

Learning Conceptions and Strategies

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WHAT DO STUDENTS THINK LEARNING IS AND HOW DO THEY DO IT? A
CROSS-CULTURAL COMPARISON

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Abstract

This study examines differences between Australian and Japanese secondary school students' conceptions of learning and their use of self-regulated learning strategies. For a variety of reasons, there is an increasing number of overseas students, particularly from south-east Asian countries, who are being educated in Australian schools. Differences in schooling and cultural traditions lead to different understandings of what learning actually is and to the strategies students use to regulate their own learning. If educators are to cater successfully for students from other cultures, it is important to develop a better understanding of differences in the ways in which students conceive of learning and how they go about doing it. In one sense, a major finding of the study confirms the stereotypical view of Japanese students as rote memorizers. On the other hand, it is the Australian students who are found to have a narrow, school-based view of learning. The Japanese students view

learning from a much broader perspective. For them, learning is not only related to what happens at school; it is seen also as a lifelong, experiential process leading to personal fulfilment. The findings from this study also indicate that the strategies that have been previously identified as being used by students in Western learning contexts are the same strategies in use by students in Japanese schools. Despite significant differences in the emphases that students placed on the use of some of the strategies, two of the three most consistently used of the strategies by both Australian and Japanese students were the same.

Introduction

Most teachers have beliefs about the nature of learning, and about how students engage in it. These beliefs are reflected in the decisions they make about curricula, in their classroom practices, and in the judgments they make about students. The wisdom of attaining a reasonable degree of congruity between teachers' and students' beliefs about learning is self-evident, and suggests the importance of finding ways to ensure that we understand learning as it is interpreted and practised from the students' perspective. With a growing number of students from Asian countries choosing to be educated in "Western" classrooms, it is increasing difficult for teachers to assume that their students reflect a Western understanding of learning, and that they engage in academic tasks in ways that our educational psychologists have indicated that they do or, at least, should.

Recent research seems to suggest that there exists an anecdotal stereotype of the "Asian" student (Ballard & Clanchy, 1984; Biggs, 1990; 1991; Kember & Gow, 1991; Samuelowicz, 1987; Watkins, 1993). More often than not, no distinction is made between the various groups of Asian students so that, for example, the Japanese, Chinese, Malaysians, Thais, and Indonesians are all viewed as exhibiting the same set of learner behaviours, many of which are seen to be incompatible with the system of teaching and learning that exists in Australia. Two of the most commonly cited behaviours relate to memorization and to seeking assistance from the teacher. Asian students are seen to be highly dependent on rote learning, and less inclined to question or engage in discussion with the teacher. They are seen not to use logical construction of argument or a critical approach in academic writing; they do not question teachers' statements or textbooks, and they expect the teacher to tell them the 'right' answer even when there may be no answer. They are viewed as passive learners, exhibiting compliance, obedience, and

a concern only to absorb knowledge rather than to understand and apply it. In contrast, Australian students are viewed as more active in their approaches to learning. They are characterized by assertiveness, independence, self-confidence, acceptance of diversity, and a willingness to question and explore alternative ways of thinking and acting.

The research reported here explores whether these stereotypical views are borne out by the reports of Japanese and Australian upper secondary students of how they conceive of learning, and the strategies they use to regulate their learning in a range of school-related contexts. A modified version of the Self-Regulated Interview Schedule (Zimmerman & Martinez-Pons, 1990) was used to investigate whether both groups of students used similar strategies to those that previous research (e.g., Brown, 1987; Corno, 1986; McCombs, 1984; Schunk, 1985; Spates & Kanfer, 1977; Wang, 1983) has identified as indicating self-regulation in learning. Students' responses to several questions about their conceptions of learning were also examined in order to identify similarities and differences between the two groups of students in this regard. In view of the recent interest in the use of memorization processes by Asian students as they engage in academic tasks, this research sought to assist in developing a clearer understanding of this process from students' points of view.

Review of the Literature

Conceptions of learning

One area of research that has received renewed attention recently is that of student conceptions of learning: how these conceptions influence the approaches to learning adopted by students; how the outcomes of learning are related to what students think learning is; and how conceptions vary across cultures. The original research into students' conceptions of learning identified five levels of understanding of the phenomenon which moved from the simple accumulation of knowledge through to a more complex interpretative process aimed at the understanding of reality (Sñljì, 1979). In a recently published investigation of students' conceptions of learning (Marton, Dall'Alba, & Beaty, 1993) first year students from the Open University in Britain were interviewed (amongst other things) about their conceptions of learning. Subsequent analysis of transcripts led to the identification of the same five qualitatively different conceptions previously described by Sñljì, as well as an added sixth conception. The six levels of conception were characterized as: (1) increasing one's knowledge; (2) memorizing and reproducing; (3) applying; (4) understanding; (5) seeing

something in a different way; and (6) changing as a person. It has been argued that these six conceptions form a hierarchy of levels of processing from the most basic to the most sophisticated (Marton, Dall'Alba, & Beaty, 1993; Watkins & Regmi, 1992), from surface to deep (Marton & Sñljí, 1984), and from novice to expert (Van Rossum, Deijkers, & Hamer, 1985). The first three conceptions share a reproductive view of learning, whereas the latter three see learning as a process of interpreting and understanding reality, a constructivist perspective.

The relationship between learning conception, study strategy and learning outcome was shown clearly in a study conducted with students from a Dutch university (Van Rossum & Schenk, 1984). The research used a phenomenographic approach, in which the emphasis is on trying to understand how people view the world around them. Attention is directed not so much at reality as it is, but more at the various interpretations people have of it - what has been referred to as "a second order perspective" (Marton, 1981). Students' responses to the question "What do you mean by learning?" were classified as belonging to one of the five levels of learning conception originally identified by Sñljí (1979). Surface level processing, in which a reproductive approach is adopted, was found to be associated with learning conceptions 1 to 3. In contrast, deep level processing, in which the student aims at understanding the learning material rather than reproducing it, was associated with levels 4 and 5. Van Rossum and Schenk (1984) indirectly showed a relationship between a student's conception of learning and the quality of learning outcome by showing that students who were surface level processors tended to have lower level learning outcomes, whereas the learning outcomes of deep level processors tended to be much higher. Martin and Ramsden (1987) directly investigated the relationship between students' levels of achievement and their conceptions of learning. Using the same five levels of learning conception, students with lower grades were found to have conceptions of learning at the lower end of the hierarchy (levels 1-3). The highest scoring students were those who conceived of learning as more than a process of storage, memorization and

utilisation of knowledge and facts (i.e., they operated at levels 4-5).

Recently, the exploration of the various meanings that people attach to learning has assumed a cross-cultural perspective. Increasingly, studies into student learning in different cultures are questioning the commonly held view that Asian students are more inclined than their Western counterparts to depend on rote learning in their studies rather than aiming for understanding.

The evidence points in the opposite direction. In a study which compared the conceptions of learning of Filipino and Nepalese 14-16 year old students, three clear conceptions were found: learning as an increase in knowledge; learning as applying; and learning as an aspect of personal development (Watkins, Regmi, & Astilla (1991). There was no evidence of learning as memorizing and reproducing facts; nor was learning as understanding a conception held by these students. Learning as memorizing and reproducing was also not mentioned in a study conducted with Nepalese university students (Watkins & Regmi, 1992). Except for this absence, the five distinct categories of conceptions of learning that did emerge from the study were similar to those identified by Marton et al. (1993). Additional themes, neither of a qualitative nor a quantitative nature, included the view that "much real learning occurs outside school", and "there is correct and incorrect knowledge which can be taught".

It seems that there is a growing body of knowledge pointing to the non-universality of views of learning and the nature of knowledge. Marton (1994) noted the potentially counterproductive exercise of attempting to implement educational measures that have been based on one set of conceptions in contexts characterized by another, sometimes hidden, set of conceptions. With an increasing number of students from a wide variety of Asian cultures choosing to be educated in Western classrooms, the chance of making inappropriate decisions about teaching and learning continues to grow.

Self-regulated learning

The importance to academic achievement of self-regulation in learning has been well established (e.g., Bandura & Schunk, 1981; Spates & Kanfer, 1977; Wang, 1983; Zimmerman & Martinez-Pons, 1986, 1990). In contrast to investigations of student achievement that focus on student ability as the key factor in learning, self-regulation theory focuses attention on why and how students initiate and control their own learning. The how of self-regulated learning can be viewed in terms of the specific strategies used by students as they engage in learning tasks. Such strategies include goal setting and planning; structuring of the learning environment; using task strategies such as organizing and transforming, reviewing, rehearsing and memorizing; seeking information and assistance from social and non-social sources; monitoring and self-evaluating, and self-consequencing.

Operating from within a social cognitive framework, in which personal, environmental, and behavioural influences operate separately but interdependently, Zimmerman (1990) proposed that students who are self-regulators of learning can be described as

"self-aware, knowledgeable, and decisive in their approach to learning. In terms of motivational processes, self-regulated learners report high self-efficacy, self-attributions, and

intrinsic task interest. To observers, they are self-starters who display extraordinary effort and persistence during learning. They seek out advice, information, and places where they are most likely to learn; they self-instruct during acquisition and self-reinforce during performance enactments" (p.5).

Social cognitive views of self-regulated learning identify at least three prerequisites before a student can learn in a self-regulated way: motivation to do so (for example, as evidenced by goal-setting); the possession of skills (such as summarizing, memorizing) necessary for the processing of content ; and the ability to regulate the use of processing skills through self-monitoring. To tap the extent to which a student could be characterized as exhibiting these prerequisites, Zimmerman and Martinez-Pons (1986) devised a structured interview schedule in which students were asked to indicate the strategies they would use in a number of different learning contexts. On the basis of the literature on self-regulated behaviour, particularly that representing social cognition theory and research, responses were identified as belonging to one of fourteen categories of self-regulated learning strategy. Results from this study revealed a substantial correlation between students' self-reported strategy use and their academic achievement, with high achievers displaying significantly greater use of thirteen of the fourteen strategies. Further studies by the same researchers confirmed this relationship between strategy use and academic achievement, and also demonstrated the link between students' perceptions of both verbal and mathematical efficacy and the use of self-regulated strategies. (Zimmerman & Martinez-Pons, 1988, 1990).

The development of an understanding of the importance of self-regulated behaviour to academic learning outcomes has, however, been developed within a Western context. With an increasing number of students from a variety of Asian cultures choosing to study overseas it is important to explore the applicability of Western models of learning to students from different cultures. For instance, in a review of studies comparing American and Japanese subjects on control related behaviours, Weisz, Rothbaum and Blackburn (1984) concluded that the Americans placed a greater emphasis on primary control, whereas the Japanese showed a preference for secondary control. In primary control, individuals deliberately act to influence existing realities such as other people, the environment, specific circumstances or problems. In secondary control, individuals set out to gain the greatest possible satisfaction by making personal adjustments in

order to accommodate existing realities (Rothbaum, Weisz, & Snyder, 1982). The possession of secondary control, however, does not imply the absence of such qualities as persistence, commitment, perseverance, and effort. The Japanese notion of effort is tied to a group "morality of aspiration" (Hamilton, Blumenfeld, Akoh, & Miura, 1989), so that when the Japanese student is exhorted to "keep on struggling" or to "push on, persist and not give up" (White & LeVine, 1986), the subsequent effort and high degree of self-regulated study behaviour is exerted for the benefit of the group; for the Westerner, in general, effort is exerted for personal gain.

The purpose of the present study is to identify, describe, and compare both the conceptions of learning and the use of self-regulated learning strategies of Australian and Japanese upper-secondary school students.

Method

Subjects

Students in their final two years of schooling (16 to 18 year olds) from five schools in Australia and from five schools in Japan were used as subjects for this study. The Australian students (n = 248) came from a range of school "types" in the Perth metropolitan area - state and private, single sex and co-educational. A similar cohort of students (n = 215) from Japanese schools in Tokyo and Shizuoka participated in the study.

Instrumentation - Student Learning Survey

A Student Learning Survey, consisting of ten open-ended questions, was used to elicit responses from students about the learning strategies they use and the conceptions of learning they hold (see Table 1). The first eight questions were concerned with students' learning strategies, and were based on The Self-Regulated Learning Interview Schedule developed by Zimmerman and Martinez-Pons (1986). Students were presented with eight different vignettes in which a range of typical learning contexts are described (e.g., in class, at home, preparing for tests, when poorly motivated). They were asked to indicate the strategies they would use to assist learning in such situations. Fourteen categories of self-regulated learning strategies (self-evaluation; organizing and transforming; goal setting and planning; seeking information; keeping records and monitoring; environmental structuring; self-consequences; rehearsing and memorizing; seeking peer, teacher or adult assistance; and reviewing tests, notes, and texts) were originally identified by Zimmerman and Martinez-Pons (see Appendix B). A fifteenth

category ("other") was used to record non-self-regulated behaviour. As well as indicating the choice of strategies for particular contexts, students were asked to estimate the frequency with which they would use these strategies in similar situations (based on a 4-point scale from 1 = seldom to 4 = most of the time). For the purpose of this study, several minor modifications to the Zimmerman and Martinez-Pons vignettes were made in order to ensure that learning contexts described to students were equally valid for both Australian and Japanese students.

The final two questions of the Student Learning Survey were concerned with students' conceptions of learning. They were given the opportunity to express what they meant by "learning", what they meant when they said they had "learned" something, and they were encouraged to provide examples to illustrate.

Table 1 about here

Although the structured interview procedure has certain advantages over procedures requiring students to respond to open ended questions in written format (e.g., the interviewer can probe students who may be shy or less articulate), it was not possible, in this instance, to interview students. The Student Learning Survey was constructed in English and translated into Japanese for presentation to the students in schools in Japan. The backtranslation method (Brislin, 1970) was used in order to ensure cross-cultural conceptual equivalence of the instrument. Both the English and Japanese versions of the survey were tested on a small group of students prior to administration within the

ten selected schools.

Procedure

The Student Learning Survey was administered to intact classes (by one of the researchers to students in Australian schools, and by a colleague from Aoyama University to students in Japanese schools). The research project had previously been explained to school principals and to teachers. Students were informed, both verbally and in written form, that they were participating in a survey about the way students learn.

Responses from the Japanese students were translated into English by the same native speaker of Japanese who had initially translated the Student Learning Survey from English to Japanese. The researcher worked closely with the translator to ensure that

the meaning of each of the answers given by students to the ten questions was quite clear.

Students' responses to the first eight questions were coded according to the fourteen categories proposed by Zimmerman and Martinez-Pons (1986) (See Table 2). Students usually described each strategy they used in one sentence, and for each question the number of strategies mentioned varied considerably. Some students said that they did "nothing special" in some learning contexts, while other students listed up to nine things that they did. Each time a student mentioned a strategy, they were asked to estimate the frequency with which they would use such a strategy in similar situations (1 = Seldom, 2 = Occasionally, 3 = Frequently, and 4 = Most of the time). The score thus obtained was interpreted as a rating of consistency of use of that strategy (Zimmerman & Martinez-Pons, 1986).

On the basis of "similarities, differences, and complementarities" (Marton, Dall'Alba, & Beaty, 1993), responses to the two questions about learning conceptions (Questions 9 and 10) were grouped and regrouped a number of times until clear categories of learning conceptions could be identified.

All Student Learning Surveys were coded by one of the researchers. In the initial stages of the coding procedure, a team of six other post-graduate students and senior academics coded approximately 10% of the surveys. The Japanese translator was used to conduct a final interrater reliability check of the coding procedures. Using Cohen's Kappa (which corrects for chance agreement) as an index of interrater reliability, high agreement was found for the coding of both the conceptions ($k = .85$) and the strategies ($k = .82$).

Results

Conceptions of Learning

Nine clear categories of learning conception emerged from the analysis. The first six are similar to those identified by Marton, Dall'Alba, and Beaty (1993), although there are several differences in the interpretation of the categories as will be indicated in the descriptions that follow. Three other minor categories were identified: learning as a duty; learning as a

process not bound by time or context; and learning as developing social competence.

Descriptions of the Nine Categories

(1) Learning as increasing one's knowledge

This conception is quantitative in nature, referring to the accumulation or absorption of knowledge - the more, the better. Marton, Dall'Alba, and Beaty (1993) used a consumption metaphor to characterize this conception, and referred to its discrete and factual nature. Similar distinguishing features were found in the responses of students in this study.

you didn't know about before

knowledge of something not known to me before

Students frequently referred to a dependence on other sources, such as teachers or books, for the acquisition of information.

from other people

someone who is qualified in that field

As well as an increase in knowledge, there was often mention of an increase in ability or intelligence.

class, and increased my ability, became more intelligent

(2) Learning as memorizing, reproducing, and studying

Previous research has identified this conception as "memorizing and reproducing". Not infrequently, both the Australian and Japanese students in this study linked the processes of memorizing and reproducing to that of studying. Although many students responded with a simple "learning is studying", for others, the act of studying was inseparable from learning and memorizing. Hence:

you have been taught

concentrating on the work given so that I can remember it when asked

Some students made reference to the "how" of memorization, specifically mentioning use of the strategies of repetition and practice:

retrieved later

Other examples indicate that students are in some way actively involved in the process of learning. In contrast to the first conception where knowledge simply "soaks in", students who described learning as belonging in this category spoke of themselves as doing something.

tests and assignments

I feel the need

memory

(3) Learning as using knowledge for a variety of purposes

In this conception, knowledge or skills gained are put to some use, either now or at some later stage. The application of knowledge is either for a specific and clearly identifiable purpose, or knowledge is seen as something that will be useful for some unspecified purpose in the future. Students generally did not refer to school contexts when describing learning as using knowledge. Responses were much vaguer, and there was frequently an emphasis on future aspirations for further study, or for a successful career.

getting enough marks for University

you need for a career

the future

outside the classroom

with my daily life

(4) Learning as understanding

In accordance with the findings of Marton, Dall'Alba, and Beaty (1993), students who were classified as holding this conception of learning typically spoke of gaining (developing, grasping, discovering, finding, searching for) meaning. They did not, however, provide much evidence of using the visual metaphor described by these researchers. Only rarely did students refer to "seeing things" or "having a fuller view".

I have no answers

about it in detail

to understand another thing

how of things

The focus for understanding appeared often to be directly related to classroom learning, the test of that understanding sometimes being the ability to explain or teach subject matter to another person:

subject, analysing and digesting it

explain it to someone else

Much of the literature on student learning highlights the supposed existence of a dichotomy between memorizing and understanding. In this instance, the relationship between these two processes was not, on the whole, clearly differentiated by either the Australian or the Japanese students. More often than not, students spoke of learning as involving both processes:

have to understand

(5) Learning as seeing something in a different way

Only small numbers of students from either group indicated that they viewed learning in this way. When they did, the emphasis

was on a changed way of thinking about something or about oneself. Personal opinions were formed and new ideas generated.

in different ways

things

Sometimes there was almost a sense of moral improvement and/or social responsibility that came with new insights and ways of thinking:

not to do - what's right and what's wrong

confronting social issues when I become aware of them

The notion of "expansion" dominated descriptions of this conception as, for example, when students spoke of "broadening their horizons" or "widening their views". This quality of expansion was different, however, from that expressed in the next conception (personal fulfilment) where the focus was more on a total change of the person, not just a particular sets of ideas.

wouldn't have thought of

(6) Learning as personal fulfilment

The features of this category were similar in many respects to those of the category previously labelled as "learning as changing as a person" (Marton, Dall'Alba, & Beaty, 1993; Watkins & Regmi, 1992). It was seen to lead to greater maturity, personal growth, or improvement, and this change sometimes led to a sense of empowerment.

as a person

you gained from the experience, grew as a person

growing, taking another step

further

one feels empowered

Personal growth was sometimes associated with adulthood, maturity, or one's "humanness".

The personal value of learning was not limited to the notion of change, however. As well as the concept of personal growth and development, there was often an associated expression of satisfaction or enjoyment; sometimes it was seen to be liberating.

more widely, you have more freedom

(7) Learning as a duty

Only one Australian student expressed a conception of learning as a duty. Although the number of Japanese students categorised here was small (n=14), it was nevertheless felt to be significant when seen in the light of the Japanese cultural emphasis on duty and responsibility, particularly to one's parents and teachers. Several students expressed an associated feeling of learning as being difficult but a responsibility, duty or obligation that one has both to oneself and to other people or society.

do our best and not try to avoid it

done; it's important; I must do my best

(8) Learning as a process not bound by time or context

The context of learning was the main consideration of students in this conception. Learning was seen as not only related to school, but as occurring in a variety of everyday contexts. Students expressed the notion of learning through a variety of life experiences - during encounters with other people, through reading books, while travelling, and while at work. Learning continues throughout life; it is a gradual, continuous process.

last period of life (before death)

to know from our society how to live in the right way....we can know and learn from a small boy

(9) Learning as developing social competence

Once again, this minor category was almost exclusively the preserve of the Japanese students and perhaps reflected the Japanese emphasis on social competence as the most important identifier of intelligence (Sternberg, Conway, Ketron, & Bernstein, 1981). There was a focus on communication, human relationships, social and interpersonal skills - how one operates as a member of society or displays social common sense. As well, there was sometimes mention of helping other people, or displaying a social responsibility.

on with other people easily

people, no matter whether they are young or old

to the world, and the problems of the elderly

society

The method proposed by Bock (1975) for the analysis of multiple-response data in frequency form was used to explore significant differences in the conceptions of learning held by the two groups. In this procedure, Bock advocates transforming frequency data to a multivariate logistic format by adding 0.5 to all observed frequencies (to avoid the problem of zero frequencies and reduce biases in the estimates), and then taking logarithms. He argues that "Since the logits are unbounded, their means in samples of subjects will tend to multivariate normality more quickly than will those of the untransformed response probabilities" (p. 552). An analysis of variance was then carried out on the result of the transformations in order to examine the relationships between the nine conception of learning dependent variables and the two groups of students.

The first two columns of Table 1 show the percent of students in each group who indicated that they held a particular conception of learning. Holding a conception at one level did not preclude a student from having a view of learning that included one or more of the other conceptions. Thus, for example, a student may

have indicated that learning was both an increase in knowledge and personal fulfilment. Results of the analysis of variance are shown in the last column of Table 1.

Table 3 about here

Contrary to popular opinion, when asked what learning actually was, the Japanese students did not see learning primarily as a process of memorizing and reproducing. It was the Australian students who most frequently mentioned this as a conception of learning. For the Japanese students, increasing knowledge (40%) was the most frequently mentioned conception, followed closely by a view of learning as personal fulfilment (35%). Memorizing and reproducing, using knowledge for a variety of purposes, and understanding were seen to be essential components of learning by about one quarter of the sample of Japanese students (not necessarily the same students in each case). Other conceptions were mentioned by only small numbers of students.

For the Australian students, conceptions of learning appeared to be focused in the first four categories, with only very small percentages of students registering responses in the remaining categories. Memorizing and reproducing (60%) and understanding (58%) were the two most frequently cited conceptions of learning. Fifty percent of students saw increasing knowledge as an essential component, and thirty-one percent mentioned using knowledge for a variety of purposes. The last five conceptions

were considered by less than five percent of students as representing an aspect of learning.

Marton, Dall'Alba, and Beaty (1993) have presented findings from research with university students to support the idea that the first six of the conceptions constitute a hierarchy through which students move as they progress towards a deeper understanding of the nature of learning. If a student mentions a particular conception, then the presence of all conceptions preceding that one are assumed to be held by the student, whether they are specifically mentioned or not. Assuming the notion of a hierarchy to be correct, it is interesting to note that a smaller percentage of the Australian students have attained a 'deep' understanding of learning as it is represented by the upper levels of the hierarchy. For instance, personal fulfilment, the uppermost level, was mentioned by only 5% of the Australian students, whereas 35% of the Japanese students mentioned personal fulfilment as an aspect of learning.

Learning Strategies

The strategy consistency method (Zimmerman & Martinez-Pons, 1986) of scoring the coded strategies was used. This method weights each mention of a strategy by a student with the estimated frequency of its use (1 = Seldom, 2 = Occasionally, 3 = Frequently, and 4 = Most of the time). The mean strategy scores for the two groups are presented in Table 2, together with the results of the analysis of variance. When means for the two groups were rank ordered, "environmental structuring" and "self-evaluating" were amongst the three most frequently used of the strategies for both groups of students. For the Australian students, the other highly ranked strategy was "goal setting and planning", while for the Japanese students it was "rehearsing and memorizing". The strategy of "reviewing tests and other work" did not feature highly for either group of students, and for the

Japanese students, "keeping records" also seemed not to be important.

Table 4 about here

The results from an analysis of variance (shown in the third column of Table 4) revealed significant differences between the two groups in their use of eleven of the strategies. Of the fourteen categories of strategic behaviour, the Japanese students scored significantly higher on three - "memorizing", "seeking information", and "reviewing textbooks". The eight other significant differences favoured the Australian students. Overall, the Australian students reported significantly greater

use of self-regulated learning strategies as indicated by the significantly higher total score.

Although students were asked to indicate the strategies they used to assist them with their learning, the category "other" was not seen to indicate self-regulatory processes. Within this category, several distinct types of behaviour were indicated. The use of cheating as an aid to learning was mentioned by students from both groups, but significantly more so by the Japanese students, $F(1, 461) = 63.752, p < .001$. The intention of students was not always clear when cheating behaviours were mentioned: was the student avoiding work by seeking the easiest way out; or, in responses such as "I copy what my friend has done", was there an intention to learn by imitation? Responses indicating the use of willpower were made by students in both groups (mean = 2.03) but there was no significant difference between the groups in their use of this strategy. Willpower has previously been excluded as a self-regulated learning strategy on the basis that references to it by students were invariably too vague. Instead, students indicated that they would "mobilise unspecified psychic forces to 'try harder'" (Zimmerman & Martinez-Pons, 1986). In this study, students were equally vague in their willpower statements and so such responses were also categorised as "other". The remaining responses in the "other" category were mostly "I just do my best statements", reactive responses indicating a reliance on an external agency for guidance ("I ask my teacher to show me which are the important parts to study"; "I pray"), or other responses that were uncodable, generally because of insufficient detail ("I panic", "I study the topic"). The advantages of interviewing students at this point are clear. When the two groups were compared on the combined scores for these last three types of "other" responses, the Japanese students were found to have scored significantly higher, $F(1, 461) = 4.124, p < .05$.

Discussion

The results of this study indicate both clear differences between the Australian and the Japanese groups of students, while at the same time drawing attention to several marked similarities. Perhaps most noteworthy is the finding that Japanese students were far less likely than their Australian counterparts to view learning as memorizing and reproducing; yet when asked to describe what they actually did in a number of different learning contexts, they indicated they do, indeed, use memorization and rehearsal significantly more than the Australian students. Western educators have tended to dichotomise the processes of memorization and understanding. Studies with Chinese teacher educators, however, have shown that the dividing line for them

does not fall between memorization and understanding, but between mechanical memorization and memorization in order to assist the development of meaning (Marton, Dall'Alba, & Tse, 1993). Such a view is in keeping with Confucian conceptions of teaching and learning, upon which many Japanese educational practices are based. The development of the ability to use imitation and repetition as an aid to learning is encouraged. This process, commonly labelled "rote learning", is frequently viewed by Western educators as an undesirable one because it is thought to signify a lack of deep thinking and understanding.

Traditionally, however, repetition has been viewed by the Japanese as a route to understanding (Hess & Azuma, 1991). Students are encouraged to learn from the traditional Confucian wisdom which recommends "Read it one hundred times, and understanding will follow spontaneously", and "Seeing knowledge without thinking is labour lost; thinking without seeing knowledge is perilous". Recent research with students from several other Asian countries, where repetition and memorization are learning strategies commonly adopted, has shown that the stereotypic Western view of the Asian learner as one who learns only by rote and who employs surface strategies and motives such that deep learning or real understanding does not occur is, indeed, inaccurate. When Asian students have been compared with students in Australian schools and universities, the reverse has been shown to be the case (Biggs, 1991; Kember & Gow, 1991; Watkins, Regmi, & Estilla, 1991). It is the Australian students who are more likely to adopt a surface approach to learning.

Another major finding of this study is the predominantly school-based view of learning held by the Australian students in contrast to the much broader views of the Japanese students. In describing what they meant by learning, the Australian students described learning mostly in relation to studying or performing academic tasks. Hence, the three most commonly held views were of learning as increasing knowledge, memorizing and reproducing, and understanding (of subject content). For the Japanese students, on the other hand, learning was not confined to the classroom. More than one third of this group described learning as some form of personal fulfilment. This conceptualisation of learning reflects Shimahara's belief that "the cultural basis of student achievement in Japan is not a unique set of premises influencing student performance in school exclusively, but a reflection of the entire Japanese cultural orientation" (1986, p.19). It perhaps represents a greater congruence between the culture of the school and that of the society in general.

It is often difficult to find instruments to measure particular behaviours across cultures. Indeed, it is questionable to assume cross-cultural equivalence of the conceptualisation of what it is

that an instrument purports to measure. In this instance, a modified version of the Self-Regulated Learning Interview Schedule appeared to be a valid instrument for assessing strategy use across cultures. Despite significant differences in the emphases that students placed on the use of most of the strategies, all previously identified strategies of self-regulated learning were used by both Japanese and Australian students. Moreover, two of the three most used strategies were the same for each of the groups ("environmental structuring" and "self-evaluating"). The apparent emphasis placed on self-evaluation as an aid to learning by both groups is contrary to the finding of Zimmerman and Martinez-Pons (1988) who reported that this strategy was one of the three least used by students in

their study. Whether this reflects an actual difference in strategy use or a difference in the coding of students' responses is unclear. For this study, self-evaluation was taken to be any behaviour that indicated that the student's prime motivation was to gauge the quality of their work, their understanding, or their efforts in relation to the task demands. Such behaviours typically included: checking, revising, or redoing work; using different methods to solve a problem and seeing if the answers were the same; testing the extent of one's knowledge or ability to perform a task through self-questioning procedures (e.g., quizzes) or by asking others to provide questions related to the material being learned; and using other sources, such as computers or people to check one's work. This last learning behaviour was seen to be different from seeking social assistance, where the primary intention of the student is to solicit help with difficulties in understanding of either task demands or concepts involved.

The least used strategy by both groups was that of "reviewing tests and other work". It is assumed that one of the purposes of using such a strategy is to capitalize on the feedback which is usually given by teachers on such work. On review of this work at some later date, students are better able to assess their weaknesses and to make judgments about where to place their efforts in relation to their current knowledge or level of skills. When viewed in the light of the finding that feedback is one of the most powerful influences on student learning (Hattie, 1994), this result should cause some concern to educators in both Australia and Japan.

Although willpower statements were categorised in this study as non-strategic "other", further investigation of this phenomenon is recommended. This is particularly so when considered in the light of the Japanese cultural emphasis on commitment to task and the ability to persevere. In Japanese schools, structured

systems of student guidance (Seito Shido) are highly influential in the fostering of concentration ability, and persistence, and the urging of oneself to "keep going and try harder" may indeed be a strategic action on the part of a Japanese student. The value of self-talk in the regulation of one's own behaviour has long been recognized within Western psychology (e.g., Karoly & Kanfer, 1982; Meichenbaum, 1977; Harris, 1990; Vygotsky, 1965). The expression by an Australian student to "try harder" may be a self-instruction to do just that - to persist and not give up, to maintain commitment to task - rather than a vague expression serving no strategic purpose.

This research did not investigate students' conceptions of learning and use of learning strategies in relation to their achievement levels. Previous research with American students has found that high achievers make greater use of certain self-regulated learning strategies. In particular, high achieving students have demonstrated a greater reliance on social sources of assistance - peers, teachers, and other adults (usually parents). In this study, Japanese students sought significantly less social assistance than did the Australian students, perhaps reflecting the cultural emphasis on personal effort as the major source of achievement (Holloway, 1988). Based on the belief in effort, rather than ability, as the principal antecedent of achievement, there is a presumption that all normal children can develop the ability to learn well. It may well be that there is less differentiation between Japanese high and low achievers in

the ways in which they set about their learning.

Future research needs also to address the question of whether the experience of schooling in Australia causes changes in beliefs about learning and the strategies used by Japanese students. Results from this research indicate that Japanese students have a less institutionalised view of learning; they expressed much more strongly the view that learning was associated with personal fulfilment as well as with such school-based activities as the accumulation, storage, understanding and application of knowledge. Very few students in either group indicated that learning was conceived of as seeing something in a different way although it would not be surprising to find that a change in the context of learning does create the opportunity for students to gain a different perspective on their world.

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Table 1

Student Learning Survey

1. Imagine your teacher is discussing with your class the influence of twentieth century developments in technology on the lives of people today. Your teacher says that you will be tested on the topic the next day. What strategies would you use to help you remember the information being discussed? What do you do if you are having trouble understanding or remembering the information discussed in class?

2. Imagine your teacher asks students in your class to write a short essay on a novel you have read this year in class. Your mark for this essay will affect your final semester grade. In such cases, what strategies do you use to help you plan and write your essay? What do you do if you are having difficulty with the topic?

3. Teachers usually expect students' homework assignments to be completed correctly or accurately, especially in subjects such as

mathematics. Many of these assignments must be completed at home without the help of a teacher. What do you do to make sure you complete your homework correctly? What do you do if you do not understand the work the teacher has assigned?

4. Most teachers give a test at the end of a topic or unit of work, and the test result usually contributes significantly to your final mark for that subject. What strategies do you use for preparing for these tests? What do you do if you are preparing for an especially difficult test?

5. Many times students have difficulty completing homework assignments because there are other more interesting things they would rather do such as watching TV or going out with friends. What strategies do you use for motivating yourself to complete your homework under these circumstances? What do you do if you are trying to meet a pressing deadline?

6. Some students find it easier if they can arrange the place where they study. What do you do to create a good environment for studying? What do you do if you are having difficulty concentrating on your school work?

7. When completing homework assignments (e.g., Science reports, English or foreign language exercises, etc), what strategies do you use for checking your work after it's completed? What do you do if it is a particularly difficult assignment?

8. When taking tests at school (e.g., in a foreign language, English, science, history, maths, etc), what strategies do you use for making sure that your answers are correct before handing in the paper? What do you do if there is a particularly difficult test question?

9. You have just described the things that you do when you are engaged in learning a number of different things in different situations. What do you actually mean by "learning"? If possible, give an example to illustrate.

10. What do you mean when you say you have "learned" something?

(Adapted from Zimmerman & Martinez-Pons, 1990)

Table 2

Descriptions And Examples Of Self-Regulated Learning Strategies

Strategy Descriptions and Examples

1. Self-evaluation Statements indicating student-initiated evaluations of the quality of completed work, understanding of an area of work, or effort in relation to task demands.

e.g., "I check over my work to make sure I did it right.

"I ask my mother to test me to see if I know it."

"I reflect on my conduct and try and work out why my work wasn't finished on time."

2. Organizing and Statements indicating student initiated overt or covert rearrangement transforming of instructional materials to improve learning.

e.g., "I make an outline before I write a paper."

"I use a highlighter to mark the important sections in the book."

"I summarize the important points in the chapter."

3. Goal-setting and Statements indicating student setting of educational goals or subgoals planning and planning for sequencing, timing, and completing activities related to those goals

e.g., "I commence revision a number of weeks before the test."

"I leave the difficult questions until last and then come back to them."

4. Seeking information Statements indicating student-initiated efforts to secure further task information from non-social sources when undertaking an assignment

e.g., "I borrow books from the library about that particular topic."

"I read as widely as I can on the subject."

5. Keeping records and Statements indicating student-initiated efforts to record events or results monitoring

e.g., "Later, I write notes of the class discussion."

"I pick out the unknown words and make cards."

6. Environmental Statements indicating student-initiated efforts to organize the learning structuring context to make learning easier. This may involve arrangement of either the physical or psychological environment.

e.g., "I make my desk clean and tidy, and put all the books that I need nearby."

"I have a shower before starting my homework."

7. Self-consequences Statements indicating student arrangement or imagination of rewards or punishment for success or failure

e.g., "I give myself rewards during study breaks, such as watching a certain amount of TV."

"I think about failing, and that makes me want to work."

8. Rehearsing and Statements indicating student-initiated efforts to memorize material by memorizing overt or covert practice

e.g., "I write out all the important points many times so that I can remember them."

"I do many of the same sorts of examples, so that I will remember how to do a similar one in the test."

9-11. Seeking social Statements indicating student-initiated efforts to solicit help from assistance peers (9), teachers (10), and adults (11)

e.g., "I discuss the assignment with my friend on the way home in the train."

"If I am having trouble understanding, I will arrange to see the teacher after school."

"I ask my father to explain how to do it."

12-14. Reviewing records Statements indicating student-initiated efforts to re-read notes (12), tests (13), or textbooks (14)

e.g., "I go over all my notes on the topic."

"I go through all the assignments and tests that I have previously done."

"I try and reread the textbook several times."

15. Other Statements indicating learning behaviour that is initiated by other persons such as teachers or parents, willpower statements, expressions of cheating, and all unclear verbal responses.

e.g., "I try and do what I think the teacher wants me to - I just do my best."

"I forget about time and just force myself to do what has to be done."

"I ask friends to show me their answers."

(Adapted from Zimmerman & Martinez-Pons, 1986)

Table 3

Percent of Students in Each Group Responding at Each Level of Conception of Learning, and Results of the Analysis of Variance

Conception	Australian (n=242) %	Japanese (n=194) %	F (df=1, 434)
1 Increasing knowledge	49.59	39.69	4.28*
2 Memorizing and reproducing	59.92	26.29	55.21***
3 Using knowledge	31.41	28.35	.48
4 Understanding	58.26	23.71	59.39***
5 Seeing something in a different way	2.89	6.19	2.81
6 Personal fulfilment	4.96	34.55	73.97***

7 A duty	.41	7.22	15.47***
8 A process not bound by time or context	4.55	4.64	.002
9 Developing social competence	.41	6.19	12.71***

*p <.05; ***p <.001

Table 4

Means (and Standard Deviations) of Strategy Scores for the Two Groups, and Results of the Analysis of Variance

Strategy	Strategy Score		
	Australian n=248	Japanese n=215	F (df=1, 461)
1 Self-evaluating	3.19 (0.68)	3.16(0.80)	.25
2 Organizing and transforming	2.72 (1.30)	2.49 (1.44)	3.29
3 Goal-setting/planning	2.98 (1.08)	2.21 (1.67)	35.27***
4 Seeking information	1.48 (1.50)	1.82 (1.55)	5.91*
5 Keeping records	1.92 (1.79)	.67 (1.36)	69.27***
6 Environmental structuring	3.20 (0.90)	3.11 (0.82)	1.27
7 Using self-consequences	1.83 (1.75)	.83 (1.47)	42.65***
8 Rehearsing and memorizing			

	2.16 (1.51)	3.15 (1.03)	65.40***
9 Seeking peer assistance	2.48 (1.38)	2.17 (1.51)	5.28*
10 Seeking teacher assistance	2.71(0.97)	1.03(1.45)	220.23***
11 Seeking adult assistance	1.27 (1.52)	.89 (1.42)	7.43**
12 Reviewing notes	2.81 (1.41)	1.76 (1.74)	51.39***
13 Reviewing tests/work	.66 (1.39)	.10 (0.58)	30.47***
14 Reviewing textbooks	2.12 (1.58)	2.74 (1.37)	19.76***
TOTAL	31.52 (6.86)	26.13 (6.21)	77.65***
15 Other	2.95 (1.00)	3.03 (0.61)	1.02

* $p < .05$; ** $p < .01$; *** $p < .001$