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The Effect of a 'Learning Theories' Unit on Students' Attitudes Toward Learning

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Abstract: People can improve themselves cognitively, professionally, academically, and in terms of their quality of life by continuous learning. Teachers, who are charged with bringing up new members of society, have to be aware of the importance of developing the ability to learn. This study examined how their knowledge of learning theories affected the attitudes of teacher candidates toward learning. For this purpose, students were given a scale of attitudes toward learning, as a pre-test and a post-test after introduction to the subject of learning theories. Data obtained from 150 participants were processed in SPSS 15.0; paired samples t-tests, independent samples t-tests and correlation tests were conducted. The results suggested that individuals with better understandings of the learning process are better at perceiving the nature of learning, more open to learning, have higher expectations about what they will get from learning and exhibit less anxiety in relation to learning.

Keywords: Attitudes towards learning, Learning theories, Faculty of education, Anxiety about learning, Educational Psychology Course

Introduction

In his serial novel *White Fang* (1906), Jack London depicts a wolf cub, with the newly-acquired ability to see, discovering the light gleaming at the entrance to the cave in which it lives. The author claims that the instinctive behaviour of the cub is really curiosity and a desire to learn, an instinct that one finds in all animals.

Most human behaviours, such as walking, speaking, reading, writing, dressing and playing, are at least in part products of learning (Ulusoy, 2007). In this process, which starts from birth and ends in death, humans learn something new each day. From this point of view, teaching is one of the essential professions for survival of society. While teachers help provisional society members to acquire the knowledge, skills and values of society, the attitudes of those individuals toward learning these things constitute one of the most important subject among the knowledge and skills acquired in a faculty of education. In preparing to practise their vocation, teacher candidates have to know theoretical basis of 'learning' and one of the main aims of the present research was to investigate their attitudes toward learning. Positive attitudes will ensure that they acquire lifelong learning skills. And an individual with positive attitudes toward any subject concentrates on it, is interested in it and takes all the actions necessary to succeed in learning about it (Başaran, 1974; Kılıççı, 1992). Thus, a favourable achievement in learning is to be expected (Kara, 2003). Learning can be defined as acquiring an ability to do an act or to take part in an event, which previously could not be done, at the end of a certain activity. Öncül (2000) considers learning

as an event firstly, and defines it as a 'process or reaction as change in behaviour partly or totally as a result of experience'.

He also considers learning as an outcome, and explains it as a newly-acquired ability. Learning, by improving the individual, leads him or her to adapt to developments and changes. Adaptation, being life-long, encompasses, among other things, the individual's cognitive, cultural, social, psychological, emotional, individual and academic lives. Learning also involves the skills that an individual needs to assess properly fact and values, technology, success, and so on. According to Washburne (1936), learning means the ability, making use of experiences owned, to solve problems encountered. Individuals acquire this ability according to the aims of their lives, their desire to solve their problems and their yearning for success.

Learning can be defined briefly as a mainly positive change of the individual in the cognitive, emotional and psychomotor domains, because when one has learned a definite subject, one is expected to think and behave in a different way from then on, and one's values have been differentiated. From another point of view, learning can be seen as adaptation to the conditions necessary for survival, an ability to benefit from the change and from new conditions. Learning also requires continuity, because a good learner has to make use of his or her previous experiences to adapt to new conditions.

One dimension of the present study was an attempt to clarify how a knowledge of concepts and theories explaining the learning process affected the attitudes of teacher candidates toward learning.

The world is in constant change. This creates an enormous amount of new knowledge and compels the present generation to spend longer time in learning. The amount of knowledge to be acquired by following generations will increase incrementally. Thus, learning stands as a valuable skill to adapt oneself to the environment, to face the challenges in adaptation and to perceive new values in a meaningful, beneficial and correct manner. Improvements, especially in science and technology, are forcing us to differentiate in our daily lives. In some cases, this change may be so rapid that by the time an individual is about to graduate from university, some of the courses he or she has attended may have become partly (or even totally) obsolete.

Therefore, all social institutions and all individuals whose existence depends upon those institutions, have to possess the ability to improve themselves and undertake lifelong learning, because learning is the key to better performance (Vakkayil, 2008). As stated in the Bologna Declaration (1999), lifelong learning is an important factor in the development of countries and the improvement of individuals. Learning is not limited to schools but lasts throughout life (Jakobi & Rusconi, 2009). It is especially vital in improving vocational qualifications and professional skills (Jakobi and Rusconi, 2009). In contemporary society, even the elderly need to learn such skills as those needed for using computers (Seals et al., 2008).

The European Union believes that education and training systems need to adapt to the challenges posed by the knowledge-based society (EU Council President, 2000). In France in 2005, university rectors stated that lifelong learning would form one of the main features of higher education in future (Conférence des Présidents d'Université, 2005).

Successful learners are enthusiastic, exhibit confident attitudes toward learning, have positive expectations from it and do not experience anxiety about learning. Because the attitudes toward learning one has inevitably influence the outcomes, the more positive attitudes one has, the better he or she performs in learning (Duarte, 2007; Braten, 2006).

Literature Review

There is a considerable amount of research on the effects of attitudes toward learning on students' behaviours. Positive attitudes toward any subject are frequently found to enhance the students' interest in the subject and their motivation to learn.

Braten (2006) showed that students' attitudes toward learning directed their participation into learning activities. Visser (2008) found that students' belief in knowledge acquisition was a significant factor in their performance. Those who believed that learning occurred quickly or not at all were more likely to have fewer problems in searching for information or evaluation than the students who believed learning to be a gradual process, requiring both time and effort. Students' belief in acquiring information was seen to trigger learning. Saade (2007) and Pierce, Stacey & Barkatsas (2007) showed that students' emotions, interest and beliefs about learning affected their behaviours. Positive attitudes led to the exhibition of positive behaviours toward courses of study, with participants absorbing themselves in courses and striving to learn more. Such students were also observed to be more eager to solve problems, to acquire the information and skills useful for daily life and to engage themselves emotionally, thereby meeting the requirements of the courses in terms of behaviours, emotions and psychomotor skills (Tsai & Kuo, 2008; Marzano & Pickering, 2007; Scheiter & Gerjets, 2007; Yang & Lau, 2003; Merisuo-Storm, 2007; Sparrt, 1999; and Yudko, Hirakawa & Chi, 2007).

There have been some studies that have investigated the effects of attitudes toward learning on academic success. Karagiannopoulou & Christodoulides (2005) showed that attitudes were more significant predictors of academic success rather than university entrance examinations. Rula (2006) states that positive attitudes toward a subject affect learning. According to the teachers taking part in this research, anxiety and attitudes toward foreign language learning seemed as significant as technical approaches. Bahn (2007) researched the factors that might have influenced the learning activities of 42 nurses and their views on and perceptions of their learning experiences through semi-structured questions. Positive attitudes were shown to improve learning. Pierce, Stacey & Barkatsas (2007) found that positive attitudes toward mathematics lessons resulted in improved learning about mathematics. Perkins et al. (n.d.) used the Colorado Learning about Science Survey to examine the relationship between 750 students' attitudes, beliefs, conceptual learning and retention and their performance in a physics lesson and observed that the students with positive attitudes toward the lesson achieved their learning goals more quickly and effectively than those who did not have such attitudes. Prokop, Leskova, Kubiátko & Diran (2007) found a significant positive correlation between attitudes and information levels. Statistically positive attitudes increase the chances of success in a lesson.

Liaw, Huang & Chen (2007) explored 30 college instructors and 168 students' attitudes toward e-learning. Participants were asked to answer two different questionnaires for investigating their perceptions about e-learning. This research suggested that positive attitudes consisted of such emotions as self-sufficiency, usefulness and enjoyment. Merisuo-Storm (2007) reached similar conclusions: for success in foreign language learning, students' attitudes and motivation played very significant roles.

Tsai & Kuo (2008) found that students' willingness to learn stemmed from a fear of getting low marks and that they defined learning as memorising information, preparing for tests, solving problems and calculating (Vakkayil, 2008). According to Yang & Lau (2003), Merisuo-Storm (2007) and Watters & Watters (2007), students worked harder to learn about matters they believed to be effective in their self-development and useful in their probable jobs. They stated that they were more eager to learn information that was congruent with real life and which they thought they could make use of in the future.

Some studies show that students are eager to learn because it is thought to give them an advantage in getting information, establishing real communication and finding employment (Taha, 2007; Merisuo-Storm, 2007). People are always motivated and ready to learn in order to achieve goals like those mentioned (Dweek & Leggett, 1988).

Students' expectations and eagerness not only motivate them to learn the subject required but also contribute to their social and personal development and attitudes towards learning should be considered among the most important factors in fulfilling social tasks and performing social duties.

Method

The aim was to show how the attitudes of teacher candidates at the second grade of the faculty of education at Adiyaman University, Turkey, were affected by being instructed about the nature of the learning process. A learning theories unit in the educational psychology course was studied by all 150 students (78 of them males) attending primary school/class teaching and mathematics teaching programs in the academic year 2007-2008.

In Turkey, acceptance for a university is determined by its entrance examination. Accordingly, the students' cognitive, affective and psychomotor readiness levels were assumed to be equal and they were assumed to have been affected equally by factors such as their IQ, motivation and expectations about the future.

The independent variable, **learning theories in the education psychology course**, was explored to determine whether it affected the dependent variable, **attitudes toward learning**. Educational psychology is one of the compulsory courses for teacher candidates. The course consists of two main parts, developmental psychology and learning concepts, and various theories dealing with how learning takes place are explained. With an expectation of change, the study aimed to examine how students' attitudes towards learning were affected when they learned about learning concepts and how learning took place.

From the literature review and the context of the educational psychology course, it was apparent that attitudes toward learning involved such dimensions as the nature of learning, expectations from learning, openness to learn and anxiety about learning. Thus the following five hypotheses were constructed and tested:

1. The difference between pre-test and post-test scores of students is significant.
2. The difference between pre-test and post-test scores of students related to the nature of learning is significant.
3. The difference between pre-test and post-test points of students related to their expectation from learning is significant.
4. The difference between pre-test and post-test points of students related to their openness to learning is significant.
5. The difference between pre-test and post-test points of students related to their anxiety about learning is significant.

The data were collected by means of a 40-item Likert scale of attitudes toward learning that had been developed by the researcher:

- *I totally disagree* (1)
- *I disagree* (2)
- *I have no opinion* (3)
- *I partly agree* (4)
- *I agree* (5)

The replies to negative questions were recoded in reverse from *I totally disagree* (1) to *I totally agree* (5).

The scale was developed through the following stages (Karasar, 1995:139-143; Balcı, 1995:142-143):

At the first stage, the literature related to attitudes toward learning was investigated thoroughly and 119 items were written. Undergraduate and masters students, as well as academic staff, were asked to criticise these items and add or delete items if necessary. At the end of this process, 77 items (of which 46 were positive and 31 were negative) were collected in the pool. After that, the items for the item pool were presented to expert academic staff. To maintain the content validity in accordance with the expert views, the number of items was reduced through a pre-selection process. And then, emotional variables related to learning were taken into account when structuring the sub-dimensions because of their multifariousness, measurability and observability. The scale consisted of four sub-sections; the first (18 items), dealt with the nature of learning; the second (21), with expectations from learning; the third (20), with openness to learning; and the fourth (18), with anxiety about learning. Following the improvements in the light of the expert views and preliminary tests, 285 students registered in the same course at İnönü University were given the test. Factor analyses were carried out and the items with theoretical validity according to these analyses were put into the last form of the scale. The height of KMO (Kaiser-Meyer-Olkin) values was especially sought. The Cronbach alpha internal consistency coefficient of the scale was found following the factor analysis. To avoid any inaccuracy in the calculation, the process was repeated. In addition, the raw data were processed by another educational programs expert academican, and the same results were obtained. Cronbach’s alpha is accepted to be adequate when it is higher than 0.70 (Bayram, 2004:128). All the values were higher than 0.70. Reliability analyses aim to determine those variables not sharing the value to be measured equally and to exclude them from the calculations, enhancing the internal consistency. For this purpose, the variables were tested on the basis of factor and reliability (Baş, 2005:193). Cronbach’s alpha and item-total correlation were used to find the items not reflecting the common value. The process was repeated on Statistical Package for the Social Sciences (SPSS) 15.0 until all the items with negative effects on any factor were eliminated. Then, all the factors were subjected to the same test. At the end of this analysis, 37 items were removed from the scale. And at last stage, 77 items were subject to the factor analysis process. At the end, 40 items, of which 29 were positive and 11 were negative, were included into the scale. The factor degree ranged from 0.45 to 0.74. The last form of the scale is shown as Table 1.

	I agree	I partly agree	I have no opinion	I disagree	I totally disagree
1. The clever ones learn more easily.					
2. Forgetting what I learn in a short time makes me anxious.					
3. Learning new things changes my thoughts.					
4. I do not want to learn, because I do not like working/studying.					
5. Learning goes on life-long.					
6. Learning is a difficult job; I experience difficulties while I learn.					
7. What I learn changes my opinion of life.					
8. I do not want to learn if I am not compelled to.					
9. Intelligence is vital for learning.					
10. Losing too much time while learning disheartens me.					

11.	I have learned too many things so far but I have not benefited from them at all.					
12.	I enjoy learning difficult subjects.					
13.	One can no longer learn after the age of 30.					
14.	I am anxious while being introduced a new subject.					
15.	I have to go on learning in order to make sound decisions about the problems encountered in daily life.					
16.	I experience difficulties while learning a new subject.					
17.	Learning is a process which goes on until death.					
18.	I have problems in concentrating while learning new subjects.					
19.	I want to develop my communication with people through learning new things.					
20.	I have been fed up with continuously learning new things.					
21.	Every individual has a different learning capacity.					
22.	Failing in concentrating my self upsets me.					
23.	Learning new things makes me successful in what I do.					
24.	I am the type of man open to learning.					
25.	Cleverer ones learn better.					
26.	I am bored while listening to new subjects.					
27.	The more I learn the fewer wrong decisions I make.					
28.	The knowledge which I have for the moment is enough for me.					
29.	Learning has always interested me.					
30.	Learning new things motivates me more about my career.					
31.	I still have a lot to learn.					
32.	Trying to learn a new subject is enjoyable.					
33.	The more I learn, the larger the aims I pursue.					
34.	I know how to make use of my experiences.					
35.	I feel anxious when I start a new subject.					
36.	I can learn any subject easily.					
37.	I enjoy learning new subjects.					
38.	I am not anxious about learning.					
39.	I have headaches while learning new subjects.					
40.	I am always ready to learn new things.					

Table 1: The scale of attitudes toward learning

According to the figures in Table 2, the scale may be considered valid. KMO, Bartlett’s Test of Sphericity and Cronbach’s alpha were calculated for each sub-dimension of the scale. A value greater than 0.60 shows the significance of Bartlett (Büyüköztürk, 2004).

	Nature of Learning	Expectations from Learning	Openness to Learning	Anxiety about learning
Cronbach alpha	.77	.72	.78	.81
KMO	.73	.78	.81	.81
Bartlett’s Test of Sphericity	293.724	438.354	497.079	606.076
Number of the valid items	7	9	11	13

Table 2: Reliability and validity of the scale

In order to determine the effect of learning theories on students’ attitudes toward learning, activities suggested by the instructional material were utilised. Weekly plans were prepared within the outline of the curriculum of the Institution of Higher Education. The text *Educational Psychology*, by Prof. Dr. Binnur Yeşilyaprak (2006), was used throughout the

research as the main course book. The units were studied for three hours per week over a six-week period:

Unit	Total hours
Nature of Learning	3
Behaviourist Approaches to Learning	3
Social Learning Theory	3
Gestalt and Humanistic Approaches to Learning	6
Information Processing Model	6

Findings and Discussion

The results of paired sample t test related to the hypothesis ‘The difference between pre-test and post-test scores of students is significant’ are shown in the following table:

	Application	\bar{x}	SD	t	p_t	r	P_r
Nature of Learning	Pre	32.14	2.57	-6.10	.00	0.1	0.22
	Post	33.67	1.98				
Openness to Learning	Pre	45.93	6.04	-4.66	.00	.00	0.81
	Post	49.00	5.20				
Expectations from Learning	Pre	40.53	4.29	-5.88	.00	0.08	0.30
	Post	43.01	3.23				
Anxiety about Learning	Pre	37.81	7.51	10.00	.00	-0.1	0.54
	Post	29.27	6.90				

Df = 149; N = 150

Table 3: The paired samples t test outcomes of the pre and post scale

As seen in the table, the difference between the pre-test and post-test means, according to the t test applied, may be regarded as significant ($\bar{x}_{pre} = 32.14$; $\bar{x}_{post} = 33.67$; $t = -6.10$; $p_t < 0.05$). The learning theories unit may therefore be said to have helped students to comprehend the nature of learning better. There was no significant correlation between the pre-test and post-test results ($r = 0.1$, $p_r > 0.05$).

For ‘openness to learning’, the difference between the pre-test and post-test means according to the t test applied was significant ($\bar{x}_{pre} = 45.93$; $\bar{x}_{post} = 49.00$; $t = -4.66$; $p < 0.05$). The students may be said to have become more open to learning. There was no significant correlation between the pre-test and post-test results ($r = 0.00$, $p_r > 0.05$).

For ‘expectations from learning’, the difference between the pre-test and post-test means was significant ($\bar{x}_{pre} = 40.53$; $\bar{x}_{post} = 43.01$; $t = -5.88$; $p < 0.05$). Students experienced higher expectations of the benefits of learning. There was no significant correlation between the pre-test and post-test results ($r = 0.08$, $p > 0.05$).

For ‘anxiety about learning’, the result of the paired samples t test was significant ($\bar{x}_{pre} = 37.81$; $\bar{x}_{post} = 29.27$; $t = 10.00$; $p < 0.05$). The students were likely to be relatively less anxious about learning.

The findings related to the second hypothesis, ‘The difference between pre-test and post test scores of students related to the nature of learning is significant’ are summarised in Table 4.

Attitude Statements	Application	\bar{x}	SD	t	P
1. The clever ones learn more easily.	Pre	4.67	.61	-4.8	0.00
	Post	4.94	.32		
9. Intelligence is vital for learning.	Pre	4.49	.80	-4.94	0.00
	Post	4.87	.48		
25. Cleverer ones learn better.	Pre	4.28	1.12	-4.46	0.00
	Post	4.76	.68		

Df = 298; N = 150

Table 4: The independent samples t test outcomes related to the nature of learning

The table shows that the pre-test and post-test means were significant only in three items related to the nature of learning:

- The significant difference between the pre-test and post-test means for Item 1 ($\bar{x}_{pre} = 4.67$; $\bar{x}_{post} = 4.94$, $t = -4.8$; $p < 0.05$) suggested that the studying the learning theories unit reinforced the belief in students that intelligence simplifies learning.
- The significant difference between the pre-test and post-test means for Item 9 ($\bar{x}_{pre} = 4.49$; $\bar{x}_{post} = 4.87$, $t = -4.94$; $p < 0.05$) indicated that the students had noticed the importance of intelligence in the learning process.
- The significant difference between the pre-test and post-test means for Item 25 ($\bar{x}_{pre} = 4.28$; $\bar{x}_{post} = 4.76$, $t = -4.46$; $p < 0.05$) suggested that students became more convinced that clever people learn more easily.

The findings related to the third hypothesis, ‘The difference between pre-test and post-test points of students related to their expectation from learning is significant’, are summarised in Table 5. The table shows that the pre-test and post-test means were significant in eight items related to expectations from learning:

- The difference between the means for Item 3 was significant ($\bar{x}_{pre} = 4.59$; $\bar{x}_{post} = 4.89$, $t = -3.98$; $p < 0.05$), suggesting that the participants had stated that their ideas and opinions had changed while they were learning.
- The difference between the means for Item 7 was significant ($\bar{x}_{pre} = 4.61$; $\bar{x}_{post} = 4.83$, $t = -3.04$; $p < 0.05$), indicating that students adopted a new approach to life through learning.
- The difference between the means for Item 15 was significant ($\bar{x}_{pre} = 4.71$; $\bar{x}_{post} = 4.94$, $t = -4.45$; $p < 0.05$), as the students had become more aware of the importance of learning in making accurate and effective decisions.
- The difference between the means Item 19 was significant ($\bar{x}_{pre} = 4.58$; $\bar{x}_{post} = 4.81$, $t = -2.87$; $p < 0.05$): students thought that the more they learned, the better the relations they could develop with other people.
- The difference between the means for Item 23 was significant ($\bar{x}_{pre} = 4.5$; $\bar{x}_{post} = 4.82$, $t = -3.67$; $p < 0.05$), showing that students were developing feelings of self-efficacy.
- The difference between the means for Item 27 was significant ($\bar{x}_{pre} = 4.41$; $\bar{x}_{post} = 4.77$,

- $t = -3.98$; $p < 0.05$), showing that students now thought that learning helped them to avoid making wrong decisions.
- The difference between the means for Item 30 was significant ($\bar{x}_{pre} = 4.41$; $\bar{x}_{post} = 4.81$, $t = -4.68$; $p < 0.05$). Learning, according to the students, helped to motivate people about their jobs.
- The difference between the means for Item 33 was significant ($\bar{x}_{pre} = 4.35$; $\bar{x}_{post} = 4.81$, $t = -5.11$; $p < 0.05$), indicating that students felt that the more they learned, the larger the aims they would pursue.

Attitude Statements	Application	\bar{x}	SD	t	p
3. Learning new things changes my thoughts.	Pre	4.59	0.79	-3.98	0.00
	Post	4.89	0.44		
7. What I learn changes my opinion of life.	Pre	4.61	0.67	-3.04	0.01
	Post	4.83	0.58		
15. I have to go on learning in order to make sound decisions about the problems encountered in daily life.	Pre	4.71	0.59	-4.45	0.00
	Post	4.94	0.26		
19. I want to develop my communication with people through learning new things.	Pre	4.58	0.74	-2.87	0.00
	Post	4.81	0.63		
23. Learning new things makes me successful in what I do.	Pre	4.5	0.88	-3.67	0.00
	Post	4.82	0.6		
27. The more I learn the fewer wrong decisions I make.	Pre	4.41	0.91	-3.98	0.00
	Post	4.77	0.64		
30. Learning new things motivates me more about my career.	Pre	4.41	0.9	-4.68	0.00
	Post	4.81	0.54		
33. The more I learn, the larger the aims I pursue.	Pre	4.35	0.99	-5.11	0.00
	Post	4.81	0.52		

Df = 298; N = 150

Table 5: The independent samples t test outcomes related to the expectations from learning

The findings related to the fourth hypothesis, ‘The difference between pre-test and post-test points of students related to their openness to learning is significant’, are summarised in Table 6. The table shows that the pre-test and post-test means were significant in six items related to openness to learning:

- The difference between the means for Item 12 was significant ($\bar{x}_{pre} = 3.81$; $\bar{x}_{post} = 4.37$, $t = -4.3$; $p < 0.05$). The students enjoyed learning even if the subject to learn was difficult.
- The difference between the means for Item 29 was significant ($\bar{x}_{pre} = 4.39$; $\bar{x}_{post} = 4.75$, $t = -4.16$; $p < 0.05$), showing that explanations related to the learning process aroused interest in learning.
- The difference between the means for Item 31 was significant ($\bar{x}_{pre} = 4.87$; $\bar{x}_{post} = 4.96$, $t = -2.13$; $p < 0.05$), meaning that the students had become more eager to learn.
- The difference between the means for Item 34 was significant ($\bar{x}_{pre} = 4.51$; $\bar{x}_{post} = 4.91$, $t = -6.00$; $p < 0.05$), suggesting that the students were making more use of their learning experiences.

- The difference between the means for Item 37 was significant ($\bar{x}_{pre} = 4.29$; $\bar{x}_{post} = 4.77$, $t = -5.53$; $p < 0.05$), indicating that the students enjoyed learning new things more than they had before.
- The difference between the means for Item 40 was significant ($\bar{x}_{pre} = 4.09$; $\bar{x}_{post} = 4.68$, $t = -5.82$; $p < 0.05$): the students may be said to have developed a greater appetite for learning new things.

Attitude Statements	Application	\bar{x}	SD	t	p
12. I enjoy learning difficult subjects.	Pre	3.81	1.3	-4.3	0.00
	Post	4.37	0.95		
29. Learning has always interested me.	Pre	4.39	0.84	-4.16	0.00
	Post	4.75	0.67		
31. I still have a lot to learn.	Pre	4.87	0.46	-2.13	0.03
	Post	4.96	0.28		
34. I know how to make use of my experiences.	Pre	4.51	0.71	-6.00	0.00
	Post	4.91	0.37		
37. I enjoy learning new subjects.	Pre	4.29	0.87	-5.53	0.00
	Post	4.77	0.58		
40. I am always ready to learn new things.	Pre	4.09	1.03	-5.82	0.00
	Post	4.68	0.71		

Df = 298; N = 150

Table 6: The independent samples t test outcomes related to openness to learning

The findings related to the fifth hypothesis, ‘‘The difference between pre-test and post-test points of students related to their anxiety about learning is significant’’, are summarised in Table 7.

Attitude Statements	Application	\bar{x}	SD	t	p
2. Forgetting what I learn in a short time makes me anxious.	Pre	4.03	1.04	8.66	0.00
	Post	2.94	1.14		
6. Learning is a difficult job; I experience difficulties while I learn.	Pre	3.01	1.28	5.04	0.00
	Post	2.32	1.09		
10. Losing too much time while learning disheartens me.	Pre	3.57	1.24	7.09	0.00
	Post	2.61	1.1		
26. I am bored while listening to new subjects.	Pre	2.57	1.15	8.29	0.00
	Post	1.56	0.94		
35. I feel anxious when I start a new subject.	Pre	3.25	1.24	0.54	0.00
	Post	2.32	1.05		

Df = 298; N = 150

Table 7: The independent samples t test outcomes related to anxiety about learning

The table shows that the pre-test and post-test means were significant in six items related to anxiety about learning:

- The difference between the means for Item 2 was significant ($\bar{x}_{pre} = 4.03$; $\bar{x}_{post} = 2.94$, $t = 8.66$; $p < 0.05$), showing that students' anxiety about forgetting too quickly what they had learned had decreased.
- The difference between the means for Item 6 was significant ($\bar{x}_{pre} = 3.01$; $\bar{x}_{post} = 2.32$, $t = 5.04$; $p < 0.05$), suggesting that the difficulty students had experienced in learning new things had been reduced to some extent.
- The difference between the means for Item 10 was significant ($\bar{x}_{pre} = 3.57$; $\bar{x}_{post} = 2.61$, $t = 7.09$; $p < 0.05$): the decrease in anxiety about the time spent on learning must be regarded as a gain of importance.
- The difference between the means for Item 26 was significant ($\bar{x}_{pre} = 2.57$; $\bar{x}_{post} = 1.56$, $t = 8.29$; $p < 0.05$), meaning a reduction in boredom while new subjects are introduced.
- The difference between the means for Item 35 was significant ($\bar{x}_{pre} = 3.25$; $\bar{x}_{post} = 2.32$, $t = 0.54$; $p < 0.05$): students were less anxious about starting new subjects.

Discussion

Post-test results suggested that the students had better comprehended the nature of learning, developed their openness to learning, clarified their expectations from learning and decreased their anxiety about learning. To some extent, the research shed light on the motives behind examination anxiety. A relationship has been observed between level of academic performance and the anxiety. The anxiety in students with lower academic capacity may be a consequence of their lack of mastery learning. This reduced anxiety (Walters & Walters, 2007:37), could provide a greater likelihood of academic success for the students attending learning theories classes. Duarte (2007) and Braten (2006) also found that positive attitudes contribute to learning. Students with these attitudes will probably adopt a habit of lifelong learning and hence, in their careers, they will adapt more easily to new developments. Such attitudes are expected to encourage students to learn and to strive for continuous improvement (Pierce, Stacey & Barkatsas, 2007). This will facilitate their achievement of their learning aims (Perkins et al., n.d.).

The perception that intelligence facilitates learning became more evident after the learning theories classes. Participants appreciated the importance of intelligence (although it is not the only variable) in learning, supporting the view of Watters & Watters (2007). The results were also supported by Gardner's Multiple Intelligence Theory. In *Frames of Mind* (1983), he stated that humans were born with eight 'intelligences' of various kinds (see also Gardner, 2003; Gardner 1995; and Gardner & Hatch, 1989). Some people have more of these individual 'intelligences' than others, and these 'intelligences' can be improved. Intelligence affects one's learning style and its nature, technique and quality, in a positive way. This research indicates that learning about the process of how learning takes place makes a positive and significant contribution to changing students' opinions, improving their decision making in relation to solving the problems they encounter, developing their communication skills with people, helping them to pursue success, enhancing their career motivation and enlarging the scope of their personal life targets. These findings parallel the research of Visser (2008), which suggested that learning improves performance at an increasing rate and learning must have direct implications for daily work practices.

Learning also involves adopting behaviours that are social skills. The participants in this study, as did those in that of Watters & Watters (2007), enjoyed learning. Getting pleasure

from learning will lead individuals to a continuous appetite for learning. In other words, this will encourage lifelong learning. Some participants in the Watters & Watters study defined learning as acquiring skills that can be used in concrete situations. Perception of a subject in this way makes it significant and realistic. Students who witness the application of a subject in real life will engage themselves in it, put effort into learning about it and try to meet all the requirements of the subject (Visser, 2008; Pierce, Stacey & Barkatsas, 2007; Braten, 2006; Karagiannopoulou & Christodoulides, 2005). All this will inevitably lead to development of self-efficacy among the students (Liaw, Huang & Chen: 2007).

The participants in the present study began to take pleasure in learning, develop interest in learning, make use of their experiences and increase their eagerness to learn new things at a significant level. As Watters & Watters (2007) argued, positive attitudes help individuals to commit to the jobs they do. Individuals who are continuously open to learning can adapt more easily to developments in social, economic, political and other situations.

According to Bloom (1956; 1995: 13), students should be at certain cognitive and affective levels appropriate to the learning they are to undertake. The present study suggests that students' positive attitudes toward an educational institution and its teachers and courses improves the quality of their learning. The utility of a subject to be learned should be stated clearly to students before its content is introduced. Students need to internalise the understanding that the learning is life itself, not some variation that is independent from their lives. The present results, which are consistent with the findings of Hoffmann et al. (1987), suggest that such an understanding will reduce the incidence of frustration and aggressiveness. The teaching of the learning theories unit may be said to have made a contribution to students' peace in life, their socialisation and their achievement of their personal goals.

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