresses teaching practice such as providing useful and timely feedback, providing clear explanations, able to motivate students, effort in making the course interesting, and able to understand students' problems.

***Encouragement towards deep approaches to learning in students***

Learning environments that were perceived to encourage students towards the use of deep approaches to learning were defined by lecturers who were motivating, understanding, and responsive to their needs; innovative; and with the ability to organise well, able to explain clearly, and were knowledgeable.

***Motivating, understanding, and responsive to needs***

Lecturers who students perceived as motivating, understanding, and responsive to their needs played an important role in how they desired to use more meaningful approaches to their learning.

*Motivating*

> My favourite lecturer is Mr [..name of lecturer..]. He is so motivated, we can feel his energy. … He does so much work, he was as if so keen and happy to teach. I have always been impressed with him, I will pay special attention. … You automatically feel like doing as much work, always want to learn more. We know he has a lot of teaching hours, but he always find time for us. (Student 26, DA)

> My project lecturer is very important to me, she gives me encouragement. It makes me full of energy, fully charged for studies. Sometimes I am so depressed, so when encouragement comes from her, I am so appreciative. … Appreciate the words of encouragement. (Student 21, DA)

*Understanding and Responsive*

Students recognised that the dedication and understanding of their lecturers were contributory towards their determination to succeed and engage positively to improve in their learning. Indications of this view were expressed by Student 86 who favourably commented upon it.

> *(Transcript translated from the Hokkien dialect)*
>
> Basically I am not a bright student, but I am determined to do whatever I can, give it a try and do my best. …They [..referring to his lecturer..] know I face study problems. With a bit of lecturer help I am currently succeeding to learn in different ways, and not follow what I've have always done in school. One or two of them are very good, and friendly, and they are also very approachable. (Student 86, SA)

*(Transcript translated from the Hokkien dialect)*

> Because they [..referring to his lecturers..] are understanding, I am less shy to talk to them. I know they will give me the time to explain what I cannot understand, and this makes me feel supported. Now, I don't want to simply memorise but like to work together, help each other solve problems, look for additional information, I would make that extra effort. (Student 86, SA)

> It is important how our lecturers encouraged us, and make us understand, some are very dedicated. They always make sure they have time for everyone. I feel now I get better grades and think better. At first when I started college, I studied alone, mostly memorise teacher's handout, my grades were average. (Student 79, DA)

***Innovative***

The responses from the interviews indicated that students valued lecturers who were able to incorporate a variety of approaches, techniques, and strategies in their teaching. Students indicated that different modes of delivery besides lectures, such as more intimate lecturer/discussion groups in classrooms, giving opportunities for student presentation, watching videos and educational outings, as well as practical sessions were useful in helping them better understand their course matter and to alleviate boredom. There were many reflective responses about the various modes of teaching and these are: lectures; doing group discussions; doing presentations; watching videos and educational outings; and practical sessions.

*Lectures*

Although there were mixed views regarding lectures, many of the students commented that lectures must be interesting and have structure. The pacing and sequencing of lecture topics were important too. Well structured lectures were emphasised by many interviewees as they provided the needed 'first' motivation to become involved in the subject and towards their effort and commitment to the subject and in their own learning. This view was indicated by the following student:

> *(Transcript translated from the Hokkien dialect)*
> Many of us come from a Malaysian school system, some are from a Chinese educated system, lectures are a big difference for us. It took me a whole semester before I learn that in lectures, you have to learn independently to understand what is being lectured about. … You must first read before the lecture or else it is too difficult to understand or that the lecture go too fast or you get distracted by the other students. … If the lecturer has logical structure and teach interestingly, then I will have motivation to want to know more, my motivation increases, I am immediately 'in-it' and want to learn more. (Student 86, SA)

On the other hand, students were quick to identify 'rushed lectures' (Student 26), 'un-sequenced lectures' (Student 222), and 'boring lectures' (Student 158) with disinterest and apathy for the subject.

> We do learn, but the lectures must be interesting, or else I will listen for the first hour and dream the next hour. At some lectures, the lecturer takes so long to get to the point, they are un-sequenced, they go round and round in circles, and I still cannot see the point. … Jumping from one area to another, maybe they think we already know the area well and think we can do the linking, it is okay if it is part 2 or part 3 of the same subject, but if it is a brand new topic? (Student 222, DA)

> Because of the time, some lecturers rushed their lectures, they put so many topics in 3 hours, I get confused. Imagine if this is the same for all subjects. (Student 26, DA)

If students felt that they were not getting much from lectures, they tended to rely on their own reading and revising.

> Sometimes, I find I don't learn much from lectures. I will listen and write notes if it is important, but mostly I need to revise and read on my own later. (Student 158, DA)

> If I cannot manage to understand in lectures, I will do study on my own, read from the internet, or get from books. (Student 222, DA)

*Doing group discussion*

As the interview responses show, students found the use of group discussion to be useful. It appeared to help students towards acquiring skills and deepening their understanding of concepts, and towards a 'more thinking person' (Student 207).

> I like group work because there are more brains to think. I like the team work. … Made me a more thinking person, we learn more how to think for ourselves. We are not trained enough for analytical work. (Student 207, DA)

> Sometimes the things we don't know, when I had an engineering project to do last semester, I was quite unsure how to start, but because some of the group already have done other projects before, they can show me how to define my project, then what I will need, and also the correct software to use – something like that. (Student 78, DA)

> We organise our group ourselves, this way, we know we can work with friends we know. In group work, we have better understanding, a lot of things we can cover. (Student 108, DA)

When prompted to explain what 'a lot of things we can cover' meant, Student 108 explained:

> We cover the questions or issues faster and don't have so much effort in learning on your own. Some-more, we like to argue with each other, not like quarrel, no, we must explain why he/she says the answer is like that. That way, for me, I get to understand well and remember better, especially the concepts and theory.

The following passages from two students are fairly typical of the other students interviewed, where working in a group provided opportunities for them to have 'personal tuition' from each other. Furthermore, group discussion also changed their ways of approaching learning from one of memorising teachers' handouts to one where they cultivated a more deep understanding of concepts.

> At first when I started college, I studied alone, mostly memorise teacher's handout. … After that I got the chance to have small group discussions, we ask around, joke, and those

> who know more will provide the explanation. Because the group are friends I know well, I feel less shy to ask each other if I don't understand, I can remember better. … Then we approach the lecturer as a group, or sometimes the lecturer comes around to each group. … It is good that they [..referring to his lecturers..] encourage us on this [..referring to group discussion strategy..]. (Student 79, DA)

> It is useful because we are able to discuss problems and exchange ideas in what we learn. … It motivates me to prepare and know the problem well before group discussion. It is a good for me later also, I think. (Student 160, ES)

As the interview responses below show, group discussion inevitably elicited responses where students' peers played a major role in their understanding through cooperation and students' solidarity among each other.

> I like to discuss problems and share it among my friends, can get to know each other, it is useful. If I cannot think of something, friends can help. I prefer such freedom in my work. I can train myself to read more, and learn more, and the chance to discuss with my friends. If I get photocopy notes all the time from my lecturers, I get lazy, and I know I will memorise notes only. (Student 82, DA)

> The benefit is we share information from each other. I might know something my friend is not aware of. (Student 95, DA)

Furthermore, in a supportive environment, an element of competition was not viewed negatively; instead it provided a sense of motivation.

> There is this Chinese student in my class and he is the top student right now, but he is friendly. I want to compete with him, I want to be better than him, but before that I want to become his friend. In this sense, my friend will be my competitor, influence in the sense that he is a motivation. (Student 150.62, DA)

*Doing class presentations*

Students welcomed the opportunity of doing class presentations. Many related that it reinforced their understanding.

> I like that he [..referring to his lecturer..] gives me and the group a chance to do presentation. He will ask us to write a report first, mostly group work, make slides for it, and takes turn to present to the whole class. I always like presentations, it is a chance to repeat what I understand, and if there are questions, I can try to explain in my own words. (Student 26, DA)

> Sometimes, presentation is quite scary. Like I don't like lecturers to read in front of class, I try to present in my own words, but to do that you must first be able to understand what it is you want to talk about, so I make sure I understand well, then when I talk, I just repeat what I already understood. (Student 319, DA)

> I like it because it is a way to explore myself, to make sure I know the stuff. (Student 222, DA)

*Watching videos and site visits*

Similarly, the use of audio visual was seen as helping students reinforce what they learnt, by relating it to what they have studied in lectures.

> *(Transcript translated from the Hokkien dialect)*
> Take an example of a subject I excelled in, [..subject mentioned..], it is a subject of my interest because the lecturer makes it interesting, the lecturer makes it come alive, and this lecturer makes the students participate in it. If there is time, the lecturer will take us to watch a video. In this way, I can see how what we learnt can be related to actual working situation. The best is when we get to visit sites, like the hotel, and listen to people who work there. (Student 155, SA)

*Practical Sessions*

Students perceived practical laboratory sessions to be very worthwhile. Practical work was especially popular with science students, and many of them appreciated lecturers who allocated additional hours to practical laboratory sessions or used lectures and practical sessions concurrently. Besides enjoying the opportunity of being independent, many students indicated that practical sessions provided them with the opportunity to

practice and implement what was taught. Importantly, several students commented on their better grasp of the main concepts and an understanding of how concepts were linked.

> *(Transcript translated from Bahasa Melayu)*
> I would want more computer laboratory work so that I can see my programming codes as output. I don't have some of the software at home in my computer, so it becomes very important to have the opportunity to use it at the college laboratory. Furthermore, the processor is much faster, and I don't have to wait so long to see my programs running. (Student 150.54, DA)

> I enjoy lab work, I think practical helped increase my knowledge. (Student 91, SA)

Student 91, an engineering student was asked what he meant when he said doing practical work was able to increase his knowledge. He said:

> When I read about a theory or concept, I sometimes memorise it, but to memorise will not help if I cannot use it, right? When I go for practical, I get the chance to actually think about it before I try out with the equipments to see the results. (Student 91, SA)

Student 79 valued laboratory work because of the experience it gave him.

> It is like group work. Most of the time the lecturer will give us some guidelines about what we need to achieve, and they will leave us to do it. Normally, we can finish the objectives on that day, sometimes we don't and will continue later, maybe on our own time. I find that I always learn something important at practical work. It is more interesting, I will see mistakes, but the more I do, the more I can understand. (Student 79, DA)

On the other hand, Student 60 appreciated that practical sessions provided him with a broader and deeper grasp of his subject.

> I will learn deeply, to gain knowledge of subject, have practical hand of the subject so as to gain a broader scope of the subject. (Student 60, DA)

Although there were mostly positive comments about doing practical work, a few students were critical about lecturers or tutors who did not demonstrate the proper use of the equipment prior to practical classes. They felt that some of their lecturers or tutors lacked the experience in handling some of the equipment. Another critical comment related to the lack of association between their lectures and seminars and the practical work and such a situation caused more confusion than understanding.

> It is better to have lab work immediately after we learn something new, but sometimes, we have 2 or 3 lectures, then only we go to the laboratories, it get confusing, and we don't know where to start. (Student 79, DA)

***Organisation, Clarity, and be Knowledgeable***

The ability of the lecturers to provide clarity of information, be knowledgeable, to explain problems or difficulties so that students could understand was stressed in several interview responses.

> They [..referring to visiting overseas academics..] provide explanations as much as we require them, they guide us. My [..subject..] is quite interesting, this lecturer presents the lesson well and the ways he guides us, I like it very much. He will conduct his class maybe for 45 minutes, after that there will be question sessions on what we have studied. So after finishing 5 lecturers, he will give us a short test, this helps me remember what was done and mistakes I may have made. Some more, I can get to understand a second time. (Student 150.56, SA)

> They [..referring to his lecturers..] must also enjoy the subject they are teaching, must be better in terms of knowledge, they must be very qualified and experienced. (Student 150.62, DA)

> The subject itself I like, I find the lecturer know the material enough, it is just the attitude towards how she present and teach to the students, her way of teaching differed from each other, she tell stories, actual stories, she relate to the reality. Take for an example when she gives us this formula, and we ask why do we use this formula, she can explain and show. (Student 163, DA)

Another student was able to describe what he would have liked the lecturer to do, and what he meant by 'criteria of teachings' and 'clearly explain'. He

described qualities associated with step-by-step presentation and materials to be presented in a logical sequence.

> Lecturers should be able to explain in detail, by step-by-step, don't jump all over the place. They should use proper transparencies that can attract my attention. Don't give notes that don't seem to connect to what we are learning. (Student 181, SA)

### *Barriers towards deep approaches to learning in students*

Prior learning habits acquired from schools, unimaginative teaching, lack of useful and timely feedback, unfair treatment by academics, and various negative characteristics of group discussions were perceptions reported by students which appeared to promote surface approaches.

#### *Prior learning habits*

A potentially dysfunctional activity which was expressed by students and their use of surface approaches to learning was their adherence to aspects of superficial memorisation cultivated and encouraged during their school years.

> *(Transcript translated from the Hokkien dialect)*
> In the school system, especially in Chinese schools, we always memorise everything and teachers give us everything. (Student 86, SA)

> Here in high school in Malaysia, we always learn to memorise, we seldom do research, we seldom go outings. Theory exams we Asians score well because we are more hard working and memorise well. … We have a disadvantage because we would study by memorising rather than understanding. Form 1 to 3 [..lower secondary..] I memorise a lot, my father makes me memorise from page one to end of text books, I hate it. Form 4 and 5 [..upper secondary..] I just study smart, understand first and memorise the requirements. … Now, for some subjects, it is application and case studies where you need to think how to apply - so it is a bit different. (Student 26, DA)

> Nowadays people, you know the Malaysian education system, it has been all this while using the spoon-feeding method, it is spoon feeding the students. … All this while they learn by

> memorising, they don't learn by understanding. They just read what is in the text-book, but they don't read-in-between the lines. (Student 319, DA)

The above transcripts showed that many students were themselves aware of their own shortcomings and seemed to hold their prior school studying habits responsible for their extensive use of superficial reproduction. Nevertheless, they had come to realise that as second and third year students doing western curriculum, required them to be enquiring, doing research, or being independent in seeking knowledge. It has enabled them to 'learn a lot of things' (Student 174) and 'teaches …to organise better and differently' (Student 291). However, perhaps for some students, the prevalent 'spoon-feeding' syndrome provided a comfort zone that some would find hard to discard.

> *(Transcript translated from the Hokkien dialect)*
> But because of our school system we are so used to spoon-feeding, and I would prefer spoon-feeding. I am not that good at understanding, so when I get notes, memorising is a better option. Still the lecturer in [..subject mentioned..] has been good and tries hard for us. (Student 155, SA)

> … maybe that is why I prefer spoon-feeding, it is easier to study, I am more used to it, it is like a culture from primary school to secondary school. (Student 204, DA)

Student 39 on the other hand reported that it comes down to students' individual attitude and that students have different expectations about learning and how it should work for them. He commented that it might be because of how Malaysian students were so used to teacher control and teacher centeredness that it is carried to university level, and that most students depended quite a lot on their lecturers.

> … classmates especially from Chinese school, they are so used to teachers giving them notes to study, they think it is the same in college, they want somebody to do the work for them all the time. It is their attitude I think. … It is the Chinese school system, everything so controlled, the hair, even caning still there. So when they come to college, some suffer in the first year because they still expect the lecturers to tell them what to do, some change, some don't. (Student 39, DA)

***Unimaginative teaching***

Students reported that unimaginative teaching and superficial skimming of the learning materials by their lecturers compounded their use of shallow memorisation of information.

> I remember this lecturer, she gives us the notes, then she will use the projector to project on the board and she will read the notes word for word. … If she can explain what the notes mean would be better, just read, you know, everyone of us can read right? If want to read like that, I also can teach. That is one of the reason most of us cannot understand and the answers she requires is exactly from the notes, therefore, we need to memorise all. … She requires the answer to be exactly what she gives us from her notes, if we use another words, like use our own words to explain, it is not acceptable. (Student 21, DA)

Similarly:

> *(Transcript translated from the Hokkien dialect)*
> There are some lecturers, are strict about students following their styles. (Student 86, SA)

A few students indicated that they were dissatisfied with lecturers who were unable to meet their expectations of what an academic staff member should do for them, and that they served to discourage them towards a deeper interest in the subject.

> Sometimes the college takes lecturer that does not have enough knowledge in the subject, they take everything from the book. … The things that I want to ask, they cannot provide the necessary information, so that I feel it is bad to us students. I feel that in my own learning, I am cheated of my money, the lecturer do not even know the stuff well and cannot explain well. I am unhappy about the situation. So I have to consult other people or buy extra books or do more reading. With this types of lecturers, I don't feel like going to the class. (Student 191, ES)

> There are times when although the subject is interesting, the lecturer made me de-motivated or dislike the subject. I feel sad about it. (Student 150.62, DA)

When student 150.62 was asked to give examples of what he meant when a lecturer discouraged him towards a subject, he commented on the inability of the lecturer to respond to questions related to the subject, and this shattered his confidence in his lecturer. He felt fearful that he will not get as much knowledge as he should from the lesson.

> It is bad when the lecturer purposefully forget what we ask because he don't know how to answer, with this kind of lecturer, we will not get the latest knowledge. (Student 150.62, DA)

The following passages from two students were fairly typical of the other students interviewed when discussing the ways lecturers were responsible for their use of memorisation, partly because of their inability to explain clearly and the large amount of unrelated notes given.

> Some lecturers are 'touch and go' lecturers. They come in for their classes, and they go. They are not dedicated. They do not have the attitude of wanting to impart knowledge to the students. They come in, they do not utilise the board, do not follow the criteria of teachings. When the lecturer does not deliver to our expectations, it is like I will not have initiative to learn. He is like using his own materials; the materials are a little related to the subject but not totally. I will get piles and piles of notes, and when exams come, there is no time to study, what else to do – so take a few pages of notes that are important and memorise. (Student 181, SA)

> *(Transcript translated from the Hokkien dialect)*
> Take for an example a lecturer who says this 'this won't come out for exams, no need to worry', they straight away tell me that he don't know the subject himself, that is why those statements were made. So how does he expect us to be good in the subject? When we ask a question, he will link it to something totally irrelevant and don't know how to explain, and talk nonsense even to the point of talking about toilets. He is good at talking, but we never get an answer, I will listen for an hour only. I have no problem with pretending to listen, ears open but brain somewhere else. (Student 131, SA)

Another problem found was not only lecturers' inability to explain things but to relate it to the real working environment.

> The lecturer is too serious, no humour, they could ask us for opinions and give real live examples, rather than they just yak yak yak. (Student 191, ES)

The lecturer's ability to perform well was not necessarily seen as effective teaching and students were able to discern between lecturers who advanced their learning with those who had 'entertained' them.

> My [..subject mentioned..] lecturer, students like her because she is very pretty, she walks up and down, makes jokes, talks well, but she cannot teach. She delivers from books. During tutorials, she will read out the answers without the explanations. (Student 158, DA)

***Lack of useful and timely feedback***

Giving quality feedback on students' work was perceived to be important, but as the comments show, it appeared to be lacking. Several students expressed frustration at being left in the dark about their effort, and felt 'time-wasting' (Student 39) of doing a piece of work and not knowing if it was right or wrong. They commented on the importance of feedback so that they would not repeat their mistakes.

> He does not give any feedback. He will keep asking for opinions, but in the end what is the correct one, all students want to know right? (Student 49, DA)

> I think when we finish the assignments and we pass up, after they [..referring to lecturers..] have checked, they should give it back to us and give us comments on where we go wrong, and how we can improve ourselves. … We need to know where our mistakes are, or else we feel like we do not know where we went wrong, and we can do the same mistake again. (Student 150.56, SA)

The following comments reflected the frustration students felt when feedback was not forthcoming from their lecturers.

> I am not asking for too much, but if like the lecturer can tell me why I did something wrong and give me feedback, I would probably work harder. (Student 191, ES)

> I would prefer feedback to be given so that I am able to get some idea of where and why I went wrong. But sometimes there are no feedback at all maybe because the lecturer lack the experience to even know what to say and comment, maybe also the lecturer dare not give feedback in case we students question back. (Student 138, DA)

> We do not get feedback at all. We only know our marks, we do not get things like how to improve. … If I get lower marks than my friends, I want to know why. I read my friend's work, I think it is worse than mine, but they get better marks. … Sometimes we feel like it is time wasting to do assignments. (Student 39, DA)

Student 39 was asked if he or any of his friends ever approached the lecturer concerned and requested for feedback. He said:

> I do… and I work part time in [..name..] factory, it is an American company. I see how they work, very professional, what is important is feedback to us about our work. But when I ask, because I am not afraid of them [..referring to lecturers..], sometimes they will say that they don't have time to put feedback for everyone.

***Unfair treatment***

Several students were vehement about issues of teacher bias and favouritism. Students do not appreciate being picked on by their lecturers, or they felt that at the level of higher education they should be equally respected.

> Stop picking on us, be fair. They always, purposely ask some of us to answer questions, especially if it is a tough question, then if we cannot answer then they will say – 'ah see, never go for classes' they embarrass us students. Maybe they think we can be afraid of them, but it gives the opposite reaction. (Student 172, SA)

When asked to elaborate on what she meant by 'opposite reaction', she explained:

> If they cannot respect us, why should I? They think we are afraid that they will fail us and must 'bordek' [..be extra nice..] them? … We don't go for the classes because they are so boring. … It is a reading subject we can read up ourselves and do it.

Marks being made lower were highly perceived by several students who felt lecturers were being biased and personal about situations. This view was expressed by the following students.

> He will blacklist the students who come late or those students who do not take part in class. He will blacklist from classroom up to private life. If we see him outside, he will not acknowledge those he blacklists. Even if he has a good knowledge, his teaching approach is not friendly; his marking scheme is very low. No matter how much we struggle or put in effort, he will give low marks. … He should judge students from our standards. (Student 108, DA)

> Some bad lecturer, they cannot take students' attitude, they easily snap and then become sarcastic, maybe they think we are still in secondary school. … We just laugh and we do no feel hurt at all. … Sometimes our marks are always lower than the others, although our answers are the same, a bit biased. (Student 286, DA)

Student 286 felt un-motivated with such a situation which was reflected in her comment:

> No motivation in it, need to pass the degree, I just want to finish it. If it [..referring to the subject..] was not compulsory, I would not bother to take it.

Other students recalled similar events as experienced by Student 286.

> There is this friend I know, his studies are on the poorer side, maybe because he seldom goes for classes, and I see him repeating the same subject even now he is in his 5$^{th}$ semester. I am not sure, but I think his lecturer purposely make his marks lower or fail. (Student 191, ES)

> Another time, the lecturer doesn't want to entertain us, even though he knows we did quite well. … I don't know why, but our group always get lower marks. (Student 95, DA)

> They penalise those weaker students and those students who don't go for classes that kind of things, some lecturers are like that, they just discriminate (Student 172, SA)

Some students who had better rapport with their lecturers were viewed as being especially favoured, and were given more help time.

> Lecturer must not take sides to certain students or pay more attention to one group of students. … I think the group approached the lecturer so many times, they build this relationship. … Those who don't ask much, or are quiet, are neglected. (Student 95, DA)

> Lecturers will notice the active or outstanding student in class, they will think this student is a good student, smart or intelligent. … Lecturers will notice the students who approach them more, close to them. … She/he will remember you more. So when you asked, you will get more than other students, it is not fair to the other students. … Normally, the lecturers will only look at students who are performing well, they do not really bother about the rest. Maybe they [..referring to students..] have problems why they do not do well, maybe they have problems with English, shy, or do not understand what you are teaching? (Student 305, DA)

A few students felt neglected by their lecturers because they were more in control and more independent in their own learning. Students commented that their lecturers were aware that they would be immersed in more independent work when they transferred to overseas western universities, and felt grateful that their lecturers were trying to assimilate them into the different kinds of 'learning cultures' they might find overseas. Students found that their lecturers worked less hard at explaining things and expected them to research for solutions to questions. Most students realised that they should have less dependence on their lecturers or tutors and to take control of the organisation of their own learning. However, a few felt that their lecturers were not doing it effectively, and tended to ignore those who adapted to independent work over those who found it difficult. Student 291 appreciated the opportunity to be independent to develop her own

approach to problem solving. However, the reverse result may occur, where she might revert to old approaches because she seemed to perceive that her lecturers tended to neglect her and her friends once they were able to be more self-reliant at their work.

> Miss [..name..] do encourage us to do independent work, she says that it is better we get used to doing it now because when we go overseas next year, lecturers there will not provide notes or hold our hands, but she is not doing it effectively though. Some of my friends and myself, we enjoy having the freedom to see how we can complete our work, and also how we can sometimes talk to her about what we want to do in our assignments. … She encourage us telling us we need to do this [..referring to being independent..] but at the same time, she overly attend to student and give free marks to those who complain about independent work. … They pay attention to students who cannot do their work themselves and ignore those who are into independent work. Implementation is not effective. (Student 291, DA)

Student 291 was asked how she would feel about such situations when this occurred.

> If we have lecturers like this, then we will not have the motivation to really study as we know she/he will not be asking us anything and we have 'let us not do it' attitude. (Student 291, DA)

Negative students' attitude and a general disappointment appeared to be prevalent when students encountered such unconstructive behaviours from their lecturers. It appeared also to influence how they viewed their learning, which is reflected in one of passiveness and submissiveness.

> Once a lecturer was very angry with a guy who did not do her tutorial questions and then she walked out of the class and ignored those who have done the tutorial questions, and he [..the student..] was nearly barred from the exams until he appealed. Because of this I do not dare do anything, ask her or contradict her, just do what she wants. (Student 49, DA)

> I don't want to make him [..referring to her lecturer..] angry, he may mark us down. I feel sometimes he will disadvantage us, make our marks lower. (Student 30, DA)

***Negative aspects of group discussion***

Although deeper understanding can be forged with group work, as reported by students on page 171 and page 172, conflicts within the group could perhaps prevent deeper learning and broadening of knowledge. Such conflicts could encourage passiveness and obstruct positive sharing and communication. For instance, students complained about members of the group who were dominant and controlled the working of the whole group thus preventing the remaining students from engaging in productive discussions.

> To me, I find it is not useful because it is a waste of time. … I don't like group work so much, sometimes there is one person who takes over everything. … The others let him take over, maybe because they are lazy themselves, but there is no team work if one always want to take over everything. I don't get any benefit from this. (Student 193, SA)

> … who thinks he or she is right, and if the member write something, they will change, sampai [..to the point of..] we get fed-up and let them do what they like. We just follow-lah, no point to argue, we always must follow what they want to say. Sometimes I think they also do not give us everything they know. (Student 174, DA)

In addition, there were feelings of dissatisfaction within group members if their peers did not put in the same amount of work as they did or who were perceived to be selfish.

> … we will have problem with group members, that is one thing you cannot avoid, I have faced it a couple of times. Like when they cannot finish their part, they will give every possible reason they can give. I just bear with them. Last semester I was so pissed off with my group member that I cried over it because the situation was so tense. (Student 191, ES)

> …what they do is to take their sweet time to research for extra materials and in the end, there is no time to compile, towards the end it is last minute work. (Student 191, ES)

> … it can be hard as I am kind of serious and they are like more to fun and entertainment, where to go. … When I get too serious and that we start earlier, they get angry. Sometimes it is hard to tell them what to do. Or sometimes they ask me to

> do, then when I finished they do not go through, just type it out. This is my dissatisfaction. (Student 163, DA)

> … but some of the disadvantage I experience are members who are selfish in that they find the information and keep it themselves. (Student 160, ES)

The analysis of the student interviews under Aspects of Good Teaching indicated that students were generally positive when their learning environments had teaching staff who were understanding and aware of problems faced by them. Students perceived that important traits such as being understanding, being a motivator, and being responsive to their needs contributed towards cultivating their interest and enthusiasm. In addition, these traits were related to the effort they expended on their learning and the approaches they adopted towards their learning.

There was also an indication in the interviews to suggest that students' sense of interest and involvement were increased if the teaching staff was innovative and stimulating in delivering their subjects. Different modes of lesson delivery such as group discussions, class presentations, and practical sessions were highly valued by students as a way of owning their learning. Many students were very positive about their interaction with peers and found it to be effective in helping each other learn as a result of group discussions, class presentations, and practical sessions. However, there may be a number of problems related to group discussions that can be detrimental to deeper learning. First, members who were more dominant tended to dominate the activities of the group. On the other hand, students reported that there were instances where peers within the group did not put in an equal amount of work or were selfish in sharing information. Both problems may prevent constructive contributions and may prevent sharing of learning and skills.

Students were critical of their own use of a superficial memorisation approach towards learning and made statements that appeared to show that they understood the importance of deeper conceptual approaches to studying. However, for some students, they did not seem to be able to act on

this awareness and continued to expect spoon-feeding and continued to use approaches that had worked for them during high school. Students indicated that lecturers who were incoherent in their teaching and uninformed, or those who were adamant about 'following their styles' possibly contributed towards their negative attitudes and served as a discouragement towards their learning.

Students appeared to be more committed in their learning if it was perceived that the teaching staff was able to explain clearly and able to help students make sense of their subject content. Interviewees stressed the importance of being able to relate teaching and what was learnt to the real situation. Conversely, a vibrant, excited presentation in class was not necessarily viewed as effective teaching as students were quite discerning about lecturers who had clearly taught and those who had entertained them in class but left them no better in their understanding.

Students had concerns with certain aspects of teaching and made suggestions for improvement. Many students stressed the importance of feedback and commented that lecturers should make an effort in providing them with constructive responses to their work. The students criticised that students who seemed to be more articulate or who seemed to be more intelligent were able to capture and monopolise the lecturer's attention. Moreover, those students who had a better grasp of doing work independently had reduced time available to them from their lecturers. Students suggested that academic staff should not be prejudiced towards individual students, or towards them as a group, but should base their judgment strictly on the students' ability and merits. Students complained that lecturers sometimes included too much subject matter in the lectures and that there was too much emphasis on theoretical matters. They also felt that lecturers did not take their level of understanding into account and assumed prior knowledge which might prove confusing. During the interviews, some students indicated dissatisfaction with the allocation of practical sessions and suggested that lectures and practical sessions be more organised and structured to run concurrently with new lecture topics so that new concepts learnt in lectures could be implemented and practised.

## Aspects of Appropriate Assessment

Aspects of Appropriate Assessment addresses the extent to which assessment practices measure higher order thinking and understanding rather than simple factual recall. Assessments included examinations, tests, assignments, and research projects.

### *Encouragement towards deep approaches to learning in students*

Students suggested that that they need to see the relevance of what they were doing for their assessments, to be able to see how their assessments relate to the 'real working world'. In addition, students suggested that assessments should be interesting and useful, and they should be able to relate to a particular concept in real situations.

#### *Relating to the 'real world'*

Several students appeared to appreciate assignments that were related to the 'real working world', or assignment projects that required them to research on actual situations. Case study assignments were found to be useful.

> I would prefer new situation and real situation in assignments to check and see if we know how to apply. (Student 174, DA)

> I like case studies assignments or when I am asked to write a report on the case study. … Lecturers should not give assignments because that is what they want, we should be given more choice to the questions and what we would like to research. (Student 75, DA)

#### *Increase interest*

Students found that doing assignments afforded more opportunity for them to understand the subject well, thus providing the interest, and also increasing their interest.

> I like to understand the use of something new. It becomes more interesting. I cannot memorise programming codes, it is either you can do it or you cannot. You need to know how the different lines work for you, why it does such and such, then

> when I have a program to write, I see the whole picture, see the step each code can perform. (Student 82, DA)

> Doing an assignment of interest would also enable me to do preliminary preparation for my examinations, there will be no overlap of preparation. … I would prefer my final year research project to be based on my interest, it can help me later when I am looking for a job. (Student 75, DA)

> Learning is interrelated to understanding, like in my case, the subject that we learn, there are certain areas we need to understand. … For example Artificial Intelligence, you really need to understand to answer to do the assignments. I like the subject, it is very interesting, but complex, and also it is something that is new and happening now, future is like 'AI' the show. (Student 53, ES)

### *Barriers towards deep approaches to learning in students*

The ramification of examinations with large amounts of information students were expected to possess tended to encourage memorisation. Some students emphasised that they relied heavily on past year questions and suggestions of examination topics from their lecturers and left the rest to chance. In addition, an excessive amount of assessment such as assignments, project work, and tests were likely to result in stress and anxiety.

#### *Ramification of examinations*

> One thing I found out is that exam questions repeat and lecturers give tips and topics that they emphasise. So I would look at past year questions and study topics where lecturers give hints. (Student 53, ES)

> What we learn in class is what we focus for exams. …There is not much challenge for me, sometimes I find there are a lot of things we do not learn. (Student 39, DA)

> I minimise the scope to what is important only – I check the previous pass year papers. (Student 7, SA)

> I don't like to memorise but I have to because I have to sit for the examination, we have to pass. … If it is less heavy, we will be able to have the time to attempt exercises and more time to study for exams (Student 150.58, SA)

> Lecturers only want to help students to pass that is all. …They give tips so some students memorise, I guess if they [..referring to lecturers giving hints..] don't a lot of students cannot pass. … There are too much to study all. In business type subjects, they are so many theories, so many things that exams can ask. … What I don't like is they also complain and say the lecturer is not good if he or she do not give them tips. (Student 174, DA)

A few students appeared to be displeased with hints and 'tips' for examinations given by their lecturers. They argued that by focussing on those topics, it relegated other equally important areas and topics as unimportant.

> Too much hints have been given to students, what we learn in class is what we focus for exams, and so we don't get other information, the information we get is shallow. There is not much challenge for me, sometimes I find there are a lot of things we do not learn. …I simply focus on the important topics that will come out, pay attention, take notes, and study areas that are important. (Student 39, DA)

***Excessiveness***

There were also comments that students were given too many assignments and tests, on top of the mandatory examinations from the partner university. It appeared that the perception of not being able to meet the demands of their assessments brought about stress symptoms i.e. interviewees reported being not able to cope and feeling overwhelmed to some degree.

> For me, the workload of assessment is heavy, and also the course is quite difficult. A lot my members [..friends..] have left. For me, to carry on and continue. I need to think and remember my parents and not disappoint them. If it is less heavy, can give me more time to study and concentrate on each subject. (Student 150.62, DA)

> The way the lesson is taught is somewhat rush, the staff do not seem to consider students' situation. When they are going to decide something, they should consider whether the students can cope or not. There was this time when there were 4 assignments for each subjects, so if I do 4 subjects I will have a total of 16 assignments to do. I don't know if this is the same over at the main university. (Student 21, DA)

Similar anxiety and strain were expressed by the following students:

> The course is a six months, six months period. In this six months we have four subjects and each subjects there is two assignments, and there are tutorials and self assessments, examinations, and furthermore we have exercises from lecturers. The classes end at 5pm or 6pm. So when I come home, sometimes it makes me like I don't want to take this course anymore, but I think I must get a degree, or it is hard to get a good job. (Student 150.56, SA)

> *(Transcript translated from the Hokkien dialect)*
> It is hard when there are too many assignments, moreover I must learn for examination. No time because there are some other subjects. … Frightened I can fail. … Feel depressed sometimes. …I feel ashamed if I fail. (Student 40, SA)

On top of the excessive assignments, some students were critical about the late scheduling of assignment questions or time given to complete them.

> Main problem we face is that the assignment always comes late, so causes us students to not able to do well. They should give us in the first week of lesson itself. … They give excuses that it comes from the partner university. (Student 141, DA)

> We have too many assignments, and the handing up time is not well planned. All assignments come in at the same date and due on the same time. One subject sometimes have 2 or 3 assignments. So sometimes for some assignments, I do 'ching-chai-bo-chai lah' (..doing without much thought to get it out of the way..). (Student 49, DA)

> *(Transcript translated from the Hokkien dialect)*
> I was working so hard on the assignments, I did not have much time to study. … When it comes to examinations, there is no choice, I will collect notes and maybe do summary, sometimes the lecturers give tips, study the tips and make points, points to memorise. (Student 40, SA)

> *(Transcript translated from the Hokkien dialect)*
> I study what will come out – I study on things that will be asked. I study following the syllabus of the course, not like I make any effort to study additional materials, but I should, maybe I do not have the extra time to do it, but then if there is less work, I don't think I can do any better, maybe more is better, will force me, otherwise I get lazy. I also depend on hot-topics and from lecturer tips. I try to answer pass year

> questions, get the answers from marking scheme, check if it is correct – if not, ask from the lecturer. All this is in the hope it comes out. (Student 131, SA)

The approaches to studying of Student 40 and Student 131 were affected due to a lack of time. Student 131 acknowledged the need for understanding, and reading widely. However, a superficial mode of studying was adopted possibly because 'understanding' and reading widely would take up too much of his time, or as he admitted, he lacked the motivation to do it because he had not enough time. For both students, preparation of past year examinations from 'hot topics' was perceived to be an activity of studying, and may justify their inertia in the need to 'understand' and to read widely.

The analysis of the student interviews under Aspects of Appropriate Assessment suggests that students were able to differentiate between assessments that were useful, and those that merely required them to produce materials without contributing much to their interest or subject area. Students expressed appreciation for assessments, specifically their assignments, where there was an opportunity for them to go beyond reproducing what they have read to actual application of what they have learnt. Many of the students found project work and case studies to be useful in this aspect. This was clearly summed up by Student 174, 'I would prefer new situation and real situation in assignments to check and see if we know how to apply…'.

The analyses found that students would be more challenged if they had the opportunity to negotiate topics of interest in their assignments. There would be a sense of ownership and being in control of their learning and this appeared to provide motivation, develop interest, and increase their drive to learn in a more active way. However, the reverse is true of tests and examinations. With examinations, students reported coping strategies to get through with the prevailing mention of memorisation used when it comes to studying for examinations, and an over reliance on past year questions and speculated questions from their lecturers.

Stress occurred when students believed they could not meet the demands being made on them by the type and frequency of assignments and coping with examinations. A few reported inadequate study and lack of time management as possible causes of stress. Poor allocation of assessment tasks and late scheduling of assessment topics added to the pressure felt by students. Generally, students felt 'pressed for time' perhaps for those reasons, and it impacted on their levels of motivation.

### Aspects of Clear Goals and Standards

Aspects of Clear Goals and Standards address course quality as measured by clear aims and objectives, and providing clear expectations of the standard of work expected from students.

#### *Encouragement towards deep approaches to learning in students*

The interviews indicated that students appreciated the provision of clear aims and objectives of the course and individual subjects.

##### *Clear aims and objectives*

Students were generally satisfied with the information provided by their lecturers about aims and objectives. Many of the students indicated that they were also able to access the partner university's website to obtain detailed aims and objectives of a particular course, and about their marking schemes.

> There is a password for us to get into the university web site, we can look at our syllabus and content if we want to. (Student 150.62, DA)

> Normally, they [..referring to their lecturers..] will tell us what the subject is about. I think it is better, so I can see what I need to do early, like read or look for books. … Sometimes the topics is exciting and I look forward to the lesson. (Student 26, DA)

Several students indicated their appreciation of lecturers who provided the aim of the day's class or lectures, and who recapitulate objectives of previous classes and then link them to the current day's lesson objectives.

> *(Transcript translated from the Hokkien dialect)*
> I like [..name..], she always revise last lesson before she starts on today's lesson. … I can see the connection. … I think this is important when you have so many subjects to study and learn. (Student 155, SA)

For some students, however, the disillusionment about the lack of clarity of expectations and guidelines with regards to course and curriculum could be a reflection of accommodating to a more loosely structured context at PHEI, when compared to their structured school system. This was described by the following student:

> There should be better advisory system. … Students should be better advised by the teacher about the course, the units I need to take etc. They should spend time to explain in depth, about what to expect in first year, second year etc. … Explain explicitly way of teaching, show us what he/she expects, tell us the way he/she will teach, ensure that when she/he lectures the class understands, tell us if we do not understand something, he/she is always willing to help and make us understand. Take for example, in my secondary school days, the teachers and principal will take responsibility for our learning and us doing well, and will also advise us with their words of wisdom. But in this college, I hardly see the principal looking at performance, encouraging us, advising us. (Student 181, SA)

### *Barriers towards deep approaches to learning in students*

Lack of clear structure focussed on key concepts and the lack of clear expectation of assessments were two areas raised by students to indicate that there were some issues of clear guidance that needed to be addressed.

#### *Lack of clear structure focussed on key concepts*

Some students reported incidences relating to lecturers who were not able to provide a clear focus on key concepts, but were rather facetious about their teaching, which frustrated the students.

> I once had this lecturer, he will come in and 'heh heh heh' here and there and we get nothing, and dare to tell us that he is doing it for the money. So I guess he does not need to care about our subject-lah. He will go 'read this lah, very important one, you read that lah, very important also'. Most of the time we don't understand anything. He will say 'this is important one, you know lah, this paragraph is also very important one heh heh heh'. … I will tell him I don't understand, he will advise me do the past exam questions, and when I handed it up, he will say it is all wrong, then what way is right? (Student 49, DA)

> I have lecturers who ask us to study ourselves, I don't really like it, because I cannot understand the concept, how can I start to learn? What is important is that the lecturer must give us some guidance, let us know what, where to look for first. (Student 193, SA)

***Lack of clear expectations of assessments***

Some students were upset when they had difficulties in their assignments and projects and commented that lecturers should not assume they know what to do, and suggested that initially some examples and guidance should be given.

> I prefer to be independent in my work. But sometimes when we don't understand or know where and how to start, especially end of year project work, the lecturer don't explain or help, I get frustrated. I get confused. Although the lecturer asks us to write in our own words, but he did not give us the direction about which way is correct. (Student 158, DA)

> … if we ask what is needed in an assignment, lecturers here do not know, they just ask us to follow what is in the course unit. How can? We depend on them to guide us in the assignments, else who can? (Student 193, SA)

The analysis of the student interviews under Aspects of Clear Goals and Standards suggests that generally students' level of satisfaction was good when they perceived the extent to which the courses' and subjects' aims and goals were made clear. For those who expressed that there were fewer clear guidelines than expected could perhaps be having difficulty coming to terms with the notion of independence in their learning as compared to their more structured school system. However, students felt that their learning might

be affected and might lead to confusion if there was a lack of clear structure of what key concepts they must know about, and if there was a lack of clear expectations of the requirements of their assignments.

### Other Aspects of the Learning Environment

The findings of the qualitative analysis also allowed the exploration of other characteristics within students' learning environments which might contribute towards their intended approaches to learning. First, students reported their experiences of 'kiasu'-ism. In addition, students felt dissatisfaction at the lack of subject choices for their degree course and complained about outdated and insufficient equipment in their practical laboratories.

#### *Manifestations of 'Kiasu'*

Especially revealing were several comments by Malaysian students of the existence of 'kiasu'-ism within their learning environments. Possibly, students adopting a surface approach were motivated by the pressures felt by being 'kiasu', where the desire was simply to complete the course or a fear of failing and 'lose face'. In addition, the intention to fulfil the course requirement by memorizing the material likely to appear in examinations appeared to be influenced by the 'kiasu'-ism perceived by students to exist during their schools years. Manifestations of those aspects of 'kiasu'–ism were reflected by the following students.

> I observe that the Chinese schools are more kiasu. … Want to be top school in [..state of Malaysia mentioned..] The teachers concentrate a lot on best classes, extra tuition in weekends. I think only the Chinese school teachers work on weekends, the students are really forced to do well, so they [..the school..] can get many A's and be top school. … So their habits are the same now. (Student 75, DA)

> Even the kiasu-ism is spreading to Kebangsaan schools [National schools..], every schools now want to be the top. (Student 75, DA)

> We were told to write the same lines again and again so we can remember, and then to mug [..learn and remember very hard..] the PMR [..Form 3 National examination..] exercise books

> because they say a lot of the exam questions will be from there. (Student 210, DA)

> Because maybe first of all, it is the kiasu attitude, some students take it they need to pass the paper, so they memorise to pass. … Surely we become kiasu, the parents give gifts to the teachers so that the children will get good marks from the teachers, so they don't get pushed down to back classes [..classes with poor performers..]. Parents don't want to 'pai-say' - mah [..lose face..], even the teachers expect this, I think. (Student 245, SA)

Yet, paradoxically, deeper understanding might develop following the manifestations of 'kiasu'-ism as the following transcript indicated:

> I am 'kiasu' - I need to learn as much as I can that can help me, but I don't like to study something I cannot understand. I try to listen well in lectures, take notes, underline important points. … I challenge myself, I don't mind if someone is better. I try even harder to be better. … It is up to us to do well, if I find I cannot understand what they [..referring to his lecturer..] are talking about, I will read more, ask more questions in tutorials, or discuss with others. Anyway, bad or good, I think that they are older and more experienced in many things, still have philosophy in life they can share with us, to develop us. (Student 75, DA)

***Restriction of subject choices***

Several students expressed concern and disappointment that the choices of subjects were not extended to students doing twinning programmes, and that there were restrictions of choices in courses and majors. This view was explained by the following student:

> In the partner university, the students there get to choose the majors and subjects, but over here, the subjects are fixed, we don't have a choice, and some of the subjects are not needed. But we have to take to complete the degree. It is like in a package, we have no choice. … Yet we are suppose to do the same thing. Say over there [..referring to partner university..], the students can choose the subjects they want that is important for the job later. … They cannot offer so many courses here as they (..the PHEI..) cannot hire so many lecturers. (Student 39, DA)

***Teaching Resources***

Most of the interviews found that students were satisfied with the teaching resources, such as OHP, sophisticated projectors, and in some instances electronic whiteboards in seminar rooms. Printers were also made available for student use. However, complaints were mainly expressed regarding practical laboratories. Invariably, the concerns about lack of equipment were aimed at the management of the college. Criticism was expressed that the colleges tended to charge premium fees but disadvantaged students with insufficient and outdated equipment.

> The computer lab is limited. We are restricted from use. (Student 189, DA)

> Provide better and newer equipments… they [..management..] want to charge fees so high but yet give us insufficient and outdated equipments. (Student 30, DA)

> We need newer facilities, especially computers, now only they upgrade. … I think if they improve the facility, I can perform better. (Student 150.56, SA)

The lack of equipment inhibited practical experiences as expressed by Student 141:

> … so lack of hands-on, we see but cannot try it out, too many of us. (Student 141, DA)

The analysis of the student interviews under Other Aspects of the Learning Environment found that the attitude towards being 'kiasu' may also be contributing to students' study approaches. Dissatisfactions were raised regarding the lack of subject choices for twinning programme students compared to their counterparts studying in the partner universities. Students were generally satisfied with the teaching resources and the physical resources available to them, although comments were expressed that management should make efforts to purchase better and newer equipment to better facilitate practical sessions.

## Summary and Conclusion to Part 4B of Portfolio 2

In a number of different ways these analyses have illustrated the relationship of students' learning environment to students' use of an approach to learning. The self-reflective data showed a number of students employing different approaches when they encountered differing elements within their learning environments. Even for those students who were identified from the quantitative data to be deep approach learners showed diversity of approaches. Especially indicative were the relations of deep approach to lecturers who: were motivating, understanding and responsive to needs; innovative; organised in their lessons and instructions; knowledgeable; and able to relate teachings to reality. In addition, deep approaches were associated with appropriate and well-scheduled assessments, adequate aims and goals, sufficient resources and sufficient choice of subjects. In contrast, dissatisfaction with poor teaching, dissatisfaction with lecturers, heavy workload, inappropriate assessment practices, absence of relevance, negative consequences of group work, prior dysfunctional learning habits, and manifestations of 'kiasu'-ism were related to reproducing study approaches. Another finding was that although students reported facing similar problems to their teaching and learning environments, they did not react similarly to those problems and adopted differing approaches to learning. Students complained of feeling stressed, feeling anxious, being tired, or wanting to give up. In addition, using superficial learning was also a response to emotional reasons such as being ashamed of failing, unwilling to disappoint parents, or pressure to get a job.

Based on the findings, the interview data provided support for the proposition that: Deep approach to learning is associated with more positive perceptions of the learning environment while a surface approach to learning is associated with less favourable perceptions of the learning environment. In addition, they also enriched our understanding of the various elements present in PHEI students' learning environments which encouraged or were barriers to their deep approaches to learning.

# PORTFOLIO 2
## Part 4C

## QUALITATIVE ANALYSIS OF PROPOSITIONS

### Approaches to Learning and Learning Outcomes

Part 4C reports on the findings related to Proposition 3: Deep approach to learning is related to more positive learning outcomes then is a surface approach to learning.

Students' self-reflective data of the processes they used to obtain particular learning outcomes provided an insight into what they were doing. In addition, it also provided an illustration of students' conceptions of learning, their approaches to learning, and their use of strategies with regards to their reported learning outcomes including their academic performance.

#### Deep Approaches and Learning Outcomes

The analysis of deep approaches to learning from the interview data suggested that understanding concepts and ideas were the main reasons for adopting deep approaches to learning. Students employed approaches towards deep understanding to achieve positive learning outcomes. For instance, in actively seeking a broad overall understanding of their work, students reported a sense of improvement in their examination grades. However, the interview data also suggested that students felt frustration when they could not understand but feelings of satisfaction, enjoyment, and possessing positive attitudes when they understood.

> I like to understand the use of something new. It becomes more interesting. I cannot memorise programming codes, it is either you can do it or you cannot. You need to know how the different lines work for you, why it does such and such, then

> when I have a program to write, I see the whole picture, see the step each code can perform. (Student 82, DA)

> For example Artificial Intelligence, you really need to understand to answer to do the assignments. I like the subject, it is very interesting, but complex, and also it is something that is new and happening now, future is like 'AI' the show. (Student 53, ES)

> I use mapping technique. I draw maps. After that I will try to understand what I have drawn. The subject Artificial Intelligence is difficult so I start to read the notes and try to draw maps for this subject. The subject had so many jargon and bombastic words. With mapping, I can see the connection and understand the concept. … If I were to base on all memorising, no way I can get good marks. (Student 53, ES)

> I would do extra research to understand more, sort of like look for additional information, highlight important points, read like a story book, at first there is not much you can absorb, but this is my first round in which I study by myself. Then I will do it again during group discussion for these areas I find hard to understand. I would make that extra effort. (Student 305, DA)

> I do feel frustrated if I cannot understand. I will try to discuss with friends, trying to understand. There are some areas and topics that we must really understand, or else what for to study. (Student 30, DA)

> You can use it all the time and everywhere if you understand. (Student 319, DA).

Students reported that using deep approaches and having developed understanding helped them towards thinking logically in their learning materials or when they were solving a problem. A sense of confidence and a feeling of readiness were associated with such an approach. Thinking logically and analysing problems were important skills perceived to be necessary to students' real working environments and future use.

> (*Transcript translated from the Hokkien dialect*)
> It is better to actually know how to do a subject, like you know how to use it logically, then you can use the understanding to implement, sometimes in your own way. (Student 131, SA)

> Sometimes, when you understand, you learn, it is easier to solve the problem, you can use own methods. … Suddenly it [..the problem..] can become clearer. (Student 30, DA)

> The important things is to fully understand, then rely on our own knowledge to write. (Student 189, DA)

> Learning is interrelated to understanding, like in my case, the subject we learn, there are certain areas we need to understand. … At the same time, it should relate to the real world. (Student 53, ES)

In addition, for some students, employing deep approaches to learning appeared to be an important philosophy in life especially when they referred to what 'learning' and 'understanding' meant to them.

> Nowadays people, you know the Malaysian education system, it has been all this while using the spoon feeding method, it is spoon feeding the students. … All this while they learn by memorising, they don't learn by understanding. They just read what is in the text book, but they don't read in-between the lines. So for me learning is by understanding, it is very crucial for individual, because learning to understand is part of growing. … I put in all my effort to do it. Because it is not to impress lecturer or to get the highest mark, just that I want to do my best, the best of learning, not to compete or show off. … If I got high marks, at least I know I learnt; it satisfies me. (Student 319, DA)

> Basically I must be willing to learn and accept new knowledge. There is no learning if there is no understanding. I think many of us must change the way we learn, especially if they are from Chinese schools, must be towards more understanding, to think in a different way, not only to memorise. (Student 305, DA)

> Understanding is good in terms of improving my knowledge of the concepts, and improving my future work life. (Student 108, DA)

> To me learning is to gain knowledge, and to gain knowledge is to understand what we are learning. This way I find that I do quite well. I am an A or B student. (Student 75, DA)

Interestingly, although Student 75 was aware of the importance of adopting a deep level of understanding in his learning, he also acknowledged that he used memorisation in his learning:

> I am 'kiasu'. I need to learn as much as I can that can help me, but I don't like to study something I cannot understand. I try to listen well in lectures, take notes, underline important points. Sometimes I need to memorise. ... I don't compete, I challenge myself, I don't mind if someone is better. . (Student 75, DA)

It would appear that Student 75 had a strong preference towards deep conceptual understanding of what he was learning. Nevertheless, the interview data suggest that he contradicts himself and is capable of using superficial approaches, possibly through the threat of 'kiasu'-ism (fear of losing out). He uses whatever approaches are appropriate to arrive at his intended aim. However his contradictions did not appear to impede his search for understanding and meaning to do well.

The following interview responses initially indicated that students were not adopting deep approaches to learning. However on more detailed analyses, they showed that students were actually adopting what has been identified as the 'narrow approach' (Kember & Gow, 1990; Kember, 1996; Marton, Dall'Alba, & Tse, 1996). Students were using the process of understanding and memorising.

> It is important to understand then memorise. ... If you understand the subject matter well, you are able to elaborate in your own way. I am able to say this because I had a bad experience once, I only memorised and luckily the question I spotted came up, if not? (Student 7, SA)

> How I study is I will start to understand the points, why it is like this, what makes it happen to be like this, one point by another point, what lead to this like what makes it happen, continuously. Probably it will make it easier, and every time when I study, of course you will forget, so it is like you are forced to remember the points and probably you can use your own way of understanding and remembering to elaborating the points. (Student 163, DA)

> I think I will understand and then memorise. … Memory cannot memorise all, but if we understand I can further memorise/remember. (Student 95, DA)

> Memorising, good in terms of exams, but also have disadvantage, just only memorising won't improve our understanding. If we understand, at the same time we can memorise. If we just memorise, does not mean we understand, because we would not know why we use such and such. If we understand, automatically it is registered in our brains, automatically we can remember. …What I mean is this, from this one word, I will know what it means and where it comes from, what it explains. From this one word, I should be able to elaborate. Take for an example, like in computer terms, I create a folder, the folder is the key word. I already understand the content, the key word triggers me off. (Student 108, DA)

> I always study smart. … I seldom memorise my notes, I will try to understand, what happens if I forget one word, I won't be able to write the whole sentence already. Understanding is of course better than memorising. I am able to come out with my own words. I understand the concept, so when I do the exam question, no need to think of recalling. … But we need to understand and also need to memorise. It is a very hard to explain. (Student 21, DA)

Student 210 tried to provide an explanation of what is meant by the understand-memorise continuum. He explained:

> Like when there is an article, I read through a couple of times, to understand it, if I cannot understand it, I cannot memorise it. There would be six lines, I will understand, and then memorise 2 or 3 words. In secondary school, I will memorise the whole 6 lines, but now in university, it is better to understand. Some people will just pure memorising. (Student 210, DA)

The description of deep approaches to learning as suggested from the interview analysis was that there were preferences for working towards meaningful understanding of various subjects such as understanding concepts and ideas and to make sense of what was learnt rather than just to remember information. In addition, there were indications of relating relevance of what was learnt and being able to use those concepts and ideas in the real working situations and future use, and towards thinking logically while learning or solving a problem. The analyses suggest that adopting deep

approaches to learning contributed towards students achieving better grades and towards their enjoyment. However, besides academic grades, students also indicated attitudinal gains such as an improvement in self-esteem, being more confident, positive perceptions towards 'philosophy of life', and being more independent in learning. The use of deep approaches, however, did not preclude students from using memorisation. Nevertheless, the interview data suggest that using memorisation did not mean that students discarded attempts at seeing the conceptual purposes behind their readings or were unwilling to consider deep meanings of what they studied.

### Surface Approach and Learning Outcomes

The analysis of surface approaches to learning from the interview data suggested that there were often preferences to use superficial memorising of theories and calculation formulas for problem solving in tests and examinations. Students reported using methods such as highlighting, underlining, and extensive copying of notes to help in memorisation without fully comprehending meanings.

> Memorise-lah, pass year answers, to pass. … No-lah, what I memorise I cannot explain properly, I don't care for it, but it is better to have something to say in exams than nothing at all-mah. (Student 79, DA)

> Memorising is like learn by heart, simply mindless remembering, right? I have to read my notes over and over, highlight key words to trigger my memory, and writing it out. … Sometimes I just forget the whole thing after the exam. (Student 138, DA)

> (*Transcript translated from the Hokkien dialect*)
> I practice a lot especially if it involve a lot of calculation, and I never see the capability at all, I cannot feel it, I cannot see it in practical use. … By practicing a lot, I am ready when the same question come out, they just change the numbers or the wordings, basically the problem is the same. (Student 131, SA)

> (*Transcript translated from the Hokkien dialect*)
> In my course, most are mathematical calculations. I hate to memorise, but I do that for formulas. Most of the time there are a lot of concepts, I need understanding. But I cannot run

> away from memorising, especially the theories and formulas. Exam questions sure ask for theories and need formulas too. … I wish there are all practicals, then I can use my understanding of concepts rather than have to memorise theory, but you also need theory. (Student 86, SA)

> Those who memorise for exams, won't do well. … If they cannot know what it is about, they are the ones who are very quiet because they are unsure what to say. They will start to ask around afterwards. (Student 26, DA)

> Because, like Malaysia-wise, they tend to more theory questions which is asking you to memorise certain definition. … For example, I have one examination, that subject had a lot of failures, due to the fact that the question is a little bit different from previous times, the lecturer mentioned the questions are to test ability to think, there is no room for memorising, a lot of failures. (Student 141, DA)

> Memorising mean that they cannot understand so well, it is difficult for them to write based on their understanding. Some of them are really good at memorising. … In certain papers, questions that need memorising, you memorise, they will perform better and also calculations. When it comes to applications, where you cannot memorise anymore, then there is problem, where they need knowledge and applying. (Student 305, DA)

Student 158, on the other hand, reported using surface methods because he perceived no other way to learn for examinations and tests.

> After lectures I make own notes, then I memorise. I go through past year questions, spot the questions as every year they tend to repeat, from these I choose the questions that roughly will come out, form there I memorise it. Before I go to sleep, I go through it, morning before I will go through it again, memorise it in the morning like I get up at 4am, go back and revise those that I spotted. (Student 158, DA)

When asked if he felt this was a good way to study, he responded:

> Just my way, it is my best way to go about it. … What happened to me in my management in midterm, I spotted a few and concentrated on them, but it did not turn up. Panic too. I was very upset that what I spotted did not come out. My result was not good, but I managed to survive. (Student 158, DA)

For some students, using surface approaches to learning was a 'way out' if they could not understand the lesson despite their effort towards wanting to understand or if they perceived that there was insufficient time to study.

> I admit memorising is not good method of studying. I need to do it because sometimes I have no time because some materials are quite hard or sometimes I don't understand what the lecturer is teaching. … So I will search the internet and find other meanings of some of the words or ideas to get more information. … Provide more examples, more different from the lecturer notes. (Student 91, SA)

> If I don't have enough time, I would be looking at topics that are related, look at my notes; usually I will look at past year questions, spot questions, look at it and then pick up hint from lecturer and those topics they emphasise… I would learn what will come out. … Normally you cannot really understand what you are learning, I don't like to do that, what to do, no time. (Student53, ES)

> Firstly, I will try to understand, if I really cannot understand, I will memorise. If it is programming subject I will memorise. (Student 158.58, SA)

When prompted to ask if programming codes could be memorised, her reply was:

> I will memorise the formula of a program. … It is a risk, I feel scared because I am not able to understand well how to do it. I feel computer science is not my area. (Student 158.58, SA)

The description of surface approaches to learning as suggested from the interview analysis, indicated that some students preferred to use superficial memorising of theories and calculation formulas for problem solving in tests and examinations. In addition, students used methods such as highlighting, underlining, extensive copying of notes, and spurious gathering of information to help in answering question without fully comprehending meanings. Nevertheless, it would appear that using surface approaches could also be attributed to previous learning experiences, time pressure, or when students perceived they had no other way to learn despite attempts at understanding. However, the interview data indicated that students realised that depending on surface approaches undermined the quality of their

learning outcomes in terms of their academic performance, confidence, participation, actual understanding, and sureness and correctness of answers.

## Summary and Conclusion to Part 4C of Portfolio 2

The analyses indicated that students who reported using deep approaches to learning focussed on conceptual understanding. The ability to be able to relate to real world situations, to explain concepts in their words, and being able to work through problems logically were important. Students who spoke of adopting deep approaches to learning were more positive towards their learning outcomes. Surface Approaches on the other hand were related to students gathering and reproducing information for the sake of tests and examinations. Students who adopted surface approaches expressed dissatisfaction with such approaches, and felt that it undermined the quality of their learning outcomes. The interview analysis also provided insights into the 'paradox of the Asian learner'. That is, students appear to be using surface approaches to learning but are actually employing deep approaches from the basis of students' reported perceptions of how they acquired their knowledge from learning.

Based on the findings, the interview data provided support for the proposition that: Deep approach to learning is related to more positive learning outcomes then is a surface approach to learning.

In general, the qualitative findings in Part 4A to 4C enrich the results from the quantitative analysis. The interviews indicated that the propositions of the study were generally supported. In addition, the data suggest that the distinction between different approaches to learning is not precise. Instead, there is an overlap in the approaches students adopt.

## General Conclusion to the Analyses in Portfolio 2

The quantitative analysis suggested that:

e. Students' individual characteristics were associated with students' perceptions of their learning environments, the approaches to learning they adopted, and to their learning related outcomes.

f. Deep approaches to learning were related to students' perceptions of good teaching and provision of clear goals and standards, and conversely, surface approaches to learning were associated with students' perceptions of poor teaching, the lack of clear goals and standards, and inappropriate assessment practices.

g. Deep approaches to learning were associated with students' positive academic attainment, acquisition of generic skills, and satisfaction with course while surface approaches were associated with lower academic attainment, poorer acquisition of generic skills, and reduced satisfaction with course. That is, deep approaches to learning contributed positively to all students' learning outcomes, while surface approaches contributed negatively to students' academic attainment, acquisition of generic skills and satisfaction with course.

h. Students' learning outcomes were associated directly with students' individual characteristics and their perceptions of the learning environments but the relationships were not mediated by their learning approaches.

The analyses indicated the need to reconstruct the model that was adopted for the analysis, indicating that approaches to learning were related to individual characteristics and learning environments but did not mediate the associations among individual characteristics, learning environments, and learning outcomes.

The qualitative analysis enhanced our understanding of the relationships among the variables. From interviews with students, the study suggests that:

a. There were relationships between the roles played by students' gender, academic discipline of choice, age, English language competencies, types of schools they attended, ethnicity, and the ways in which they perceived their learning environments and in the ways in which they approached their learning. However, the relationships among the predictors and students' learning outcomes were less clear.

b. Approaches to learning were related to students' perceptions of their learning environment. Teaching and teacher characteristics produced a variety of learning environments which caused students to vary their approaches to learning. Teaching methods, pace and sequencing of subject matter, teacher enthusiasm, understanding, and commitments were related to students adopting deep approaches to learning. In addition, appropriate assessment practices, clear goals and aims, sufficient resources, and sufficient choice of subjects encouraged deep approaches to learning. Conversely, overload of work, poor allocation of assignments, inappropriate assessment procedures which encouraged reproduction, poor perception of relevance of assessments, poor teaching, and poor rapport with teaching staff encouraged surface approaches to learning and might contribute to students feeling stressed, anxious, being tired, or wanting to give up. In addition, the manifestations of 'kiasu'-ism and prior learning habits encouraged students towards reproducing study approaches.

c. Students who spoke of adopting deep approaches to learning were more positive and more confident towards their learning outcomes. On the other hand, students who adopted surface approaches expressed dissatisfaction with such approaches, and felt that they undermined the quality of their learning outcomes.

Together, the quantitative and qualitative investigations indicate that individual characteristics, perceptions of learning environments, and approaches to learning are important variables in understanding Malaysian students' learning related outcomes and experiences in PHEI. In Portfolio 3, I discuss further the implications of the findings for higher education from the perspective of twinning programmes in Malaysia.

# PORTFOLIO 3

# CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

## Introduction

The present study was undertaken to examine associations among individual background characteristics, perceptions of learning environments, approaches to learning, and learning related outcomes of PHEI students undertaking twinning programmes in Malaysia. A research model was designed to examine possible associations among gender, academic discipline, age, English language competency, perceptions of learning environments, approaches to learning, students' academic attainment, acquisition of generic skills, and their overall satisfaction with the course. The research model I adopted suggested that approaches to learning mediate relationships between individual characteristics, students' perceptions of learning environments, and their learning outcomes. I used both quantitative and qualitative research methods to examine research propositions that I constructed from the model.

Because I modified and validated two questionnaires, namely, the Course Experience Questionnaire (CEQ) and the Revised Two-Factor Study Process Questionnaire (R-SPQ-2F), I discuss the implications of their use to assess students' perceptions of learning environments and students' approaches to learning in private twinning colleges. Then I discuss the research results in relation to each proposition. Implications and recommendations suggested by this study and its findings are provided, followed by the limitations of the study. Finally, Portfolio 3 concludes with a proposal for future research directions.

## Use of CEQ and R-SPQ-2F as Instruments to Explore Perceptions and Approaches to Learning of the Twinning Programme Environment

### The CEQ

Based on the findings from factor analyses and scale correlations, the Course Experience Questionnaire (CEQ) was found be a valid instrument. In addition, information about internal consistency reliability (Cronbach alpha reliability) also indicated that the CEQ had acceptable reliability, thus, demonstrating that the questionnaire can be used with confidence in a twinning programme environment in private higher educational institutions in Malaysia. However, the statistical analysis indicated that only three out of the four scales of the CEQ could be used with enough confidence, namely, aspects of good teaching, aspects of appropriate assessment, and aspects of clear goals and standards. One possible reason the fourth scale, aspects of appropriate workload, did not perform as expected could be that students did not comprehend the meanings of the items or that students might be responding to those items differently. This could, in part, be due to the different course disciplines which have different cultures influencing the learning environment or different work ethics found within the learning environment. Hence, it is recommended that an examination of the items in appropriate workload scale be conducted as the scale might still provide useful information. Each statement can be reviewed to check that it is appropriate and if necessary have words changed to provide suitability in the twinning programme environment. Testing of the revised form together with the other scales would be required.

Despite the omission of the fourth scale, this study demonstrated that the CEQ would be a useful instrument for lecturers to use to monitor their students' learning environment. The CEQ can also report on the views of students in a twinning programme environment about what makes it difficult for them to learn and what academics can do to help them learn. In addition, it also enables lecturers to obtain feedback quickly about themselves and their classrooms from a student's perspective.

**The R-SPQ-2F**

Through testing, using factor analyses, as well as estimating the internal consistency reliability (Cronbach alpha coefficient), the findings indicated that the Revised Two Factor Study Process Questionnaire (R-SPQ-2F) was a valid and reliable instrument. Hence, the R-SPQ-2F can be used with confidence to evaluate students' approaches to learning from twinning programmes in private higher educational institutions in Malaysia. Although the R-SPQ-2F was revised, re-developed, and validated by Biggs, Kember, and Leung (2001) for lecturers to evaluate tertiary students in Hong Kong, its cross-validation in the present study for students across different course disciplines in twinning programmes in Malaysia demonstrates that this questionnaire is versatile and is suitable for use in a wider range of academic environments requiring little modification and adaptation. Interestingly, the deep and surface mainscales had good α reliability estimates that were higher than Biggs' et al. (2001) original deep and surface mainscales. It appears that it is possible to use the questionnaire in another culture and administer it equally across a number of cultures to produce similar results. In addition, students can use the questionnaire to evaluate their own learning approaches and adjust their approaches to suit their course goals and to improve on the effectiveness of their own learning.

Both questionnaires have considerable potential for other uses, such as providing an assessment of whether counselling support and other resources are needed to assist students in twinning programmes. Such support might initiate managing the demands of their learning, examining study methods, providing additional language skills, and helping students in their allocation of their time. In addition, the questionnaires can provide opportunities for managers and policy makers of twinning programmes to gather information that can be used to assess the quality of students' learning processes and teaching environments and to identify areas for improvement.

## Examination of the Propositions

**Proposition 1**. Students' individual characteristics (gender, academic discipline, age, and English language competency) are related to the students' perceptions of their learning environments, to the approach they adopt to learning, and to their learning outcomes.

When students' perceptions of the learning environment were investigated, the quantitative analysis found no statistically significant differences between how male and female students perceived their learning environment. Mature age and younger students had similar perceptions of their learning environment. However, the quantitative analysis found that students from business courses were more negative about their assessment practices than were students from science courses. In addition, students with higher English language competency had more favourable perceptions of their learning environments than did students with lower competency in the language.

When students' learning approaches were investigated, the quantitative analysis found no statistically significant differences in how male and female approached their learning. There were also no statistically significant differences between how mature age and younger students approached their learning. However, the quantitative analysis found that students from science courses had deeper approaches to learning than did students from business courses. In addition, students who reported higher English language competency had deeper approaches to learning than did students with lower competency in the language.

When learning outcomes were examined, the quantitative analysis found that while male students had higher academic attainment scores than female students, female students had greater overall satisfaction with their course than did male students. Students from science courses had higher academic attainment scores than did students from business courses. Mature age students had higher academic attainment scores and were more satisfied with their courses then were younger students. Students with

higher English language competency had higher academic attainment scores, indicated better acquisition of generic skills, and were more satisfied with their course than were students with lower competency in the language.

Generally there were no indications in the interviews to show that male and female students perceived their learning environment differently. Male students suggested that female students tended to use more memorisation in their learning. In addition, female students tended to be more 'fussy' and particular. Although male students in science courses exceeded the number of female students, female students in science courses did not indicate that their 'minority status' affected them. Female students indicated that they derived satisfaction from their learning because of the support they obtained from their friends.

The interview data showed that younger students viewed the mature age students as adopting deeper level approaches to their work, being better at problem-solving, better at tackling questions in a more organised and systematic manner, were more assertive, and more confident. Younger students found cooperation among friends to be useful. The custom of respect for someone older, in this case students' lecturers, was important for both mature and younger age students.

The qualitative data suggested that students with low proficiency in the English language had less favourable perceptions of their teaching and learning environments. They indicated that they found their lack of language competency as a barrier to collaborative team work, analytical work, their class presentation, and understanding learning instructions from Caucasian lecturers. In addition, it inhibited their motivation to succeed, to pursue deep approaches to learning and affected their overall satisfaction with their course.

Comments from both science and business students indicated that science students tended to prefer a deeper conceptual understanding of their science related subjects. Business students on the other hand observed that because of the numerous amounts of theory and reading materials, and

assessments which required superficial recall, they tended to depend on rote learning.

Although types of schools and ethnicity were not the focus of this study, the interview data revealed that students coming from Chinese type schools were more hardworking but tended to be influenced by the cultural phenomena of 'kiasu'-ism which encouraged surface approaches to learning. Chinese students were perceived as being better achievers compared to the Malay and Indian students.

The two sets of analyses provided initial support for Proposition 1. The findings are consistent with the position of Biggs (1987, 1989) that students' individual characteristics are linked to the approaches they adopt, the situational context they find themselves in, and students' learning outcomes. In addition, the findings lend support to other investigations which have looked at students' personal characteristics as predictors of approaches to learning, perceptions of the learning environments, and academic attainment (Richardson & King, 1991; Richardson & Woodley, 2003; Watkins & Adebowale, 1992; Watkins & Hattie, 1981, Zhang, 2000). The findings from the qualitative analysis also revealed fresh perspectives that were not evident from the statistical analysis which might contribute towards a development of the presage phase of the 3P Model.

**Proposition 2**. Deep approach to learning is associated with more positive perceptions of the learning environment while a surface approach to learning is associated with less favourable perceptions of the learning environment.

The quantitative analysis indicated that students' adoption of deep approaches to learning had significant associations with their perceptions of learning environment with regards to aspects of good teaching and aspects of clear goals and standards. In addition, students' adoption of surface approaches to learning had significant associations with their perceptions of learning environment with regards to inappropriate assessment practices.

Interview responses related to aspects of good teaching and clear goals and standards suggested some distinct elements that make up characteristics of good teaching and clear goals and standards, that are associated with deep approaches to learning. Ramsden (1992) proposed that 'teaching which is perceived to combine certain human qualities... is the most likely to encourage deep approaches' (p.75). Several accounts in the interviews reflected the excitement felt by students when faced with academic staff who were motivating, approachable, friendly, responsive, able to explain clearly, able to relate teachings to reality, and helpful or when clear guidelines were given about student expectations. Modes of lesson delivery where there were high levels of interaction among students were considered to be enjoyable and valuable because they provided opportunities for students to discuss and move towards a better understanding, to manipulate ideas with others, as a confidence booster, and as an avenue for independent learning. Such findings support Gibbs (1992) who stated that students need to be active in their participation and deep learning is associated with doing. As part of good teaching, students expressed the importance of timely and useful feedback. Feedback was perceived as essential in helping them develop their ideas and a lack of it was perceived to hinder their learning and was a discouraging factor.

Interviews in the study showed that students relied on surface approaches to learning in reaction to their lecturers' activities, behaviour, and conduct. The use of irrelevant handouts, materials, and inappropriate transparencies were mentioned as contributing towards students' confusion. The description of using a surface approach as a manifestation of lecturers' actions, well intentioned or otherwise, could arise from such circumstances and as a result, students who were deep approach learners could be forced to employ surface methods such as rote learning and replication of notes. The interview analyses appeared to support an investigation by Kember and Wong (2000) who found that an over dependence on the excessive use of handouts and materials could downplay the importance of active learning and for students to be actively engaged in their learning, thus creating an environment of passive perception of their learning and towards rote-learning approaches. Similarly, the noble intent of some lecturers in helping

students in their examinations by speculating and highlighting possible examination questions could reduce their desire and experience of needing to know something. Moreover, the interview analyses showed that the perceived behaviours of lecturers such as being prejudiced, threatening and intimidating, being unenthusiastic and un-imaginative in their teaching, and having negative attitudes towards students and teaching did not provide positive emotional and motivational conditions necessary for deep learning. Instead, such discouraging factors were found to be instrumental in students developing passive and submissive attitudes and adopting surface learning.

Interviews related to inappropriate assessment and surface approaches to learning have provided support for the quantitative findings. The interview data showed that students used surface approaches where their intentions were to memorise formulas, calculation methods, and theories to pass tests and examinations. Although the interviewees' responses indicated that they understood that quality of learning in terms of understanding concepts was more important, many admitted that they focussed on memorising formulas and theories and had an over dependence on remembering methods of calculation for tests and examinations. A few students commented on their dependence on memorisation because it had worked well for them in facing examinations when they were in school. Students focussed on gathering and remembering information without the ability to explain what was meant. They memorised using techniques such as highlighting notes, memorising theories, remembering lines of statements, recalling descriptions from textbooks, and using notes for regurgitation in tests and examinations.

Some students spoke of being stressed and being forced to use surface approaches because of time pressures, excessive workload in terms of the varying and large amount of assessment, and time allocation in submitting assignments. The interview data appear to be consistent with an investigation by Edwards (1999) which showed that if assessments were not well organised they could contribute towards students' stress and work overload, and thus influence the types of learning approaches adopted by students. Several students also voiced their fear of failing because the

examination questions were from overseas and marking was done overseas. Unwilling to disappoint their parents, feelings of embarrassment at failing, and pressures to get jobs were also reasons students expressed as contributing towards their superficial learning habits. Conversely, students expressed appreciation of assessment activities where there were opportunities for deep approaches such as being able to relate to real circumstances and being able to picture real work situations. Being able to display a fundamental understanding and purpose of concepts and theories was found to be important.

In the analysis, the interview data indicated dissatisfaction among students at the lack of choice over subjects and specialisations as compared to their counterparts undertaking the same course at partner universities. In addition, the interview data revealed the existence of 'kiasu'-ism within students' learning environments. Students indicated that they were adopting surface approaches because of the pressures felt by being 'kiasu', where the desire was to complete the course or a fear of 'losing out'.

The interviews reinforced the findings of the quantitative data, thus providing support for Proposition 2. Both quantitative and qualitative data from Proposition 2 appear to support the argument by Ramsden (1992, p.75) that 'deep approaches are associated with quite specific characteristics of the experience of being taught'. In addition, Biggs (2001, p.92) states that students' lecturers are able to provoke 'cynicism, anxiety, or maladaptive attributions, … lower order or irrelevant cognitive activities' among students, which Biggs cautioned could lead to 'the presence of surface approaches to learning'. The findings are consistent with the 3P Model which depicts learning context as one of the factors that is related to students' adoption of either deep or surface learning strategies.

**Proposition 3.** Deep approach to learning is related to more positive learning outcomes then is a surface approach to learning.

The quantitative analysis indicated that students' adoption of deep approaches to learning had significant associations with their academic attainment, acquisition of generic skills, and their satisfaction with the course. In addition, students' adoption of surface approaches to learning had a significant association with their perceptions of learning environment with regards to inappropriate assessment practices.

The qualitative results suggested that adopting deep approaches to learning focussed on understanding concepts and ideas and making sense of what was learnt rather than just remembering information. In addition, students indicated that the ability to be able to relate to real world situations, to explain concepts in their own words, and being able to work through problems logically were important. With the adoption of deep approaches, students suggested that they obtained better grades and had better enjoyment of their learning experiences. Besides better academic achievement, students also indicated attitudinal gains such as improvement in self-esteem, being more confident, more positive perceptions towards a personal 'philosophy of life', and more independent in their learning. The interview data suggested that students who adopted deep approaches also used memorisation in their learning, however, this did not mean that students discarded attempts at seeing conceptual purposes or were unwilling to consider deep meanings of what they studied.

Students indicated that they used surface approaches to learning when they were preparing for their tests and examinations. Although they felt that such approaches undermined their academic performances, they cited using surface approaches due to time pressures or when they perceived no other way to learn despite attempts at understanding. Prior learning habits instilled in students during their high school days were also reasons given to their adoption of surface approaches to learning. Students indicated that using surface approaches also undermined their confidence, their participation, actual understanding, and correctness of their answers.

Findings from the two sets of analyses support Proposition 3. The results are consistent with investigations which have indicated that students who adopted deep approaches to learning emerged from their course having achieved higher quality learning, including the development of analytic skills, than did those who maintained greater reliance on surface approaches (Biggs, 1993a, 1999; Entwistle, 1998).

**Proposition 4**. Students' individual characteristics, positive perceptions of learning environments, and deep approach to learning combine to have large associations with students' learning outcomes.

The quantitative results showed that students' choice of academic discipline, high English language competency, and approaches to learning had medium significant associations with their academic attainment scores. In addition, high English language competency, positive perceptions of the learning environment with regards to aspects of good teaching and aspects of clear goals and standards, and approaches to learning had large significant associations with students' acquisition of generic kills. Students' perceptions of aspects of good teaching, aspects of clear goals and standards, and aspects of appropriate assessments had a large significant association with their satisfaction with the course. Deep approaches to learning were related positively to academic attainment and acquisition of generic skills while surface approaches had negative relationships with these outcomes.

Generally, qualitative data from Proposition 1 to 3 tentatively supported Proposition 4. While certain characteristics of approaches to learning were preferable in seeking to maximise learning outcomes, the interviews showed that a combination of students' experiences, prior learning contexts, choice of academic strand, maturity, English language proficiency, and the adoption of different approaches were related to their perceptions of their learning environments. Although the quantitative data did not identify many outcome differences related to students' individual characteristics, the qualitative data did suggest there were some alternative perceptions. The interview data suggested that students' positive perceptions of their teaching

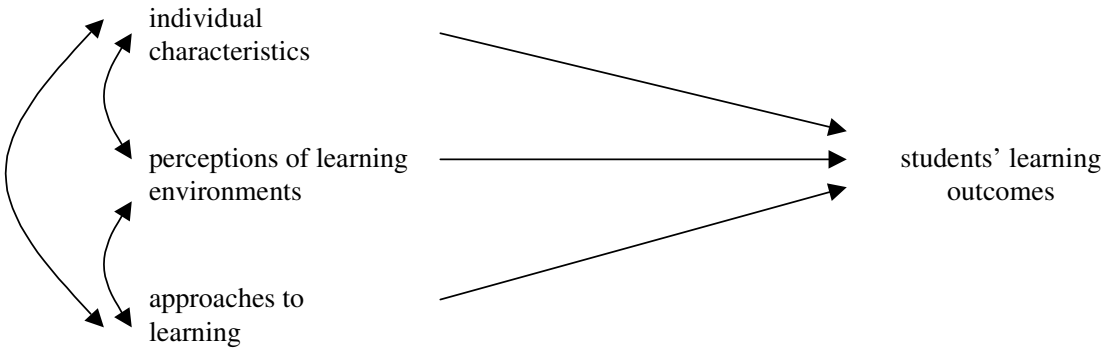
and learning environments contributed towards their motivation to succeed, to improve, and a desire to pursue deep approaches to learning. Moreover the interview data showed that students welcomed the opportunity to experience alternative modes of teaching besides lectures and to use a certain amount of flexibility in their own learning. The existence of these factors provided students with the academic motivation and academic engagement needed for better grades and overall satisfaction. Positive interaction with their friends taught them better interpersonal skills and the ability of working together. The findings are consistent with the student approaches to learning (SAL) position that better learning outcomes reflect the interaction between characteristics of the individual students, the context and content of their particular learning task, and approaches to learning students adopt where deep approaches tend to lead to qualitatively better learning outcomes (Biggs, 1987, Biggs, 1993a; Entwistle & Ramsden, 1983; Watkins, 1983).

**Proposition 5**. Students' approaches to learning mediate the relationships between individual characteristics, perceptions of learning environments, and learning outcomes.

There was no qualitative analysis to test Proposition 5 as this proposition examined the statistical paths in my research model. To test the overall research model of the study, I used multistage regression analysis. The results did not support the proposition that approaches to learning mediate the relationships between individual characteristics, perceptions of learning environment, and learning outcomes. Instead, the analysis suggested that the following model might be more appropriate in explaining differences among the variables being investigated.

**Figure PF3.1**

**Revised Research Model**




The analyses indicated the need to reconstruct the model that was adopted for the analysis, indicating that approaches to learning are related to individual characteristics and learning environments but do not mediate the associations among individual characteristics, learning environments, and learning outcomes.

## Implications for Teaching and Practice in PHEI

Using quantitative and qualitative research methods in the study provided a clear picture of the learning contexts of twinning programme students and described the ways in which they engaged with their educational contexts. Importantly, the investigation provides helpful information for the improvement of twinning programme education. Implications and recommendations for teaching and practice drawn from the findings are presented in the following sections and they deal with course matters, teaching practices, assessment and workload, and English language.

### Course Matters

The findings indicate that certain factors which relate to students' chosen courses encourage them to adopt deeper level learning approaches and are

important influences on their attitudes. The factors, included a learning environment that students perceived had freedom of choice over their subjects and specialisation. Heed needs to be taken from students' comments of their enjoyment and interest in doing work that they perceived had real life relevance to them in their future professional environment and that is related to actual working practices. When perceived relevance and interest were low, students tended to adopt surface level approaches and indicated that they were studying for the subject merely because it was required. McKeachie (1999) cautioned that students are intrinsically motivated in subjects that they have chosen rather than subjects that are compulsory for them to take. Similarly, Dart (1994) and Entwistle and Ramsden (1983) stated that students' perceptions at the lack of relevance of their subject matter could discourage them towards higher level learning approaches. On the basis of these findings my recommendations are:

*Provide students more choice of subjects and specialisations.* Efforts could be made between twinning programme providers and partner universities to offer more choice of specialisations and subjects to twinning programme students.

*Allow the course curriculum to be relevant to students' lives.* Attention needs to be directed at providing a course curriculum that is applicable to the Malaysian aspects of students' lives and to their future working environments. For instance, introduce examples and case-studies of Malaysian facets in reading materials, avoid too many teaching materials that overly present stereotypes from western culture, and inculcate issue-based topics of immediate relevance and usefulness to Malaysian needs.

### Teaching Practices

The results of this study suggest that students are able to discern between teaching practices that encourage or are barriers towards their use of higher level learning approaches. Higher level learning approaches are reflected in students being better at analytical skills, to think critically, share and apply ideas, and to cultivate a positive philosophy and interpretation of their life

and world. Students were critical of teaching practices which were unconstructive, non-committal, apathetic, showing favouritism, and not catering to the different needs of student diversity. The findings suggest that appropriate teaching practices, supportive teacher attitudes, and the provision of positive learning environments are important factors for student learning. Therefore, based on these findings, my recommendations to improve teaching practices are:

*Understand the importance of creating and encouraging cooperation and sharing among students.* Academics could make learning more sharing by introducing strategies such as brain storming sessions, group discussion, and other team-related activities. Through the process of communicating, sharing, and cooperating, younger students may benefit from the more experienced older students. Also, weaker learners or those who may have English language difficulty may understand better what they have learned. In addition, the shared aims within group activities may provide a positive environment to encourage self-efficacy and support among the sexes and different ethnic groups. Nevertheless, academics must be conscious that doing group work and any work that involves group effort can be time consuming and meaningless if it is not planned and structured carefully with appropriate aims and objectives of what is to be achieved. Therefore, lecturers must organise any group related activities carefully to harness the strength of such activities and make them an effective learning tool.

*Understand the importance of guiding students towards adopting deep approaches to learning*. PHEI students who come from more traditional school systems need academics to guide them in organising information or to be analytical in problem solving within their reading and studying. For example, lectures can initially be sequenced and structured to explain important concepts and theories, followed by explanations that can show the relationship of what they are learning to real life situations. By showing students the reality of what they are learning, students may be able to reflect on the importance of what they are learning, thus stimulating their interest. In addition, students can explore new concepts and ideas learnt through group work discussion, through solving problems from authentic case

studies and projects, and through appropriately planned practical laboratory sessions. Academics should be aware that test questions and problem solving activities should be made more challenging that require students to adopt deep approaches, thus helping them withdraw from their habit of shallow memorising or dependence on finding answers to past year questions. Academics should also be aware that Malaysian students are reluctant to express openly their opinions or contradict their lecturers because of the respect they have for their elders. This does not necessarily mean that students are passive and lack the ability to think critically; rather academics could assist them by providing opportunities for them to argue or agree on issues and problems without fear or favour.

*Understand the importance of creating and encouraging an impartial learning environment.* Academics should be aware of the needs and differences of the diverse student groups in their classes. Efforts should be made to discard teaching environments that are threatening and prejudiced and adopt those that are satisfying, enjoyable, and non-discriminatory. Such efforts should include regarding students' views and opinions, giving students a chance to express themselves in their own way, avoiding preferential allocation of marks in tests or assignments, and by not overly spending time with one particular student or group of students. In addition, academics should be careful about making assumptions of students' prior knowledge of the subject if the topic is new or has not been introduced in their first year. For those academics who still hold obsolete racial assumptions in their teaching practices, they should be made aware that such mentality has no place in any progressive higher educational institution. Perceptions of inequality from lecturers because of race differences may perpetuate bias and raise hostilities among students of different ethnic groups.

*Provide Professional Development.* Gow, Kember, and Sivan (1992) indicated that many higher education lecturers are unaware that their teaching practices produced effects quite different to those they intended. Horsburgh (1999) has noted that staff training programmes have been shown to make an impact on how teachers view their teaching and their students' learning. Some form of professional development programmes could be initiated as a

way to improve academics' teaching performance and for them to realise some of the potential negative aspects of their teaching approaches.

Professional development programmes could take the form of:

- Academic staff training. Academics who are considered as poor performers including those who have no formal training in teaching could be offered opportunities of staff training as a way to enhance their effectiveness and improve their contribution towards teaching performance.
- International, research, and industrial experiences. Adequate funding and time-out allowances could be arranged between twinning partners and partner universities to:
  i. provide twinning programme lecturers with overseas teaching attachments with the partner universities;
  ii. provide opportunities for lecturers of both institutions to initiate collaborative research, development projects, and developing concepts and ideas;
  iii. establish partnerships with the private business and industry sector to elicit input from them regarding industrial needs and to be receptive to the current needs of businesses and industries.

**Assessment and Workload**

Scouller (1998) has identified the importance of assessment in influencing students' approaches to their learning. Even for those students who would like to demonstrate deep approaches to their learning, the very nature of assessment practices might have discouraged them from doing so. Moreover, the type, style, and number of assessments have also been shown to be associated with the approaches adopted by students (Scouller, 1998). In the present study, the findings showed an association between surface approaches to learning and inappropriate assessments. Also, the study revealed that students found dissatisfaction with learning when they perceived that the assessments had no relevance to their areas of learning; and a perception of being overwhelmed by the amount of assessment and

time frame given for completion. Moreover, external problems such as stress and anxiety caused by assessments were also related to their perceptions of overload. Students in science related courses were more likely to adopt deep approaches to learning than students in business related courses. The findings indicated that business students perceived that their subjects were essentially factual and procedural with reproducing-type assessment methods. Lizzio, Wilsons, and Simons (2002) reported that commerce-business students tended to rely on rote-learning because of the nature of their subjects. Following from these findings, my recommendations are:

*Provide flexibility within each course for PHEI academics to structure and design assessments, or to re-structure some of the academic programmes.* It is recommended that there should be flexibility within each course for academics of PHEI to amend predetermined assessments with regards to the length, type, importance, usefulness, and weightings within the total semester load. Note needs to be taken of students' expressed view that group work, presentations, and practical sessions were useful and valuable. By providing some flexibility, lecturers would be able to amend and restructure assessment criteria to focus more on practical work, group projects or other activity-oriented exercises relevant to their group of students that could promote deep level approaches. In addition, some flexibility to restructure the academic programmes may provide the opportunity for academics to advance their professional expertise to cater to the needs of the current situation and provide the needed relevance.

*Understand students' workload.* Academics could provide assignment questions early in the semester with appropriate completion dates given. Large project type assignments could be broken down into smaller tasks with appropriate and timely feedback given before the next stage is attempted. It is important to ensure that assessment, like class presentations and seminars, are given the necessary assistance and guidance. In giving additional reading materials, short tests, and problems for tutorials, there must be consideration of the amount given and be within reasonable time intervals.

*Plan and design assessment activities that could help students assimilate to more western educational concepts.* Courses, specifically the assessment tasks and projects which are 'exported' for use in twinning programme mode might have taken very little account of the differences of Malaysian PHEI students in a multicultural learning environment with regards to their past school lives and any inhibitory consequences of their prior teaching and learning experiences. Interviews showed that students understood the importance of using deep conceptual understanding towards their studying. However, superficial reproduction might be a situation when students are not sufficiently equipped with the ability to develop or use deep approaches. Western educational concepts value high cognitive level outcomes that are addressed in assessment that is classroom-based and conducted in a non-threatening atmosphere (Biggs & Moore, 1993). However, Asian classrooms tend to be authoritarian and teaching methods are focussed on preparation for external examinations (Biggs, 1996). Allowance should be provided in planning and developing the 'exported' assessment activities that could gradually develop students' competence and confidence in using high level processing, being independent in monitoring their own progress, and grooming students towards a sense of curiosity and creativity. A 'gradually expanding' assessment task might encourage and motivate students to take responsibility for their own learning as an independent learner.

### English Language

PHEI students enter the twinning programmes with a minimum English language requirement specified by the overseas partner universities. Nevertheless, the present findings suggested that studying in English might still be quite disadvantageous for some students with lower competency in the language. Students with lower competency perceived their learning environment less favourably, tended to adopt surface approaches to learning, and had poorer learning related outcomes. Johnston (2001) observed that students who were less competent and less confident in English tended to deteriorate further in their English language skills over time. Gow, Kember, and Chow (1991) found that students who were less confident in the language were more likely to rely on rote learning without

trying to understand what they were learning. In light of the importance of the English language, recommendations to assist students with English language difficulties are:

*Accommodate students' English language competency*. Academics could accommodate students' lack of English language competency in the learning by:

i. ensuring that handouts do not contain too many high level vocabulary and complex sentence structures;
ii. reading through any materials or study manuals with students in order to point out the main ideas and meanings;
iii. using tutorial sessions to further explain assignments or projects;
iv. allocating consultation time for students to review their assignments and class presentations;
v. creating a 'mentor-mentee' system consisting of students with very high competency to assist low competency students.

*Create English Language for Specific Purposes Centres*. Students may come unprepared to write appropriately as required by their specific subjects, for example, to write technical reports, to write business summaries, or to write-up research projects, etc. In addition, students may be untrained to listen at lectures to sieve through important points made by lecturers. Therefore, efforts could be made to extend tertiary-level reading, writing, and listening skills to assist students who find it hard to function using the English language in their area of specialisations by offering and requiring courses in these areas.

Recommendations, based on the findings of the study, for course matters, teaching practices, assessment and workload, and English language suggest a framework which is driven by the aim to provide supportive learning environments that promote deep approaches to learning and impede the adoption of surface approaches. Within such a supportive learning environment students may be continuously challenged towards meaningful learning and ultimately towards the improvement of their learning related outcomes.

## Limitations of the Study

The present study examined associations among students' individual characteristics, perceptions of learning environments, learning approaches, and learning related outcomes of Malaysian PHEI students undertaking twinning programmes. A mediation model was developed to provide an initial framework to investigate the associations. In general, students' individual characteristics, perceptions of learning environment, and learning approaches were associated with medium to large amounts of variance in the outcome variables. However, the learning approaches variables did not mediate the associations between students' individual characteristics, perceptions of learning environments, and learning related outcomes, but were in fact directly related to their learning outcomes. The study has provided important insights into the quality of learning that twinning programme students in Malaysia undertake. However, several considerations need to be taken into account when interpreting the findings of the present study.

First, the samples for the study were limited. The sample only involved second and third year twinning programme students from engineering, computing, and business strands. Although the sample size of 368 students was considered adequate for the statistical procedures used to make comparisons and associations, a large number of the 368 students were from one particular ethnic group, namely the Chinese.

Second, only six PHEI conducting the twinning programme were involved in the study, which could limit the generalisabilty of the findings to other PHEI twinning colleges. However, this was unavoidable as I was constrained by the number of PHEI who were willing to participate.

Third, to provide a basis for dividing the student sample into contrasting performance groups, the end-of-session assessments (course work, tests, and examinations) were standardised by rating the marks into 1 (low) to 5 (high), with the cut off fail mark at 49%. The procedure was undertaken to carry out comparative and associative analysis between relatively more and

less successful levels of attainment rather than an analyses based on their assessment marks. In addition, ratings were used to identify the way that achievement was operationalised in each of the PHEI rather than to compare achievement scores across the six PHEI. However, there may be differences between an Australian curriculum and a British curriculum, their assessment procedures, scoring procedures, and marking schemes and this could influence students' attainment.

Finally, owing to the sensitivities of the information involved, I could not collect or obtain information about factors that could be important to the conclusions of the surveys, for example, information related to the socioeconomic background of students. Furthermore, contributions such as participant observation to gauge non-verbal behaviour of students could not be carried out due to time, human resources, and financial constraints, and the logistics of travelling to the different colleges. In addition, it would be preferable to have had data from lecturers and tutors to compare information provided by the students. Inclusion of these additional factors could provide a boarder spectrum to complete the findings.

While there is a risk about the generalisability of the findings caused by the limitations as indicated, my results based on the quantitative-qualitative design involving two sources of data may have, to some extent, overcome some of the problems. The questionnaires used were able to measure important dimensions of the learning environments and learning approaches of twinning programme students. However, they may not be sensitive or sufficient enough to address the research intentions adequately. Therefore, the quantitative analysis was complemented and supplemented using interviews to identify additional themes not possible with quantitative findings alone. While the qualitative investigations provided a fuller and more detailed picture of information given by the students, it also enhanced the statistical findings thus giving a more comprehensive understanding of twinning programme environments at PHEI in Malaysia.

## Directions for Future Research

Other desirable and new directions using both quantitative and qualitative approaches that could prove worth pursuing are suggested below.

First, it would be valuable to investigate the factors addressed within this study with other groups of students who are studying in overseas partner universities undergoing the same program. Such groups form a significant proportion of university enrolments in Australia and the United Kingdom. Therefore, these students' need for meaningful learning and their perceptions of their learning environments need to be better understood. In addition, it would be interesting to make comparisons of (and possibly in some instances, why) any differences in perceptions, approaches, and outcomes between different groups of students undertaking the twinning programmes and students in partner universities undertaking the same program.

Second, it was not possible to determine conclusions as to the causal effects of associations found in the present study since the study which is essentially a correlational one did not set out to manipulate variables nor was it a longitudinal study due to time and financial constraints. Therefore, longitudinal studies could be carried out to examine possible causal links among the variables.

Third, attempts could be made to incorporate both cultural elements and socioeconomic factors to examine differences among the three main races in Malaysia. Comparative studies could identify factors that might be beneficial not only to the multicultural education system in Malaysia, but also to the educational systems of other countries involved in multicultural learning. In addition, such studies that examine cultural and social factors might pave the way to explore how overseas curriculum in twinning programmes might be made more culturally sensitive and to be more relevant to the participating countries.

Fourth, the present research uncovered the existence of 'kiasu'-ism among PHEI twinning programme students that is often associated with Singaporeans. More detailed definition and practical operationalisation of this personality trait and its relationships to the processes of learning as it pertains to Malaysian students could be important in enhancing teaching and learning.

Fifth, past studies have indicated that it is useful to include academic staffs' perceptions of the learning environment, as well as academic staffs' approaches to teaching. Ramsden (1984) found that academics' perceptions of the learning environment tend to differ from their students' perceptions. In addition, it has been reported by Trigwell, Prosser, and Waterhouse (1999) that there was an association between academics' approaches to teaching and students' approaches to learning, where academics who leaned towards teacher-centeredness and a transmissive mode of delivery were more likely to have students who adopted surface approaches to learning. Therefore, it would be advantageous to extend the two suggestions to twinning programmes in Malaysia to obtain additional information that can be useful for further improvement of twinning programme learning environments and to provide fresh insights into the complex nature of the way in which teaching and learning processes interact under a twinning mode.

Finally, this study has modified and validated two instruments for use at the PHEI twinning programme level, the Course Experience Questionnaire (CEQ) and the Revised Two-Factor Study Process Questionnaire (R-SPQ-2F). Moreover, an English competency questionnaire (PELCQ) was designed to gauge differences in competencies to different academic situations. Further use of these instruments should be replicated by:

(i) using a larger sample selected from other PHEI twinning programme students throughout Malaysia. Doing this would cross-validate the instruments to a wider population thus reinforcing and extending the validity of the questionnaires.

(ii) including first year students, and students from other academic disciplines. The data obtained could provide other useful insights into PHEI students' learning environment, learning approaches, and learning

outcomes associations from first year students and students of other academic disciplines.

(iii) involving a range of students from public universities. It would be interesting to explore and investigate the results of this study based on private higher education environments in comparison with studies conducted on public higher education environments.

## A Final Word

The present study which involved Malaysian students from PHEI undertaking the twinning programmes began from a reconsideration of my own career in twinning programmes and my interest in this particular group of students' learning. It continued with an examination of the associations among their individual characteristics, perceptions to learning environments, learning approaches, and their learning related outcomes. Overall, findings from the investigation have provided a clearer and more meaningful comprehension of twinning programme students' learning and learning environments, and have supported to a large extent other previous published results with regards to student diversity, learning context, approaches, and outcomes from various academic disciplines and academic environments.

I briefly return to a comment made by a former Minister of Education of Malaysia that PHEI students 'were being taught but not educated and were hence unable to think critically or to be analytical'. First, the current study indicated that students who used deep approaches to learning tended to have better academic attainment, higher generic skills, and were more satisfied with their learning. Possibly then, PHEI students who adopted deep approaches do think critically and are analytical. Students do desire to learn with deep meaning and understanding and they do desire to acquire the ability for analytical and creative learning because possessing them will assist them in their aspirations to succeed in the real working world. The present study also showed that students' learning environments played an important role towards their desired learning approaches. However, the

results also showed that there is also interplay between students' individual characteristics and the learning environments. To some students, experiencing a different learning environment than they are used to could mean a motivation to adapt. But for others, they might experience it as a threat to their self-concept and have difficulties, thus resorting to superficial learning. Perhaps, academics should be alert to students' individual differences and realise that they play important roles in guiding and building desires to succeed, in exciting students, and in motivating students. In the same way, academics possess the ability to foster learning by constructing learning environments that are related to high level learning approaches. At the least, the present results should compel the former Minister and academics to recognise and accept that the relationships found in this study are important for students to learn in a more effective way and every effort should be made to create a conducive learning environment that can support critical and analytical thinking.

I hope that the findings of my study will stimulate future development and guide further improvements to enhance PHEI students' learning from the twinning programmes towards their high and successful attainment from both an academic perspective and life-long potentials.

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# APPENDICES

## Appendix A

Sample of the actual questionnaire used for obtaining student background data, CEQ, R-SPQ-2F, and the PELCQ, including all instructions given to the students.

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## UNIVERSITY OF ADELAIDE
## Graduate School of Education
## Australia

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### Student Learning Survey

The purpose of the questions that you will find is to collect your perceptions of your courses. Your responses will assist in developing better methods and strategies for student learning.

Please answer all questions based on your experiences in your course. There are 4 sections.

All information supplied by you will be treated in strict confidence. Please be assured that no particulars will be released for any reason. All information is to be used for research only.

---

***Student Number*** *(or College Matric Number):*

### Section A

This section will ask for information about you.

**1.** Nationality. (please TICK ONE ONLY)

_____ Malaysian

_____ International Student (please state country_____

**2.** Race (*for Malaysians only*). (please TICK)

_____ Malay

_____ Chinese

_____ Indian

_____ Others, please specify: _____

**3**. Gender. (please TICK)

_____ Male

_____ Female

**4.** Age. (please TICK)

_____ 16 and below

_____ 17- 21

_____ 22 - 26

_____ 27 and above

(Please continue to Section B)

.

## Section B

Think about your course as a whole rather than identifying individual subjects, topics or lecturers. Choose the one most appropriate response to each statement. Please **CIRCLE** the category that best fits your immediate reaction.

| | Strongly disagree | | | | Strongly agree |
|---|---|---|---|---|---|
| 1. It was always easy to know the standard of work expected. | 1 | 2 | 3 | 4 | 5 |
| 2. The teaching staff of this course motivated me to do my best work. | 1 | 2 | 3 | 4 | 5 |
| 3. The workload was too heavy. | 1 | 2 | 3 | 4 | 5 |
| 4. I usually had a clear idea of where I was going and what was expected of me in this course. | 1 | 2 | 3 | 4 | 5 |
| 5. The staff put a lot of time into commenting on my work. | 1 | 2 | 3 | 4 | 5 |
| 6. To do well in this course all you really needed was a good memory. | 1 | 2 | 3 | 4 | 5 |
| 7. The staff seemed more interested in testing what I had memorised than what I had understood. | 1 | 2 | 3 | 4 | 5 |
| 8. It was often hard to find out what was expected of me in this course. | 1 | 2 | 3 | 4 | 5 |
| 9. I was generally given enough time to understand the things I had learned. | 1 | 2 | 3 | 4 | 5 |
| 10. The staff made a real effort to understand difficulties I might be having with my work. | 1 | 2 | 3 | 4 | 5 |
| 11. The teaching staff normally gave me helpful feedback on how I was doing. | 1 | 2 | 3 | 4 | 5 |
| 12. My lecturers were extremely good at explaining things. | 1 | 2 | 3 | 4 | 5 |
| 13. Too many staff asked me questions just about facts | 1 | 2 | 3 | 4 | 5 |
| 14. The teaching staff worked hard to make their subjects interesting. | 1 | 2 | 3 | 4 | 5 |

| | Strongly Disagree | | | | Strongly Agree |
|---|---|---|---|---|---|
| 15. There was a lot of pressure on me as a student in this course. | 1 | 2 | 3 | 4 | 5 |
| 16. The huge amount of work to be got through in this course meant that it couldn't be all completely understood. | 1 | 2 | 3 | 4 | 5 |
| 17. The staff made it clear right from the start what they expected from students | 1 | 2 | 3 | 4 | 5 |
| 18. The course developed my problem-solving skills. | 1 | 2 | 3 | 4 | 5 |
| 19. The course improved my logical skills. | 1 | 2 | 3 | 4 | 5 |
| 20. The course helped me develop my ability to work as a team member. | 1 | 2 | 3 | 4 | 5 |
| 21. As a result of my course, I feel confident about overcoming unfamiliar problems. | 1 | 2 | 3 | 4 | 5 |
| 22. The course improved my skills in written communication. | 1 | 2 | 3 | 4 | 5 |
| 23. My course helped me to develop the ability to plan my own work. | 1 | 2 | 3 | 4 | 5 |
| 24. Overall I am satisfied with the quality of this course. | 1 | 2 | 3 | 4 | 5 |

(Please continue to Section C)

## Section C

This questionnaire has a number of questions about your attitudes towards your studies and your usual way of studying.

There is no right way of studying. It depends on what suits your own style and the course you are studying. It is accordingly important that you answer each question as honestly as you can. If you think your answer to a question would depend on the subject being studied, give the answer that would apply to the subject(s) most important to you.

Please choose the one most appropriate response to each statement. Please **CIRCLE** the category that best fits your immediate reaction. Do not spend a long time on each item: your first reaction is probably the best one. Please answer each item. Do not worry about projecting a good image.

The letters alongside each number stand for the following response:

**A** - Never true or only rarely true of me
**B** - Sometimes true of me
**C** - True about me about half the time
**D** - Frequently true of me]
**E** - Always true or almost always true of me

| | | | | | |
|---|---|---|---|---|---|
| 1. I find that at times studying gives me a feeling of deep personal satisfaction. | A | B | C | D | E |
| 2. I find that I have to do a lot of work on a topic so that I can make my own conclusions before I am satisfied. | A | B | C | D | E |
| 3. My aim is to pass the course while doing as little work as possible. | A | B | C | D | E |
| 4. I only study seriously what's given out in class or in the course outlines. | A | B | C | D | E |
| 5. I feel that almost any topic can be highly interesting once I get into it. | A | B | C | D | E |
| 6. I find most new topics interesting and often spend extra time trying to obtain more information about them. | A | B | C | D | E |
| 7. I do not find my course very interesting so I keep my work to the minimum. | A | B | C | D | E |
| 8. I learn some things by memorising, going over and over them until I know them by heart even if I do not understand them. | A | B | C | D | E |
| 9. I find that studying academic topics can at times be as exciting as a good book or movie. | A | B | C | D | E |

**A** - Never true or only rarely true of me
**B** - Sometimes true of me
**C** - True about me about half the time
**D** - Frequently true of me
**E** - Always true or almost always true of me

| | | | | | |
|---|---|---|---|---|---|
| 10. I test myself on important topics until I understand them completely. | A | B | C | D | E |
| 11. I find I can manage to pass most assessments by memorising key sections rather than trying to understand them. | A | B | C | D | E |
| 12. I generally restrict/limit my study to what is specifically set, as I think it is unnecessary to do anything extra. | A | B | C | D | E |
| 13. I work hard at my studies because I find the material interesting. | A | B | C | D | E |
| 14. I spend a lot of my free time finding more about interesting topics which have been discussed in different classes. | A | B | C | D | E |
| 15. I find it is not helpful to study topics in detail. It confuses and wastes time, when all you need is just enough knowledge to get by in these topics. | A | B | C | D | E |
| 16. I believe that lecturers shouldn't expect students to spend large amounts of time studying material everyone knows won't be examined. | A | B | C | D | E |
| 17. I come to most classes with questions in mind that I want answering. | A | B | C | D | E |
| 18. I make a point of looking at most of the suggested readings that go with the lectures. | A | B | C | D | E |
| 19. I see no point in learning material which is not likely to be in an examination. | A | B | C | D | E |
| 20. I find the best way to pass examinations is to try to remember answers to questions that might come out. | A | B | C | D | E |

(Please continue to Section D)

## Section D

Please CIRCLE the number that best describes your own feelings and beliefs about your English Language ability towards the following situations. There are no right or wrong answers.

| My English Language competency in: | **Very Good** | **Enough** | **Only Just Enough** | **Uncertain** | **Definitely Not Enough** |
|---|---|---|---|---|---|
| Reading academic text books, materials, handouts, study manuals, printed articles and reading for an essay or assignment. | 5 | 4 | 3 | 2 | 1 |
| Writing - assignments, essays, reports (including science, business or laboratory reports), notes during lectures or keeping up with lecturers in terms of note-taking. | 5 | 4 | 3 | 2 | 1 |
| Understanding lectures and/or seminars. | 5 | 4 | 3 | 2 | 1 |
| Discussion and Presentation during tutorials, seminars, and in class (e.g. giving instructions, explaining ideas, or getting responses etc.) | 5 | 4 | 3 | 2 | 1 |
| Informal everyday conversation with friends and staff (e.g. telling jokes, giving advice, or seeking advice etc). | 5 | 4 | 3 | 2 | 1 |

(Please continue to the next page on INTERVIEWS)

## Interviews

I would like to contact you for a short interview.

The interview will be on a voluntary basis. Please leave your email and/or telephone/mobile number where I can contact you.

I appreciate very much your kind support in this.

Email Address: _____

Contact Numbers: _____ Telephone Number

_____ Mobile Number

**THANK YOU** very much indeed for completing this questionnaire. This research will assist many educators and academics better understand the complexity of your learning.

## Appendix B

Factor Analysis on the five scales of the CEQ

**Communalities**

| | Initial | Extraction |
|---|---|---|
| q4 | 1.000 | .506 |
| q8 | 1.000 | .352 |
| q18 | 1.000 | .610 |
| q20 | 1.000 | .597 |
| q21 | 1.000 | .592 |
| q23 | 1.000 | .540 |
| q1 | 1.000 | .605 |
| q7 | 1.000 | .532 |
| q16 | 1.000 | .405 |
| q29 | 1.000 | .469 |
| q9 | 1.000 | .362 |
| q15 | 1.000 | .574 |
| q22 | 1.000 | .379 |
| q5 | 1.000 | .669 |
| q17 | 1.000 | .443 |
| q24 | 1.000 | .631 |
| q28 | 1.000 | .314 |

Extraction Method: Principal Component Analysis.

**Total Variance Explained**

| | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| Component | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 3.948 | 23.224 | 23.224 | 3.948 | 23.224 | 23.224 | 3.538 | 20.814 | 20.814 |
| 2 | 2.291 | 13.477 | 36.701 | 2.291 | 13.477 | 36.701 | 1.776 | 12.445 | 33.259 |
| 3 | 1.235 | 7.263 | 43.963 | 1.235 | 7.263 | 43.963 | 1.670 | 10.821 | 44.080 |
| 4 | 1.107 | 6.514 | 50.478 | 1.107 | 6.514 | 50.478 | 1.598 | 9.398 | 53.478 |
| 5 | .919 | 5.404 | 55.881 | | | | | | |
| 6 | .866 | 5.094 | 60.976 | | | | | | |
| 7 | .834 | 4.904 | 65.880 | | | | | | |
| 8 | .750 | 4.414 | 70.294 | | | | | | |
| 9 | .712 | 4.187 | 74.480 | | | | | | |
| 10 | .693 | 4.078 | 78.558 | | | | | | |
| 11 | .671 | 3.944 | 82.503 | | | | | | |
| 12 | .626 | 3.681 | 86.183 | | | | | | |
| 13 | .585 | 3.439 | 89.622 | | | | | | |
| 14 | .517 | 3.043 | 92.665 | | | | | | |
| 15 | .467 | 2.746 | 95.411 | | | | | | |
| 16 | .443 | 2.603 | 98.014 | | | | | | |
| 17 | .338 | 1.986 | 100.000 | | | | | | |

Extraction Method: Principal Component Analysis.

**Component Matrix[a]**

| | Component | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| q2 | .697 | -.120 | -2.18E-03 | 7.779E-02 |
| q5 | .537 | -.170 | -.177 | 5.345E-02 |
| q10 | .729 | 3.082E-02 | -.279 | 1.120E-02 |
| q11 | .726 | 2.681E-02 | -.229 | .127 |
| q12 | .758 | 4.851E-03 | -.100 | 8.797E-02 |
| q14 | .696 | -2.05E-02 | -9.77E-02 | .213 |
| q1 | .355 | 3.619E-02 | .438 | -.535 |
| q4 | .423 | .243 | .475 | -.262 |
| q8 | .133 | .491 | .284 | .258 |
| q17 | .596 | -6.40E-02 | .318 | 8.616E-02 |
| q6 | 5.381E-02 | .596 | -6.05E-02 | -1.45E-02 |
| q7 | 2.079E-02 | .458 | .107 | .593 |
| q13 | -.188 | .546 | 9.590E-02 | .190 |
| q3 | 7.907E-02 | .587 | -.430 | -.365 |
| q9 | .562 | .220 | .122 | -.252 |
| q15 | -9.30E-02 | .665 | -.278 | -.321 |
| q16 | -9.31E-02 | .491 | .160 | .198 |

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

**Rotated Component Matrix[a]**

| | Component | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| q2 | .669 | -4.688E-02 | .203 | -.125 |
| q5 | .570 | -.154 | 2.479E-02 | -4.89E-02 |
| q10 | .757 | -7.026E-02 | 8.117E-02 | .161 |
| q11 | .767 | 1.374E-02 | 4.870E-02 | 7.256E-02 |
| q12 | .750 | 1.681E-02 | .171 | 6.737E-03 |
| q14 | .724 | 7.504E-02 | 7.314E-02 | -7.35E-02 |
| q1 | 6.775E-02 | -.153 | .758 | 4.838E-02 |
| q4 | .174 | .174 | .686 | 2.846E-02 |
| q8 | 7.486E-02 | .605 | .395 | 4.207E-02 |
| q17 | .410 | .107 | .481 | -.267 |
| q6 | 3.364E-02 | .529 | 7.905E-02 | .201 |
| q7 | .106 | .725 | -.186 | -4.92E-02 |
| q13 | -.185 | .544 | -2.89E-02 | .219 |
| q3 | 8.339E-02 | 6.162E-02 | 2.767E-02 | .811 |
| q9 | -.114 | .403 | .180 | .439 |
| q15 | .411 | .196 | 5.557E-02 | -4.89E-02 |
| q16 | -.111 | 4.367E-02 | 3.975E-02 | .143 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

**Component Transformation Matrix**

| Component | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1 | .923 | -.008 | -.010 | .384 |
| 2 | -.051 | .725 | .669 | .156 |
| 3 | .239 | .602 | -.501 | -.574 |
| 4 | -.297 | .334 | -.549 | .706 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

## Appendix C (1)

Factor Analysis of the Motive Subscale of the R-SPQ-2F

**Communalities**

| | Initial | Extraction |
|---|---|---|
| qa1 | 1.000 | .544 |
| qa5 | 1.000 | .345 |
| qa9 | 1.000 | .553 |
| qa13 | 1.000 | .457 |
| qa17 | 1.000 | .334 |
| qa3 | 1.000 | .444 |
| qa7 | 1.000 | .491 |
| qa11 | 1.000 | .433 |
| qa15 | 1.000 | .511 |
| qa19 | 1.000 | .325 |

Extraction Method: Principal Component Analysis.

**Total Variance Explained**

| | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| Component | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 2.443 | 24.428 | 24.428 | 2.443 | 24.428 | 24.428 | 2.246 | 22.460 | 22.460 |
| 2 | 1.994 | 19.939 | 44.366 | 1.994 | 19.939 | 44.366 | 2.191 | 21.907 | 44.366 |
| 3 | .879 | 8.788 | 53.154 | | | | | | |
| 4 | .860 | 8.603 | 61.757 | | | | | | |
| 5 | .803 | 8.030 | 69.787 | | | | | | |
| 6 | .725 | 7.245 | 77.033 | | | | | | |
| 7 | .649 | 6.488 | 83.521 | | | | | | |
| 8 | .624 | 6.241 | 89.761 | | | | | | |
| 9 | .528 | 5.282 | 95.043 | | | | | | |
| 10 | .496 | 4.957 | 100.000 | | | | | | |

Extraction Method: Principal Component Analysis.

**Component Matrix[a]**

| | Component | |
|---|---|---|
| | 1 | 2 |
| qa1 | .615 | .408 |
| qa5 | .430 | .400 |
| qa9 | .610 | .425 |
| qa13 | .599 | .314 |
| qa17 | .325 | .478 |
| qa3 | -.514 | .424 |
| qa7 | -.543 | .443 |
| qa11 | -.256 | .606 |
| qa15 | -.469 | .539 |
| qa19 | -.445 | .356 |

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

**Rotated Component Matrix[a]**

| | Component | |
|---|---|---|
| | 1 | 2 |
| qa1 | .731 | -.101 |
| qa5 | .587 | 1.446E-02 |
| qa9 | .739 | -8.60E-02 |
| qa13 | .656 | -.162 |
| qa17 | .560 | .143 |
| qa3 | -.105 | .658 |
| qa7 | -.114 | .691 |
| qa11 | .210 | .624 |
| qa15 | 4.857E-03 | .715 |
| qa19 | -9.75E-02 | .561 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

**Component Transformation Matrix**

| Component | 1 | 2 |
|---|---|---|
| 1 | .749 | -.662 |
| 2 | .662 | .749 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

## Appendix C (2)

Factor Analysis of the Strategy Subscale of the R-SPQ-2F

**Communalities**

| | Initial | Extraction |
|---|---|---|
| qa2 | 1.000 | .291 |
| qa6 | 1.000 | .441 |
| qa10 | 1.000 | .451 |
| qa14 | 1.000 | .548 |
| qa18 | 1.000 | .493 |
| qa4 | 1.000 | .245 |
| qa8 | 1.000 | .406 |
| qa12 | 1.000 | .454 |
| qa16 | 1.000 | .280 |
| qa20 | 1.000 | .492 |

Extraction Method: Principal Component Analysis.

**Total Variance Explained**

| | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| Component | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 2.256 | 22.558 | 22.558 | 2.256 | 22.558 | 22.558 | 2.209 | 22.090 | 22.090 |
| 2 | 1.844 | 18.435 | 40.994 | 1.844 | 18.435 | 40.994 | 1.890 | 18.904 | 40.994 |
| 3 | .972 | 9.720 | 50.714 | | | | | | |
| 4 | .924 | 9.243 | 59.957 | | | | | | |
| 5 | .802 | 8.020 | 67.977 | | | | | | |
| 6 | .768 | 7.675 | 75.652 | | | | | | |
| 7 | .691 | 6.912 | 82.565 | | | | | | |
| 8 | .627 | 6.268 | 88.832 | | | | | | |
| 9 | .601 | 6.005 | 94.838 | | | | | | |
| 10 | .516 | 5.162 | 100.000 | | | | | | |

Extraction Method: Principal Component Analysis.

**Component Matrix[a]**

| | Component | |
|---|---|---|
| | 1 | 2 |
| qa2 | .519 | .145 |
| qa6 | .651 | .129 |
| qa10 | .642 | .195 |
| qa14 | .711 | .206 |
| qa18 | .605 | .357 |
| qa4 | -.184 | .459 |
| qa8 | -.255 | .584 |
| qa12 | -.318 | .594 |
| qa16 | -.110 | .517 |
| qa20 | -.259 | .652 |

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

**Rotated Component Matrix[a]**

| | Component | |
|---|---|---|
| | 1 | 2 |
| qa2 | .538 | -3.82E-02 |
| qa6 | .657 | -9.78E-02 |
| qa10 | .671 | -3.25E-02 |
| qa14 | .739 | -4.53E-02 |
| qa18 | .690 | .132 |
| qa4 | -1.85E-02 | .495 |
| qa8 | -4.27E-02 | .636 |
| qa12 | -9.88E-02 | .667 |
| qa16 | 7.106E-02 | .524 |
| qa20 | -2.39E-02 | .701 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

**Component Transformation Matrix**

| Component | 1 | 2 |
|---|---|---|
| 1 | .941 | -.337 |
| 2 | .337 | .941 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.