

The Use of Critical Thinking Skills Among University ESL Students

Mohd Rozaidi Ismail

rozaidi@pahang.uitm.edu.my

Roslina Abdul Aziz

leenaziz@pahang.uitm.edu.my

Zamnah Husin

zamnah@salam.uitm.edu.my

Universiti Teknologi MARA
Lintasan Semarak, 26400
Bandar Jengka, Pahang
Malaysia

THE USE OF CRITICAL THINKING SKILLS AMONG UNIVERSITY ESL STUDENTS

ABSTRACT

This research was undertaken to measure the critical thinking ability of university ESL students and to determine the relationship between critical thinking ability and the (1) English language ability; (2) fields of study (or major); and (3) academic performance. The Cornell Critical Thinking Test Level X (CCTTX) developed by Ennis and Millman (1985) was used to determine the students' critical thinking level and a questionnaire was administered to obtain other relevant data i.e. students' English language ability, fields of study and academic performance. The respondents involved in the study were two hundred and sixty-one public university students in Pahang. The students' CCTTX were marked and scores were given. Association between students' critical thinking ability and English language ability, fields of study and academic performance were analysed via one-way analysis of variance using the Statistical Package for Social Sciences Version X (SPSS-X). The findings revealed that the overall scores obtained by the students in CCTTX test were low. There was a significant difference in the critical thinking scores with the students' language ability. However, there were no significant differences recorded between the students' CCTTX scores and their fields of study and academic performance. The implications of the findings for the English Language Curriculum were elaborated and relevant recommendations were made.

INTRODUCTION

In today's 'contemporary realities', the rapid changes in technology, information explosion, aging population, ethnic diversity, globalization of business, new economic pressures, changing of labor market, chronic high unemployment rate and cutbacks in health and education budget (Paul 1993), have brought about serious implications upon the development of a country's education system. One that is most challenging would be the need for a curriculum that will be able to produce citizens who are able to withstand this global pressure, citizens who are able to maintain continuity of the country's progress and growth, citizens who will continuously provide adequate support to the manpower needs of the country.

Hence, the rising number of unemployed graduates in Malaysia, as reported by the Economic Planning Unit (EPU), is a cause for concern. According to an EPU survey, 60,000 Malaysian graduates were unemployed in 2005, 81 percent of which were graduates from the public universities (The Star, 3 Nov 2005). In reaction to this alarming figure, the Deputy Prime Minister, Datuk Seri Najib Tun Razak in his speech during the

15th Prime Minister's Golden Hands Awards 2005 ceremony, stressed that there are four main characteristics of skilled workers; first and foremost is having a creative mind, followed by being agile at work, having a precision culture that leads to internationally-recognized standards and being result-and performance-oriented. According to him, lacking of these skills would jeopardize the chances of graduates to secure any position in the job market (The Star, 7 April 2006). Being a progressively developing nation, this excess in the number of graduates without employment could very well point to the weakness of the country's education and manpower development programs. Therefore, for institutions of higher learning especially the universities in Malaysia, to ensure that the graduates produced comply with the country's manpower needs, development of higher level critical thinking ability of the graduates is inevitable.

As emphasized by Tan Sri Lim Kok Wing, president of Limkokwing University in his comment of the Ninth Malaysia Plan (Rancangan Malaysia Ke-9), "education and manpower development should have, as part of its curriculum, the training of young minds to be critical, creative and adventurous". He added that it is important to make sure that "graduates have the right skills and values that meet market demand..." (New Straits Times, 9 April 2006). Therefore, to survive today's employment market filled with highly challenging 'contemporary realities', university graduates need to possess high level critical thinking ability. (Edgerton 1991, Ennis 1989, McPeck 1990, Paul 1993, Rodriguez and Kies 1998).

Critical thinking was defined as "the appropriate use of reflective skepticism within the problem under investigation" by McPeck (1981: 7). McPeck is a firm believer that the criteria for the correct application of critical thinking vary with specific areas of expertise and knowledge. According to Simon and Kaplan (1989) critical thinking involves the formation of logical inferences. Ennis (1985) simply defined critical thinking as "reasonable reflective thinking that is focused on deciding what to believe or do" (p.45)

Similar to Ennis (1985) Chafee (1988) defined critical thinking is "our active, purposeful, and organized efforts to make sense of our world by carefully examining our thinking, and the thinking of others, in order to clarify and improve our understanding" (p.29). Halpern (1989) defined critical thinking as "thinking that are purposeful, reasoned and goal directed. It is the kind of thinking involved, in solving problems, formulating inferences, calculating likelihoods, and making decisions" (p.5). Paul (1993) believed that "critical thinking is a unique kind of purposeful thinking in which the thinker systematically and habitually imposes criteria and intellectual standards upon the thinking (p 21). It can be drawn from all the definitions that critical thinking include the idea of purposeful thought based on knowledge which leads to sound conclusions and solutions.

As an institution of higher education, a university is denotatively known as a place for higher level of learning. The needs and expectations for advanced or higher level of thinking are thus inclined on each students enrolled at a university. According to Bloom (1957 in Pikkert and Foster, 1996), having "higher level thinking skills" means having the "mental ability to be critical in analysing, applying, synthesizing and evaluating facts or materials" (in Pikkert and Foster, 1996)". Hence the ability to think critically can be

dubbed as crucial to every student. This is because the students' ability to think critically would therefore have important bearings on the success and failure in all their academic ventures at the university. This emphasizes the need for students to have a certain level of Critical Thinking Skills (CTS) to be able to survive as undergraduates at any institution of higher education or university.

A university that aims to produce world-class graduates who are globally competitive, research and development in the areas of Critical Thinking (CT) among the students is inevitable. Mohd Rozaidi (2003) in his study of the use of language learning strategies by 250 students from UiTM, found that the strategies that are directly related to thinking, namely, cognitive, memorization and affective strategies, were the least used by the students. This suggests that the critical thinking ability of university students do need to be further analysed if any pedagogical aspects of the university is to be improved. Inputs from studies in CT can help provide relevant ideas in developing better teaching approaches and methods, as well as provide the graduates with a better chance of survival in the employment market.

The purposes of this study are;

1. to measure the critical thinking ability of the second year students at UiTM Pahang; and
2. to investigate the relationship between the critical thinking scores and the students' fields of study at the university, academic performance and English language ability .

The research questions of this study are;

1. What is the critical thinking level of the ESL students?
2. Is there any significant difference in the critical thinking ability between the Science Technology and Business Management students?
3. Is there any significant difference in the critical thinking ability among the students with Low, Average, High and Excellent Academic Performance?
4. Is there any significant difference in the critical thinking ability among the students with Low, Average, High and Excellent English Language ability?

MATERIALS AND METHODS

There were 261 students from Universiti Teknologi MARA Pahang (UiTM Pahang) who took part in this study, 68 male and 193 female. They were all second year diploma students. 150 were studying in the field of Science and Technology at the Faculty of Science and Technology, while 111 were studying in the field of Business Management at the Faculty of Business and Management. The entry requirement for both fields of study is Sijil Pelajaran Malaysia (SPM). Prior to this study, the students had also completed a full year of diploma program at UiTM Pahang. Therefore, their Cumulative

Grade Point Average (CGPA) at the end of the second semester was used as reference to their academic performance at UiTM Pahang.

This is a quantitative study designed to elicit data on the use of Critical Thinking Skills (CTS) among the ESL students. The data for this study will be collected via:

- a. Questionnaire – The questionnaire collects details such as the students’ fields of study, on-going academic performance (Cumulative Grade Point Average or CGPA), SPM English Language results and gender. These factors will be the variables in this study. (Please see Appendix I).
- b. The Cornell Critical Thinking Test Level X (CCTTX) created by Ennis and Millman (1985) (Please see Appendix II) – The test collects information concerning the use of CTS among the subjects. It is a multiple-choice test with 71 items and three options that evaluates students’ critical thinking ability in applying inductive reasoning and deductive reasoning, evaluating reliability of reports, credibility of statements, and assumptions in arguments. Members of the Illinois Critical Thinking Project have intensively discussed each item and there is agreement that the items in the CCTTX do test critical thinking ability. This is “one basis for content validity.” (Ennis, Millman and Tomko 1985: 15) Another basis for content validity claim is that all the answers to the CCTTX can be defended. For the Cornell Thinking Test Level X, the reliability coefficients range from .67 to .90 (Ennis, Millman and Tomko: 1985).

Descriptive statistics (mean scores, frequencies, standard deviation and range) were computed for all the variables contained in the questionnaire. The students’ CCTTX were marked and scores given. In estimating internal consistency reliability of the items in the CCTTX, the Alpha (Cronbach) model for reliability analysis was used. Also, for the purposes of analysis the students’ CCTTX scores, Cumulative Grade Point Average (CGPA), English Language Examination results and BEL 200 results were also recoded into four broader performance categories – i.e. ‘Low’, ‘Average’, ‘High’, and ‘Excellent’. (See Table 1) Associations between students’ critical thinking ability (CCTTX scores) and the following variables – fields of study, academic performance (CGPA), English language ability (SPM EL examination results), and gender – were checked via one-way analysis of variance using the Statistical Package for the Social Sciences Version X (SPSS-X). Significant levels were set at $p < .05$.

Table 1: Reclassifications of students grades/scores based on performance category

Performance (Category)	CGPA (Grade Value)	SPM EL Exam (Grade)	CCTTX Score (Percentage)
Excellent	3.00 – 4.00	A	75 - 100
High	2.33 – 2.99	B	60 - 74
Average	2.00 – 2.32	C	50 - 59
Low	0.00 – 1.99	D, E, F	0 - 49

RESULTS AND DISCUSSION

Research Question 1

What is the critical thinking level of the ESL students?

The internal consistency reliability of the Cornell Thinking Test Level X (CCTTX) using Cronbach's alpha was computed at .736 based on the entire 261-student sample. Based on the reliability coefficients standard for the CCTTX given by Ennis, Millman and Tomko (1985), which ranged from .67 to .90, the results obtained by this study indicate that the scores obtained by the students in the CCTTX are reliable.

The scores from the CCTTX indicate that a majority of the students or 63.6 percent belonged to the 'low' critical thinking ability category. 27.2 percent in the 'average' category; 8.8 percent were in the 'high' category; and only 0.4 percent or one out of the total population of the study of 261 students, in the 'excellent' category. Evidently, based on the CCTTX scores the students' critical thinking ability is considerably low. Table 2 reports the findings.

Table 2: Students' CCTTX test scores based on category

Category	Percentage	Frequency	Percent
Excellent	75 - 100	1	.4
High	60 - 74	23	8.8
Average	50 - 59	71	27.2
Low	0 - 49	166	63.6
Total		261	100.0

The mean score for the CCTTX was 33.046. Based on the total 71 items contained in the test, the result shows that the mean score percentages obtained by the students' were only at 46.5 percent. The highest score recorded was 55 out of the maximum possible score of 71 or 77.5 percent, while the lowest was 14 out of 71 or 19.7 percent. Table 3 shows the findings.

Table 3: Summary of CCTTX test scores

	N	Min	Max	Mean	Std. Deviation
CCTTX Scores	261	14.0	55.0	33.046	7.4703

Although the findings indicate that the students in the study do possess critical thinking ability, the level of performance of most of the students in the CCTTX, which represents their level of critical thinking ability, was substantially ‘low’.

Research Question 2

Is there any significant difference in the critical thinking ability between the Science Technology and Business Management students?

The mean score, standard deviation and range for each of the two groups of students were calculated. The standard deviation was 7.9869 for the Science Technology (ST) and 6.7344 for the Business Management (BM) students while the mean scores were 32.833 and 33.333 respectively. The similarities of the scores indicate that there was little difference in the critical thinking test scores between the students from both fields of study. However, the ST students had scores ranging from 14 to 50 while the BM students had scores ranging from 18 to 55. This shows that the BM students’ scores were better compared to the ST students. The lowest and highest scores recorded by the BM students were higher compared to the ST students. The BM students recorded the highest score of 55 out of the maximum possible score of 71 in the CCTTX test, while the ST students had the lowest score at 14. Table 4 is a summary of the CCTTX scores of the students from the two different fields of study.

Table 4: Summary of CCTTX test scores of BM and ST students

Field of Study	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval		Min	Max
					Lower Bound	Upper Bound		
Science and Technology	150	32.833	7.9869	.6521	31.545	34.122	14.0	50.0
Business and Management	111	33.333	6.7344	.6392	32.067	34.600	18.0	55.0
Total	261	33.046	7.4703	.4624	32.135	33.957	14.0	55.0

Analysis of Variance (ANOVA) was used to determine if a significant difference existed in the CT scores of the students from the fields of Science and Technology, and Business and Management. However, no statistically significant difference was observed in the critical thinking scores of the two groups of students. Significance levels were set at $p < .05$. Table 5 reports the findings.

Table 5: ANOVA of relationship between BM and ST students' CCTTX scores

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	15.948	1	15.948	.285	.594
Within Groups	14493.500	259	55.959		
Total	14509.448	260			

Although the score range of the Business and Management students indicated better performance in the CCTTX, no significant difference was recorded. These results show that critical thinking ability did not appear to be affected by the fields of study the students were attached to.

Research Question 3

Is there any significant difference in the critical thinking ability among the students with 'low', 'average', 'high' and 'excellent' Academic Performance levels?

The mean score, standard deviation and range for each of the four groups of students were calculated. The similarities of the mean score and standard deviation show that there was little difference in the critical thinking test scores among the four categories of academic performance. However, the students in the 'excellent' academic performance category had scores ranging from 16 to 55, the 'high' category had scores from 16 to 49, and the 'average' category had scores from 14 to 46, while the 'low' category had scores from 33 to 34. This indicates that the higher the level of academic performance of the student the higher is his or her critical thinking ability. Table 6 is a summary of the CCTTX scores of the students from the four different academic performance categories.

Table 6: Summary of CCTTX test scores by academic performance (CGPA)

Category	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval		Min	Max
					Lower Bound	Upper Bound		
Excellent	97	34.433	8.0892	.8213	32.803	36.063	16.0	55.0
High	134	32.448	6.9796	.6029	31.255	33.640	16.0	49.0
Average	28	31.071	7.2107	1.3627	28.275	33.867	14.0	46.0
Low	2	33.500	.7071	.5000	27.147	39.853	33.0	34.0
Total	261	33.046	7.4703	.4624	32.135	33.957	14.0	55.0

Analysis of Variance (ANOVA) was used to determine if a significant difference existed in the CCTTX scores among the students based on their level of academic performance. However, no statistically significant difference was observed in the critical thinking scores of the students with 'low', 'average', 'high' and 'excellent' academic performance. Significance levels were set at $p < .05$. Table 7 reports the findings.

Table 7: ANOVA of relationship between CCTTX scores and Academic Performance (CGPA)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	344.142	3	114.714	2.081	.103
Within Groups	14165.306	257	55.118		
Total	14509.448	260			

Even though descriptive statistics indicate that there exists a tendency that the higher the CGPA of the students the higher is their CCTTX scores, no significant difference was found. These results show that the students' academic performance did not appear to have significant effect on their critical thinking ability.

Research Question 4

Is there any significant difference in the critical thinking ability among the students with 'low', 'average', 'high' and 'excellent' English Language ability?

The students' English Language ability is determined using their Sijil Pelajaran Malaysia (SPM) English Language Examination results as reference. The mean score, standard deviation and range for each of the four categories of SPM EL performance level were calculated.

Descriptive statistics reveal that there exist relationship between the students CCTTX scores and their level of EL ability based on the SPM EL results. The mean scores and the confidence interval for the mean (upper and lower bound) of the CCTTX scores of the students indicate that the higher the students' level of SPM EL scores, the higher are their CCTTX test scores. This shows that the students' EL ability may have an effect on their CCTTX test scores. Table 8 is a summary of the CCTTX scores of the students based on the SPM EL results.

Table 8: Summary of CCTTX test scores by EL ability (SPM)

Category	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval		Min	Max
					Lower Bound	Upper Bound		
Excellent	18	39.944	5.3300	1.2563	37.294	42.595	31.0	50.0
High	62	35.548	6.8417	.8689	33.811	37.286	18.0	55.0
Average	83	33.747	7.1395	.7837	32.188	35.306	21.0	50.0
Low	98	29.602	6.8440	.6913	28.230	30.974	14.0	46.0
Total	261	33.046	7.4703	.4624	32.135	33.957	14.0	55.0

Analysis of Variance (ANOVA) revealed a statistically significant ($p < .05$) difference in the mean scores of the CCTTX test and the students with 'low', 'average', 'high' and 'excellent' SPM EL results. Table 9 reports the findings.

Table 9: ANOVA of relationship between CCTTX and SPM EL scores

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2447.983	3	815.994	17.387	.000
Within Groups	12061.466	257	46.932		
Total	14509.448	260			

There is significant difference in the critical thinking test scores among the students with 'low', 'average', 'high' and 'excellent' English Language ability. These results reveal that the higher the students' level of SPM EL results, the higher are their CCTTX scores. This suggests that the students' EL ability may have an influenced on their overall scores in the CCTTX.

CONCLUSIONS AND RECOMMENDATIONS

Certain conclusions can be drawn from the results of this study. First, the ESL students who participated in this study had low critical thinking ability. Second, there was no significant difference found between the students' CCTTX scores and their fields of study. This finding indicates that none of the two fields of study, namely, Science and Technology, and Business and Management, has any measurable advantage in developing the students' critical thinking ability. Money (1996) and Waite (1989) had similar findings in their studies concerning the relationship between field or nature of study and critical thinking ability.

Third, there was no significant difference found between the students' CCTTX scores and their academic performance. This finding indicates that critical thinking ability does not have a strong influence on the academic performance of the students in this study. Hence, high critical thinking ability does not ensure high academic performance. Fourth, there was significant difference in the critical thinking test scores among the students with 'low', 'average', 'high' and 'excellent' English Language ability. There appear to be a measurable advantage in having better EL ability among the students. It is reasonable to state that students with higher ability in the English Language were able to use their language advantage to answer the CCTTX. So it is more likely for them to gain better scores compared to those with lower EL ability because the medium of the test was English.

One possible explanation for the high similarities of the CCTTX scores among the students in this study is that they were all second year Malay students with similar first year tertiary experience at UiTM Pahang. The students also went through the same secondary school curriculum before entering university. Another possible explanation could be that the minimum entry requirement for both fields of study was similar, which was Sijil Pelajaran Malaysia (SPM). These factors could have drawn the students into having similar abilities.

The results from the study may have helped to measure the ability of the students to think critically, but it will be more important now to find out ways how critical thinking ability can be developed. Hence, more research and resources would be needed to find suitable methods in developing critical thinking ability among the students at the university.

The major focus of this study was to promote critical thinking development at the university. There were no significant difference recorded between the students' CCTTX scores and their fields of study, their academic performance and their gender. The similarities of scores among the students suggest similarities in critical thinking ability and skills. Implementation of critical thinking programs would thus be much easier considering the students with similar abilities. However, the ability of the students to think in the English Language allowed the students with higher English Language ability to get better scores. The significant relationship between English Language and critical thinking ability could also suggest that critical thinking is also necessary in the English as a Second Language (ESL) classroom. The development of critical thinking in the ESL classroom would increase both their critical thinking and EL ability. Perhaps the focus should be at developing critical thinking ability among the students for their long-term needs.

The question remains, is critical thinking skills being taught consistently in Malaysia? Are the students being given the opportunity to use divergent ways of thinking and to solve problems in the classroom? Or are educators prepared and trained to teach critical thinking? Gardner (1991) stated that even though critical thinking is deemed as being an important skill at all levels, it is rarely being practiced in schools. There is therefore, the need for education institutions in Malaysia to place the development of critical thinking skills among its students as the primary goal of the institution.

As the result of this study, recommendations for education and research will be suggested. From the data it seems additional research are needed so that sufficient understanding of critical thinking can be acquired and long term success can be achieved. Therefore, the following suggestions are given to initiate further development of critical thinking at the university.

1. More accurate findings can be drawn using multiple tools to test the critical thinking skills of the students.
2. This study should be replicated with a larger number of subjects so that generalizations can be made with a larger population.
3. Studies need to be done to find out more about the use of critical thinking skills at the workplace and the extent of how the skills are used.
4. More research is needed in determining the methods of teaching that would effectively develop critical thinking skills.
5. The use of critical thinking skills in tasks and assignments given to students should be examined.
6. The incorporation of critical thinking skills in the curricula should be investigated.

REFERENCES

- Afiza Mohamad Ali. (2000). *Developing critical thinking through the use of questions: an empirical research*. Master Dissertation. International Islamic University.
- Beyer, B.K. (1991). **Teaching thinking skills: a handbook for secondary school teachers**. Boston: Allyn and Bacon.
- Broadbear, J.T. and Keyser, B.B. (2000). *An Approach to teaching for critical thinking in health education*. **The Journal of School Health**, 70, 8, 322-326.
- Brookfield, S.D. (1987). **Developing critical thinkers- challenging adults to explore alternative ways of thinking and acting**. Buckingham: Open University Press.
- Chaffee, J. (1988). **Thinking critically**. Boston, MA: Houghton Mifflin.
- Halpern, D. F. (1989). **Thought and knowledge: An introduction to critical thinking**. Hillsdale, NJ: Lawrence Earlbaum Associates.
- Edgerton, R. (1991). *National standard are coming*. **AAHE Bulletin**, 8-12.
- Ennis, R.H. (1989). Critical thinking and subject specificity; Clarification and needed research. **Eduaction Research**, 18, 13-16.
- Ennis, R.H. and Norris, S. (1989). **Evaluating critical thinking**. Pacific Groove, CA.: Midwest Publications.
- Ennis, R.H., Millman, Tomko, T.N. (1985). **Cornell critical thinking test level X and level Z manual. 3rd ed**. Pacific Grove, CA.: Midwest Publications.
- Ennis, R.H., Millman, J. (1985). **Cornell critical thinking test level X 3rd ed**. Pacific Grove, CA.: Midwest Publications
- Gardner, H. (1991). *The unschooled mind: How children think and how schools should teach them*. New York: Harper Collins.
- Goodland, J. (1984). **A place called school**. New York: McGraw-Hill.
- Law, L.C. and Tan, A.G. (2000). *Critical thinking*. **Teaching and Learning**, 20, 2, 1-11.
- Lim Kok Wing. Create the right kind of human capital. *New Straits Times*. 9 April 2006.

- McGuinness, C. and Nisbet, J. (1991). *Teaching Thinking in Europe*. **The British Journal of Educational Psychology**, 61, 174-186.
- McPeck, J.E. (1981). **Critical thinking and education**. New York: St. Martin's Press.
- McPeck, J.E. (1990). **Teaching critical thinking: Dialogue and dialect**. New York: Routledge, Chapman and Hall Inc.
- McTighe, J. and Schollenberger, J. (1991). *Why teach thinking? A statement of rationale*. In **Developing Minds: A Resource Book for Teaching Thinking**, A.Costa (ed.) Alexandria, Va.: Association for Supervision and Curriculum Development.
- Mohd Rozaidi Ismail (2003). The use of language learning strategies among Malay students at a university in Malaysia, Universiti Kebangsaan Malaysia. MA Thesis. UKM, Bangi.
- Moore, R. A. (1992). *Critical thinking ability and measures of language proficiency: A quantitative study on the X152 seminar for Malaysians*. Unpublished research. Indiana University.
- Morgan, K.R. (2002). *Using primary sources to build a community of thinkers*. **English Journal**, 91, 4, 69-74.
- Nor Shidrah Mat Daud. (1999). *Assessing the development of critical thinking skills in writing: A case-study using traditional and computer-based method*. Master Dissertation. International Islamic University Malaysia.
- O'Malley, M.J. and Chamot, A.U. (1990). **Learning strategies in second language acquisition**. Cambridge: CUP.
- Ornstein, R. (1980). **Institute brochure**. Los Altos, Calif.: Institute for the study of human knowledge.
- Paul, R. (1993). **Critical thinking: What every person needs to survive in a rapidly changing world**. Santa Rosa, CA: Foundation for Critical Thinking.
- Pikkert, J.J.J and Foster, L. (1996). *Critical thinking skills among third year Indonesian English students*. **RELC Journal**, 27,2, 56-64.
- Rodrigues, I. and Kies, D. (1998) *Developing critical thinking through probative questioning*. **Reading Improvement**, 35, 80-89.
- Ruggiero, V.R. (1988). **Teaching thinking across the curriculum**. New York: Harper and Row, Publishers.

- Ruggiero, V.R. (2001). **Beyond feelings- a guide to critical thinking. Sixth edition.** California: Mayfield Publishing Company.
- Simon, H.A. and Kaplan, C.A. (1989). In MI. Posner (Ed). **Foundations of cognitive sciences.** Cambridge: MIT Press
- Tarlow, M.C. and Spangler, K.L. (2001). *Now more than ever: Will high-tech kids still think deeply?* **The Education Digest**, 67, 3, 23-27.
- Versaci, R. (2001). *How comic books can change the way our students see literature: One teacher's perspective.* **English Journal**, 91, 2, 61-67.
- Wade, C and Tavis, C. (1993). **Critical and creative thinking: The case of love and war.** New York: HarperCollins College Publishers.
- Wenden, A. (1991). **Learner strategies for learner autonomy.** United Kingdom: Prentice Hall
- Wenden, A. and Rubin, J. (1987). **Learner strategies in language learning.** United Kingdom: Prentice Hall.
- Malaysian has 60,000 undergraduates unemployed. The Star. 3 November 2005.
- Four qualities we must have. The Star. 7 April 2006.