How and Why Students Learn and Its Implications on Academic Achievement

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Abstract
This study examines the relationships how and why students learned and academic achievement for 2646 university students from various faculties. The Learner Awareness Questionnaire (LALQ) a self-report measure of student approaches to learning was administered and academic achievement data was obtained from student CGPA. The results showed significant differences in the approach to learning of male and female students and how and why they learned can influence their achievement and efficacy. High achievers and low achievers have different learning behaviours. High female achievers were more likely to learn for a better future and be persistent in it. The high male achievers were more likely to seek approval from their peers and more confident about graduating on time from their university. The implications individual difference and limitations of the study are discussed.

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Introduction

Although there has been much research on student learning, it is often concerned with cognitive processes specifically on how they process information (Moreno & DiVesta, 1991; Schmeck, Geisler-Brentsein, & Cercy, 1991). However, this concern with cognitive processes has ignored the self-regulating process, that is the how and why students learn, which govern human development and adaptation. This paper will report on the results of a study on students' awareness (Bell, 1993) of how and why they learn and how it influences overall achievement.

Student approaches to learning

According to Bandura (1993), self-regulating processes will give meaning and valence to external events. It will also determine students' self-beliefs about their capabilities to exercise control over events that affect their lives. Apart from self-beliefs, self-regulating processes also influences motivation. Students can motivate themselves and guide their actions through their perceptions of and beliefs about a task (Zimmerman & Bandura, 1994). Hence the expectancy of success or failure will determine the efforts which students will place on the task.

However, apart from self-regulation, student approaches to learning (Heikkilaa & Lonka, 2006; Cleary & Zimmerman, 2004; Biggs 1999) that is, the intended learning outcome will determine how students learn as well as the strategies they use. According to Heikkilaa and Lonka, there are three approaches to learning: deep, surface and strategic. Students who apply a deep approach will pay attention to the fundamental idea or message of the materials to be learned. Trying to remember to surface feature of the text alone and trying to remember it word for word will be used by students using the surface approach. Students adopting the strategic approach will choose strategies to maximise their chances of academic success and are very conscious of assessment practices and strive to obtain good grades as a mark of successful learning. Another study on learner awareness by Choy et al (2014), based on the constructivist theory, find students' awareness falling into four levels: survival, establishment of stability, approval and loving to learn. Students tend to talk about their learning experiences in terms of the four levels. This study also finds high achievers more confident and enjoyed what they learned which were reflective of deep learners. However, the average and low achievers learned more for a brighter future and the possibility of a better paying job reflective of strategic learners.
Learner Awareness and Student Achievement

Individuals are in control of certain variables when they learn. These variables are the personal, conscious and purposeful selection of learning skills (Sherman, 1985), because learning is a personal activity requiring learning decisions and processes. Caprara et al (2008) termed these learning variables as self-regulated efficacy, which consists of the capacity of individuals to regulate thoughts, self-motivate and execute appropriate learning behaviours. Such self-regulated efficacies are the core properties of human agency within the conceptual framework of social cognitive theory (Bandura, 2006). It is important today to keep in view students' ability to self-regulate especially with the autonomy they can exercise over their own learning process because of easy access to information technology and the globalising of learning. A study on student approaches to learning by Zimmerman and Bandura (1994) finds that

students who are able to regulate their own learning achieved better scores in academic writing and set better learning goals.

Apart from developing better self-regulation strategies, Entwistle (2000) suggests that developing students' awareness of learning may also involve students having a fully developed conception of learning, being aware of the different contexts to which the learning can be used and being able to adapt it the various tasks. Therefore, the effect of context on learning cannot be dismissed as learning takes it meaning in part from the specific social setting. Students tend to use past events to help interpret what is required of them in a particular learning situation (Burnett, Pillay, & Dart, 2003). Students' belief about learning must also overlap with what they hope to achieve (Beaty, Gibbs, and Morgan, 1997). Hence, they will bring with them a set of aims and attitudes which expresses their individual relationship with a course of study. The extent to which students fulfil their own aims will determine their success or failure which in most cases is measured by their achievement.

A search of the available literature revealed the definitions for student achievement to be wide and it varied from overall grades in terms of grade point average to grade promotion or retention (Jeynes, 2005; Makinen, Olkinuora & Lonka, 2004; Fan, 1999). Academic achievement in this study is defined as the students' cumulative grade point average (CGPA). A study by Pekrun, Goetz, Titz and Perry (2002) found that student academic achievement can be influenced by their emotion-specific goals, like feelings of confidence, enjoying learning, anxiety, and fear of examinations. The strategies and approaches students used to learn are also influenced by these goals as well. According to Pintrich (2003), the need for achievement represents a desire to achieve and be successful similar in the need for competence. Hence, students who believe they are able and that they can and will do well are more likely to put in the effort and be more persistent than students who believe they are not able and do not expect to succeed. However, these competency beliefs may not be an accurate representation of students' capabilities because being cognizant of new unlearned knowledge and being deeply engaged in the task is insufficient to induce change (Pintrich, 2003). It is the intentional learning that is initiated by students that determines whether they achieve their learning goals. Sinatra (2000) defined intentional learning as students who use knowledge and beliefs to engage in an internally-initiated goal-directed action in order to acquire new skills and knowledge.

The purpose of the current study is to examine differences between high and low achievers in their awareness of how and why they learned. Specifically the four learner awareness levels: survival, establishing stability, approval and loving to learn as measured by the Learner Awareness Questionnaire, LALQ (Choy, Goh & Sedhu, in press) is examined. The definition of learner awareness involves students reflecting on fulfilling a need for learning, safety needs which they perceived had to be established, need for approval from significant others, and motivation to acquire new knowledge. We hypothesised that male and female high achievers will have significant differences in 'loving to learn' scores than low achievers of both genders.

In addition the relationship of the two learner awareness scores for 'survival' and 'establishing stability' levels of the learner awareness scales on how and why students learn for high and low achievers will be examined. 'Survival' involves students' beliefs about the amount of control they have over learning situations and influence

significant others have over their lives. 'Establishing stability' involves students' need to establish and secure a better future. We hypothesise that both 'survival' and 'establishing stability' will have significant differences with the low achievers of both genders because high achievers of either gender will have more self-confidence and self-efficacy. The male and female high achievers are probably not as dependent on the influence of significant others and are more assured of having a better future in terms of jobs as they are doing well in school.

For the third learner awareness level, 'approval' we hypothesised that it will have significant differences for male and female high achievers because they tend to have an approach to learning that builds confidence and achieve the learning outcomes they are striving for. According to Biggs (1999) students will learn if they experience success in what they are doing and gain confidence when they learn.

Method

Participants

A total of 3000 students enrolled in a large university in Malaysia were randomly selected to participate in this study. These students were from various undergraduate degree programmes conducted by the university. Valid responses were obtained from 2646 students (1761 female and 885 male), representing a response rate of 98.5%. Ethnicities comprised of Malay (77%), Chinese (10%), Indian (6%) and others (7%). The ages ranged from 18 to 27. The students were from all four years of bachelor degree programmes. As there was no set approach to identifying low and high achievers (Jeynes, 2005; Fan, 1999), the students in this study were separated into high and low achievers using their CGPA by assigning those student who scored at least one standard deviation above the mean CGPA (*M = 3.50, SD = .35)* to the high achievement group and those students who scored one standard deviation below the mean to the low achievement group (VanZile-Tamsen & Livingston, 1999). As the actual records for students' CGPA was private and confidential, the self-reported CGPA was used. A total of 1590 students that reported a CGPA of 3.85 and above, were taken as the high achievers group while a total of 1056 that reported a CGPA of 3.22 and below, the low achievers.
Procedures

The LALQ was distributed and filled in between lectures. The participants were asked to answer the questionnaire anonymously and were also told that they could withdraw from answering the questionnaire at any time they chose. Most of the questionnaires were returned before the start of the next lecture class. It took most students on average between 15 to 20 minutes to answer the questions.

Materials

The LALQ consisted of 21 items concerning how and why students learn. A 5-point Likert scale was used for each item, with a 5 indicating Strongly agree, 4 Agree, 3 Neutral, 2 Disagree and 1 Strongly disagree. The questionnaire consisted of four scales which measured (Refer to Table 4 for the complete questionnaire):
  • Survival, for example 'My family wants me to study so I think I have no choice but to listen to them.'

- Establishing Stability, for example 'Passing examinations is important to me for a secure future.'
- Approval, for example 'I think I will have more friends if I do well in my studies.'
- Loving to learn, for example 'I think learning is fun.'

Scales and Reliabilities

Means and Cronbach alphas for the four scales of the LALQ were calculated. The number of items in each scale, the reliabilities of each scale, item means as well as the maximum and minimum scores are presented in Table 1.

Table 1. The reliabilities of the scales, number of items, item means and maximum and minimum scores

Scale	*n* of items	Cronbach α	Item means	Max./ Min Scores
Survival	9	.81	2.68	4.35/2.23
Establishing Stability	4	.53	3.88	4.28/2.86
Approval	4	.67	3.67	4.17/3.24
Loving to Learn	4	.83	3.99	4.08/3.92

Statistics and Measures

Correlations were computed in order to examine the interactions between the scales of the LALQ, gender and grade point average. The correlational methods were useful for looking at relationships among the scales. As the study was also interested in looking at the differences in learning approaches between males and females, the LALQ scores were correlated with grade point average for the two groups. Finally a t-test was used to explore if there was a difference between high and low achievers of the two groups and the correlations with the scales of the LALQ.

Results

In this study we hypothesise that high male and female achievers will have significantly higher 'love of learning' and 'approval' scores than low achievers and both 'survival' and 'establishing stability' scores will be significantly higher for low achievers. In order to explore these relationships, Pearson coefficients were calculated (Table 2 and Table 3).

The relationship between 'love of learning' and grade point average for the female students was investigated using Pearson product-moment correlation coefficient. There was a small, positive correlation between the two variables, $r = .10$, $n = 1761$, $p < .05$, with high grade point averages associated with high 'love of learning' scores. In the relationship between 'survival' scores and grade point average, there was a small, negative correlation between the two variables, $r = -.10$, $n = 1761$, $p < .01$, with high grade point averages associated with low 'survival' scores. There was however, no significant correlation between female grade point average, 'establishing stability' scores and female grade point average and 'approval' scores.

Table 2 Pearson product-moment correlations between the scores for the four scales of the LALQ and grade point average for females

	1.	2.	3.	4.
1. Survival				
2. Establishing Stability	.08**			
3. Approval	.16**	.40**		
4. Loving to learn	-.08**	.35**	.45**	
5. Grade point average	-.10**	.04	.03	.10*

Note *$p< 05$, **$p< .01$

An independent-samples t-test was conducted to compare the 'survival' scores for high and low female achievers. There was a significant difference in scores for the high achievers ($M = 2.76$, $SD = .70$) and low achievers ($M = 2.63$, $SD = .70$; $t(1759) = 4.32$, $p = .00$, two -tailed). The magnitude of the differences in the means (mean difference = .14, 95% CI: .08 to .21) was small (eta squared = .01). A further independent-samples t-test was conducted to compare the 'love of learning' scores for high and low female achievers. There was a significant difference in scores for the high achievers (M = 4.04, SD = .73) and low achievers (M = 3.94, SD = .71; $t(1759)$ = -2.03, $p = .04$, two-tailed). The magnitude of the differences in the means (mean difference = -.07, 95% CI: -.14 to -.002) was small (eta squared = .01).

The items on the 'survival' scale that correlated negatively to the grade point average for females were survival Q1, $r = -.11$, $n = 1761$, $p < .01$, survival Q2, $r = -.12$, $n = 1761$, $p < .01$, survival Q3, $r = -.10$, $n = 1761$, $p < .01$, survival Q4, $r = -.06$, $n = 1761$, $p < .05$, survival Q7, $r = -.06$, $n = 1761$, $p < .01$, survival Q8, $r = -.10$, $n = 1761$, $p < .01$ and survival Q9, $r = .06$, $n = 1761$, $p < .05$. The items on the 'loving to learn' scale that correlated positively to the grade point average for females were loving to learn Q20, $r = .08$, $n = 1761$, $p < .01$ and loving to learn Q21, $r = -.06$, $n = 1761$, $p < .01$. Table 4 shows the items on the LALQ.

The relationship between 'approval' and grade point average for the male students was investigated using Pearson product-moment correlation coefficient. There was a small, positive correlation between the two variables, $r = .10$, $n = 885$, $p < .01$, with high grade point averages associated with high 'approval' scores. In the relationship between 'loving to learn' scores and grade point average, there was a small, positive correlation between the two variables, $r = .10$, $n = 885$, $p < .01$, with high grade point averages associated with high 'loving to learn' scores. There was however, no significant correlation between male grade point average, 'survival scores' scores and male grade point average and 'establishing stability' scores.

Table 3 Pearson product-moment correlations between the scores for the four scales of the LALQ and grade point average for males

		1.	2.	3.	4.
1.	Survival				
2.	Establishing Stability	.16**			
3.	Approval	.21**	.52**		
4.	Loving to learn	-.04	.41**	.52**	
5.	Grade point average	-.05	.05	.10**	.12**

Note **$p < .01$

An independent-samples t-test was conducted to compare the 'approval' scores for high and low male achievers. There was a there was a significant difference in scores for the high achievers ($M = 4.04$, $SD = .73$) and low achievers ($M = 3.70$, $SD = .71$; $t(883) = -2.65$, $p = .01$, two-tailed). The magnitude of the differences in the means (mean difference = -.13, 95% CI: -.23 to -.03) was small (eta squared = .01). A further independent-samples t-test was conducted to compare the 'love of learning' scores for high and low male achievers. There was a significant difference in scores for the high achievers (M = 3.83, SD = .77) and low achievers (M = 3.97, SD = .76; $t(883) = -2.44$, $p = .01$, two-tailed). The magnitude of the differences in the means (mean difference = -.14, 95% CI: -.24 to -.04) was small (eta squared = .01).

The items on the 'approval' scale that correlated positively to the grade point average for males were approval Q15, $r = .11$, $n = 884$, $p < .01$, approval Q16, $r = .07$, $n = 884$, $p < .05$, and approval Q17, $r = .07$, $n = 884$, $p < .05$. The items on the 'loving to learn' scale that correlated positively to the grade point average for males were loving to learn Q18, $r = .08$, $n = 884$, $p < .05$, loving to learn Q19, $r = .08$, $n = 884$, $p < .05$ and loving to learn Q20, $r = .08$, $n = 884$, $p < .05$. Table 4 shows the items on the LALQ.

Table 4 The Learner Awareness Questionnaire (LALQ)

Scales		Items
Survival	Q1	My family wants me to study so I think I have no choice but to listen to them
	Q2	To please my parents, I enrolled in this programme although I do not like it
	Q3	I study because my parents want me to.
	Q4	I am studying in this institution because I want to please my parents
	Q5	I have always thought that I had no choice about going to school
	Q6	I do my course work because I do not want to disappoint my parents
	Q7	I signed up for this programme because my friends signed up for it

	Q8	I give up easily especially when I feel the subjects are difficult
	Q9	I learn because I want a better future
Establishing Stability	Q10	I am studying now so that I can have a good job in the future
	Q11	Passing examinations is important to me for a secure future
	Q12	I make sure I go for my classes because what I learn can be applied to my future
	Q13	I will just memorise my notes rather than analyse them in order to pass my examinations.
Approval	Q14	I think my friends will be impressed if I do well in my studies
	Q15	I am confident I can do the work required in this programme and graduate on time
	Q16	I feel confident I can pass my examinations with good grades
	Q17	I think I will have more friends if I do well in my studies
Loving to Learn	Q18	I think learning is fun
	Q19	I find learning interesting
	Q20	I love learning all through my school year until now
	Q21	I like to think of new ways to learn something

Discussion

In the present study we quantitatively explored the relations between grade point average and the four learning awareness levels as measured by the LALQ. Our findings indicate that high and low achievers have different learning behaviours. High female achievers were negatively correlated with the 'survival' scale. An investigation into the responses in the LALQ, shows that high female achievers do not perceive that they have to learn to please parents and are not influence by peers to sign up for their studies. They are not discouraged by difficult subjects and studied because they believed that they will have a better future. This however, is not evident for male high achievers. Our hypothesis that 'survival' will have significant differences with low achievers is only true for females. This finding suggest that students with higher self-efficacy and self-confidence are better able to monitor their learning and execute appropriate learning behaviours which are congruent with the findings of Caprara et al (2008), Bandura (2006) and Zimmerman and Bandura (1994).

There are no significant differences between the 'establishing stability' scale and grade point averages for females and males. Hence, our hypothesis that 'establishing stability' will have significant differences for low achievers is not true. The items in this scale are designed to measure students' strategic approach to learning (Heikkilaa & Lonka, 2006; Biggs 1999) which focuses on the strategies they choose to maximise their chances of academic success. The results indicate for this group of students at

least, they are not focused on strategizing how they approached learning to maximise success.

There are significant differences between 'approval' and grade point average for male students. The grade point average for female students does not show such differences for the scale. Hence, high male achievers tend to score higher for the 'approval' scale on the LALQ. Analysis of individual items on the scale that correlated significantly with grade point average show male high achievers as more confident of making the grade and graduating on time. They also believe that they will be more popular among their peers if they do well in their studies. This finding is congruent with Bandura's (2006) theory of human development in that individuals who believe and have confidence in themselves can have a wider array of options to bring about their desired futures. It is also in line with Cleary and Zimmerman's (2004) findings that individuals who feel empowered often have a sense of control over their lives which are present in these high achievers.

The grade point average for males and females shows significant differences with the 'loving to learn' scale. Hence, both male and female high achievers tend to score higher on this scale. Analysis of items on this scales show that males perceive that learning is fun and interesting while the females tend to find new ways of learning. However, both males and females love to learn all through their years of schooling. It is interesting to note that this is the only item that significantly correlated with both males and females. This finding is congruent with intrinsic interest in academic task (Cleary & Zimmerman, 2004) which enables students to be more motivated when learning.

There are some specific methodological limitations to the present study. Firstly, how and why students learned was measured using a self-report instrument, which was not context specific. However, there are differing points of view from researchers on this. Pintrich (2003) recommends adapting a questionnaire to suite the course rather than being overly global while Heikkilaa and Lonka (2006) recommends a more general and non-context driven questionnaire to measure student approach to learning. Because this study is explorative and cross-disciplinary in nature, the LALQ used is suitable for students that come from various faculties and departments.

The second limitation concerns the low reliabilities of two of the scales on the LALQ. There are several possibilities for this, as the approaches to learning, self-management and student academic achievement are not well defined or simple to operationalize. It is also possible that university students answer in a socially desirable way; some items more transparent than others. This could lower the reliabilities.

Earlier research indicates that cognitive strategies are related to learning approaches (Makinen et al, 2004; Heikkilaa and Lonka, 2006). Pintrich (2003) has argued for the consideration of what students want when they learn, where their feelings toward learning is taken into account. Hence the affective variables need to be taken into consideration in future research. The findings of this study specifically for the love of learning scale seem to indicate this need.

It must be noted that the data is collected from students of various faculties and programmes and many contextual aspects having to do with students' specific study

culture were ignored. The grade point average is used as a measure of study success because the participants are from various faculties and at various phases of their studies. Future studies will need to look at the learning approaches of students from various social and cultural aspects which will be more contextual and grounded on use of specific strategies. Attempts are also made to avoid interpretations of the data from the current study that will reflect seeing approaches and strategies as trait-like entities. The interpretations are from a more systemic view and the approaches to learning in terms of the adaptations to a learning environment. This does not mean that students will exhibit similar predispositions across all learning environments nor does it mean that it is unchangeable. Hence, there is clearly a need for a longitudinal study to determine causality which cannot be made with the correlational evidence of the current study. Sinatra and Pintrich (2003) further encouraged more rigor in research methodologies, more reliable behavioural measures, and developmental research. Hence, new methodologies and measuring instrumentation are needed, representing great opportunities for future studies.

The results of this study suggest that student approaches to learning can influence student achievement and efficacy. There are significant differences in how and why male and female students learn. It is therefore important for teachers and administrators to provided adequate scaffolding and monitoring the effectiveness of different instructional procedures. One way of carrying this out is to develop better diagnostic and research instruments that will help monitor students' progress and development. Identifying problems early will allow intervention in a constructive manner and provide instructional support to students that need it.

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