

# Cultural Differences and Learning Styles of Chinese and European Trades Students

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## **Abstract**

This article discusses the differences in the learning styles and the approaches to learning by students of Chinese origin, in their first year of tertiary (College or University) study in New Zealand, compared to European students. The research focuses on students doing Electrical and Electronics Trade courses, at Unitec

## **Introduction**

The purpose of this research was to gain insight and hopefully improve teaching methods to cater for the ethnic and cultural diversity of Trades students studying overseas. From teaching experience over many years it appeared that Asian and particularly Chinese students tended to use somewhat different learning methods and styles than those students of European origin. It appeared that in the past groups of Asian international students studying in the tertiary sector in New Zealand often appeared to learn primarily by rote / off-by-heart. Sometimes they memorised large tracts of lecture notes perfectly, and in many cases their level of English comprehension appeared low. Biggs (1996b) however argues that memorising may result in deep learning albeit using an approach regarded as outdated by current Western pedagogy. More recent groups of international students seem to be more fluent to a Western observer, and they demonstrate a deeper understanding of concepts, rather than just words.

The overall aim of this research project was to identify or confirm classroom observations of learning methods, and if there were any significant differences in approaches to learning between Chinese and European Trades' students. Because of the large proportion of Chinese students, it is reasonable to question whether their learning methods and hence teaching methods might (or should) be different to reflect differences in their culture and / or upbringing.

The research question has been refined and limited to reflect the predominant group of Asian students in classes. The field of study has also been narrowed to include the Trades area that Unitec Applied Technology Institute covers, but not overly restricted to Electro Technology department, as this would unduly limit student numbers.

## Literature Review

This literature review covers two areas, students' approaches to learning, and the methods / instruments used to measure learning styles. Ideas about Asian students' learning styles have changed since Ballard and Clanchy (1991) who assumed Chinese students' use of repetition involved learning by rote and therefore only surface learning occurred. Biggs (1996b) seminal work has produced many publications countering their earlier arguments, and other researchers such as Kember (1998) and Entwistle and Ramsey (1983) have shown that Chinese students use repetition as an aid to gain deep levels of understanding.

Kember and Gow (1989) suggest that memorisation helps reduce the workload when studying in a foreign language. The paradox is that Chinese students' achievement level is often higher than European students despite a class pedagogy widely regarded as outdated by current Western teaching philosophy. (Biggs & Watkins, 2001).

Western educational theory currently favours a constructivist approach, where students construct (build) their own knowledge, merely facilitated by the teacher. In a Confucian Heritage Culture (Biggs & Watkins, 2001) the teacher is generally well respected with all the wisdom, a mentor, guide or maybe even guru figure for the students who are the apprentices. This knowledge is imparted to the students. Imposing Western pedagogy on such a cultural background, such as the introduction of the Target Oriented Curriculum into Hong Kong has met with a lack of success (Boekaerts, 1998).

Experience has shown Chinese students do not tend to ask as many questions as Western students (Biggs, 1996a). In Chinese culture questioning may be seen to represent a challenge to the teacher (Ginsberg, 1992). However Chinese teachers assume the role of mentor and role model far more so than Western teachers. They interact with students after class in a more informal mode (Stevenson & Stigler, 1992) far more than their European counterparts. It would also be incorrect to assume that Chinese classes are entirely teacher centred. Student participation can include rapid fire questions by the teacher, answered by one student on behalf of the class while the other students participate by listening and tend to follow a sequence of Initiation, Response and Follow-up to reinforce the learning (Cortazzi, 1998).

Ng, Tsui and Marton (2001) observed an interesting difference in classroom technique between two identical classes taught by the same teacher; one in English for higher band / level bilingual students and the other in Chinese to lower level students with less English comprehension. They observed that the class in Chinese, far from occurring at a lower academic level, actually contained significantly more open ended questions, and received better student responses to such questions than the English class, which was perhaps limited by both the students' and teacher's mastery of the English language.

One study has shown (Watkins & Biggs, 2001) that Western students tend to believe understanding occurs as a sudden insight, and academic success is primarily related / attributed to innate ability (perhaps related to IQ). Chinese students on the other hand tend to attribute understanding, and hence academic success primarily to effort. This can have both positive and negative consequences. The Chinese view promotes serious study, students paying strict attention in class and other behaviours likely to gain positive learning outcomes. However, if a student does not succeed in a particular course of study for reasons beyond their control, self blame, shame and even suicide may result (Dweck & Grant, 2001).

Recent studies (Chan, 1999; Woodrow & Yuen Mei, 2001) and even a local study (Robinson & Kuin, 1999) provide insight into the different learning styles and practices of Asian and in particular Chinese students studying in a European country. They provide a cultural context for the Chinese approach to copying material for assignments, both from colleagues and from external sources such as the Internet. The Chinese regarding copying as a valid method of learning, as opposed to the popular Western view which regards such copying as plagiarism and cheating.

## **Methods**

Research styles and methods in the construction industry, a related trades area has also been the subject of at least two local books (Fellows & Liu, 1997 , Naoum, 1998). These have been instructive to help focus on a research question, and choose a suitable method / instrument to answer that question.

In evaluating which instrument would be most effective for this project Coffield, Moseley, Hall and Ecclestone (2004) has provided guidance. They evaluated thirteen of the most influential learning styles models, and rated them for four factors, namely internal consistency, reliability, construct validity and prediction validity. Although Allinson and Hayes (1996) rated positively on all 4 factors, their Cognitive Style Index is primarily designed for analysing business relationships, particularly manager - subordinate, and has a single scale from Intuition to Analysis. Therefore it was regarded as inappropriate for this purpose.

Reversal Theory (Apter, Mallows, & Williams, 1998) rated well except for construct validity; however apart from challenging the notion of fixed learning style preferences, there is no evidence of its pedagogical impact, and therefore also unsuitable for this research project. The PEPS survey (Dunn, Dunn, & Price, 1996) rated poorly except for predictive validity, despite its wide promotion and use. Learning Styles Inventory (Kolb, 1999) has been globally influential but rated well only on retest reliability, and the Learning Styles Questionnaire (Honey & Mumford, 1982) although also widely used, again rated well only in retest reliability. The Inventory of Learning Styles (ILS) (Vermunt, 1994) however rated well in all factors except predictive validity. To complete the survey of possible instruments a series of perhaps lesser known online questionnaires was investigated, however none

compared with the ILS (Vermunt, 1994). Therefore the Inventory of Learning Styles was chosen for this research project. Although an early version of the questionnaire is freely available on the Internet, the author's permission for use of the updated version for this study was obtained.

The reason a quantitative questionnaire, rather than a qualitative method such as a focus group was chosen, is mainly that it is less intrusive for the participants. Students are more willing to participate in a 10 - 20 minute questionnaire than an interview or focus group. There may also be student reluctance to participate in individual interviews or focus groups, particularly with a lecturer from a different cultural background. Future qualitative research could be indicated to illuminate any resulting questions arising from this study.

Use of an existing, well proven questionnaire avoids any pitfalls in designing a new instrument (Cohen, Manion, & Morrison, 2000). There are many questionnaires available in this field and in the early stages of this project the PEPS survey (Dunn et al., 1996) was considered, but the logistics of processing the results overseas in USA made the PEPS survey impractical for this research. The additional cost of processing the results would also need to be considered.

The pilot study for this project used the Learning Styles Questionnaire (Honey & Mumford, 1982), with a small sample of lecturers as subjects. However Inventory of Learning Styles Questionnaire, (Vermunt, 1994) proved to be the most appropriate for this research project and provided a much greater quantity of data covering a much wider range of learning styles and modes than the Honey and Mumford questionnaire. Having tested the questionnaire myself it required 10 minutes to complete, however the subsequent student completion time ranged up to 25 minutes. One student did not fully complete the questionnaire and as a result his data was unusable and was not included.

Unitec Research Ethics Committee approval was sought and gained, involving the moderation not only of the questionnaire itself, but accompanying participant Information Sheets and Consent Forms. Copies of the questionnaire and accompanying forms are available from the author by request.

The research participants / subjects in this study were Unitec students, studying in the Trades areas at Unitec Applied Technology Institute. The sample size consisted of four separate classes of students giving total sample size of 44 students. Participation was voluntary and anonymous.

The Inventory of Learning Styles questionnaire has 120 questions each scored on a rating of 1 to 5. It is divided into 3 sections. Part A measures Study Activities, Part B1 : Study Motives, and Part B2 : Study Views. There are 56 questions in Part A, using a 1 to 5 rating scale denoting the frequency of the Study Activity. 1 means "I do this Seldom or Never" ranging up to 5 which means "I do this Almost Always". Part B1 contains 24 questions and Part B2 an additional 40 questions, both measuring

the agreement or otherwise to a given statement. In these sections 1 means “I Disagree entirely” ranging up to 5 which means “I Agree Entirely”.

The results of each questionnaire are totalled into 20 separate categories as shown in Table 1. These are organised into 4 main categories and 16 sub categories 5 of which are further subdivided into 9 sub scales as shown in Table 1.

Table 1  
*Categories and Sub Scales*

<b>Main Category</b>	<b>Sub Categories</b>	<b>Sub Scales</b>
<b>Part A</b>  Processing Strategies	Deep Processing	Relating and Structuring Critical Processing
	Stepwise Processing	Memorising and Rehearsing
	Concrete Processing	Analysing Application
Regulation Strategies	Self Regulation	Self Regulation of Learning Processes and Results Self Regulation of Learning Content
	External Regulation	External Regulation of Learning Process External Regulation of
	Lack of Regulation	Learning Results
<b>Part B1.</b> Learning Orientations	Personally Interested Certificate Directed Self Test Directed Vocation Directed Ambivalent	
<b>Part B2.</b> Mental Modes of Learning	Construction of Knowledge Intake of Knowledge Use of Knowledge Stimulation Education Co-operation	

Table 2

*Results*

<b>Sub Category - Sub Scale</b>	<b>Significance</b>
Deep Processing - Relating and Structuring	0.287
Deep Processing - Critical Processing	0.463
<b>Stepwise Processing - Memorising and Rehearsing</b>	<b>0.043</b>
Stepwise Processing - Analysing	0.303
Concrete Processing	0.559
Self Regulation of Learning Processes and Results	0.332
Self Regulation of Learning Content	0.137
<b>External Regulation of Learning Processes</b>	<b>0.019</b>
<b>External Regulation of Learning Results</b>	<b>0.038</b>
Lack of Regulation	0.947
Learning Orientations - Personal Interest	0.436
Learning Orientations - Certificate Directed	0.156
<b>Learning Orientations - Self Test Directed</b>	<b>0.032</b>
<b>Learning Orientations - Vocation Directed</b>	<b>0.027</b>
<b>Learning Orientations - Ambivalent</b>	<b>0.009</b>
Mental Modes of Learning - Construction of Knowledge	0.074
<b>Mental Modes of Learning - Knowledge Intake</b>	<b>0.012</b>
<b>Mental Modes of Learning - Use of knowledge</b>	<b>0.022</b>
Mental Modes of Learning - Stimulating Education	0.223

Note: A significance level of less than 0.05 is regarded as significant.

The 44 students surveyed consisted of students from four classes of the Certificate of Applied Technology, both Levels 3 and 4. They comprised a mix of nationalities, with a large majority of 25 Chinese students, 7 New Zealand students, and the balance including 3 Fijian Indian, 3 Korean and also single students of the following nationalities : Indian, Persian, Burmese, Peruvian, Bangladeshi and one unspecified Asian. Only the Chinese and New Zealand students' results have been

included in the comparison and the other nationalities' results have been set aside for a future, wider study. The average score for each of the sub categories or sub scales was compared between the Chinese and New Zealand students (only). Analysis was conducted initially using an MS Excel spreadsheet, and subsequently in more detail using SPSS statistical package. The use of SPSS allowed a more detailed ANOVA test, which resulted in some sub scales showing a statistically significant difference between the nationality groups where no difference was initially apparent or obvious using the simpler Excel analysis.

The processing strategies described in Part A of diagram 1 categorise the ways of dealing with material to be learned. Some students may prefer to make lists, others summaries. It has been commonly assumed that New Zealand students and teaching methods favour deep processing, whereas Chinese students and teaching methods favour stepwise processing. Processing the material step by step very thoroughly with an eye for detail and learning the factual information completely by heart was regarded as a common Chinese learning method. However the results show an insignificant difference between the two groups with both groups favouring deep processing, and the Chinese group rating slightly higher in all sub scales, except concrete processing. New Zealand students show a slight but statistically insignificant preference to link their learning to the world around them using examples from their experience and everyday life.

Chinese students showed slightly higher regulation strategies in all areas, both self and external regulation, with the single exception of Lack of Regulation, where both groups scored equally. This may indicate that Chinese students have a better study ethic than New Zealand students. However there were two sub scales showing the greatest significant difference between the two groups. The first was External Regulation of Learning Processes, indicating a preference by Chinese students for teacher guided study, primarily using textbooks. This may be expected as Chinese culture and students tend to show more reliance and obedience to teacher instruction than New Zealand students. The other sub scale with less of a marked difference was External Regulation of Learning Results, where again Chinese students scored significantly higher, maybe indicating Chinese students' strong focus on assessment and passing the requirements of the course.

In part B1, terms of learning orientation / motive the two groups scored similarly for most sub categories. Chinese students rated slightly but significantly higher for self test directed, indicating a desire to show yourself and others that you can succeed. New Zealand students scored higher for vocation directed, probably having a more immediate profession or job pathways motivating their study. This compares with many Chinese students whose choice of study (towards a vocation) may be strongly influenced by family, cultural or other outside factors. It has been recorded that a number of Chinese students who recently completed an entire one year certificate or three year degree course in one particular trade, then subsequently re-enrolled in the same certificate or degree course majoring in a different trade area. Perhaps unsurprisingly, this lack of focussed direction is reflected in Chinese students

scoring significantly higher in the ambivalent sub category. In fact this sub category showed the highest level of difference between the two groups.

In part B2, the mental modes of (opinions about) learning the New Zealand group scored statistically higher for knowledge intake and for use of knowledge. This indicates New Zealand students tend to accumulate knowledge both within and outside the classroom, often using their own initiative rather than relying on the teacher, and furthermore they are continually looking for ways to put their knowledge to work. They want strong links between theory and practice.

The Chinese group scored higher in the other mental modes of learning, namely construction of knowledge and stimulating education. Interestingly the last sub scale namely Co-operation shows very similar results for the two groups. The commonly held perception of Chinese students working together far more than New Zealand students is not reflected in this score.

## **Discussion**

The results of this questionnaire show that Chinese and European students have similar attitudes towards their study and use similar study methods, albeit with some small but significant differences. Chinese students are more result focused, or sometimes ambivalent about their learning, whereas New Zealand students are more vocation focused. Some New Zealand students see their study as (only) a means to an end, and often ask "What job can I get when I complete my course?" or even "Do I need to know / learn this for a job?" Chinese students on the other hand are more self-test (result) focussed and would instead tend to ask "Will this be in the exam?" or "Can I resubmit this assignment to get a better mark?"

Chinese students rely on more external regulation of their learning processes and results (Biggs, 1996a). This is in line with Confucian Heritage Culture, where the teacher or lecturer strictly controls the learning environment and content, and is regarded as the font of all knowledge. In contrast New Zealand classrooms are much more student centred, with the student having a large degree of control over their own learning, and the teacher regarded more as a facilitator than a teacher.

## **Conclusions**

The most obvious conclusion made from this study is that there are less differences between the two student groups than might have been previously thought, given the differences in cultural beliefs and pedagogical history. This may be for a number of reasons. Increased globalisation, communication and joint educational research particularly in such places as Hong Kong with a mixture of Chinese and British heritage, has led to a cross fertilisation of pedagogy with hopefully the best practices of both cultures being adopted.

This study may also be influenced by the sample group of Chinese students being studied are those who have chosen (for whatever reason) to study abroad in a Western culture. This obviously shows willingness by the students (and their families) to be influenced by Western culture to a large degree, compared to Chinese students studying at home. The results of a similar study performed in the students' home country may well be different.

In the past, it has been commonly assumed that Western (pedagogical) ideas are more modern than Confucian Heritage Culture teaching methods (Ballard & Clanchy, 1991), however more recent studies have shown otherwise (Biggs & Watkins, 2001). Similarly, efforts to impose Western education methods on Chinese students have met with failure (Boekaerts, 1998).

It may be that the future lies with creating partnerships between East and West on a more equal basis. For example Unitec's Electro Technology department and a Shanghai university have recently instituted such a reciprocal arrangement, and a visiting Professor from China is currently spending a semester at Unitec undertaking joint research, and supervising research students. This is to be followed by one of our staff members teaching in Shanghai over the coming summer. Such cross fertilisation can only benefit both institutions, improve the research outcomes and pedagogy in both Chinese and New Zealand institutions and promote a better cultural understanding between China and Western countries such as New Zealand. As this research has shown Chinese and Western students have far more in common than their perceived differences may have suggested in the past.

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