Investigating the Effect of Internet Information Literacy on the Development of University Students' Metacognitive Skills

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Abstract: The purpose of this study was investigating the impact of Internet information literacy training on university students' problem solving skills. In this study, research method was quasi-experimental. Research population was 230 undergraduate students of Islamic Azad University, Ardabil Branch in 2009-2010 academic year. Sampling method was simple random sampling and the sample was 50 students. There were 22 students in experimental group and 28 students in control group. The data in this study were collected by standardized Metacognitive Awareness Inventory. Data were analyzed by SPSS 16 software and independent groups' T test. This study showed that there are a significant difference between experimental and control groups in terms of metacognitive components (procedural knowledge, declarative knowledge, conditional knowledge, information management strategies, debugging strategies and evaluation). But this study also showed that there are not a significant difference between experimental and control groups in terms of some metacognitive components (planning and comprehension monitoring). Results from this study can be used to improve student's metacognitive skills.

Key words: Internet information literacy, metacognitive skills, university.

INTRODUCTION

Regarding the quick changes in information and knowledge of human being and accelerating knowledge production process and also the obsolescence process of the present knowledge, Curriculum should emphasize the aim of how to learning and lifelong learning (metacognitive skills) more than ever. Curriculum should be to realize a new definition of literacy which also includes information and computer literacy. It is even impossible to think about an well educated and efficient human being who lacks the ability to use the new technology capacities in improving his quality of life in different area. Information literacy has been known as one of the fundamental skills of life in new millennium (Mehrmohammadi, 2004). On the other hand, today because of appearance of new educational technologies in universities and the changing in teacher's and student's role in relation to teaching and learning, the need to obtain metacognitive skills is emphasized on more than ever. Metacognition is defined as individuals' ability in feedback, understanding and controlling their learning (Schraw, 1994). The word "metacognition" that Flavell and his colleague Ann Brown gave to this kind of thought and thinking has been led to the completely new field in research and the results of these studies are now observed in classes all over the world. The word "metacognition" is a special term and is an expressive of the special process of changes in thought (Larkin, 2010). In addition to studies made by Flavell, study made by Kluwe in the early years of 1980s, which emphasized on self-controlling, is also worth of being paid attention to. He believed that our thinking is controlled by ourselves. The work of Borkowski showed that how the metacognitive knowledge can have an effect on motivation and self-esteem. His model included self-concept, self-assurance and having knowledge of possible selves and also the situation of individual motivation.

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Borkowski showed the relationship between using the strategies and sense of self-efficiency and also establishing the important relationship between strategies that can be taught successful learning and self-esteem (Borkowski, 1996). Sanchez model of metacognition includes not only awareness and control, but the third part that is called self-poesis (Sanchez, 1998). This part means that metacognition takes place not only consciously and controls the cognition, but creates itself using some kind of feedback spiral ring (Larkin, 2010). Wenden is another researcher who has studied in relation to metacognition. He claims that metacognitive knowledge is necessary and essential for successful learning because students perceptions of themselves, of assignment that they are engaged in, and of available strategies for them, directly have some effects on all of their decisions about learning. Wenden, (2001) believes that metacognition contains an element named knowledge and another element named strategy. He defines strategy part of metacognition as general skills which through of this general skills, learners manage, guide, regulate and lead their learning, that is, planning and monitoring, and evaluation. Zimmerman is also among those who have worked a lot about metacognition process. He believes that active learners, because of their metacognition, are self regulated individuals who can plan and organize. In different steps of learning processes, they are self learner, self supervisor, and self evaluator (Cotterall, 2009). Schraw and Moshman have also done a lot of researches on metacognition process. They believe that metacognitive skills are different from metacognitive knowledge. metacognitive knowledge refers to declarative knowledge that an individual possesses about the interaction among personal characteristics, task characteristics and available strategies in learning situation. Brown and Kluwe believe that metacognitive skill, on the other hand, relates to procedural knowledge that is really needed for regulating and controlling the learning activities. Task analysis, planning, monitoring, studying and thinking are indicatives of such skills (Veenman, 2005). On the one hand, metacognitive ability relates to knowledge and awareness about self, about strategies that can be used and about application of such strategies (knowledge and being aware of cognition and self monitoring), and on the other hand, to the learning process control that includes some kind of evaluation (regulating the cognition and its control (Alonso, 2007).

Having knowledge about Internet information literacy skills as a means for obtaining new information and data can help the metacognitive skills of students grow, because, through internet, they can evaluate their previous information and also can manage required information for themselves. Information literacy helps individuals efficiently use information and following research, evaluation and producing information. Internet information resources that include information data bases, electronic libraries, websites and weblogs are some fundamental elements of information literacy. Online libraries and information references provide an environment that improves free and open research and as a facilitator, that environment is used to interpret, integrate and apply knowledge in all learning fields (Jacobs, 2008). Internet information literacy is not only a source for obtaining information but also a source for learning. In fact, young people bearing this skill and searching for information from internet in relation to curricula and non-curricula, learning lots of things in a self motivated manner and independently from the teacher or professor, thus, internet and different available information references in it can provide an appropriate ground for learning independently. As you know, in the past education was mostly based on the teacher's description and text book. In fact, text book was the only information source but today to learn most of the subjects, students in case of being equipped with skills for working with internet and search can themselves take steps to learn, but the question "whether using internet information literacy can lead to the growth of students' metacognition or not?" is the one that the present research is to find a scientific answer to it.

Research Background:

Several studies have been done in the field of information literacy and metacognitive skills and some of them are as follows:

A research entitled "Studying the Information literacy of the Last Year Bachelor Course Students of Al-Zahra University" that was done by Bakhtyarzadeh in 2002. Results from the research showed that the Mean of obtained Means in relation to the factors that show information literacy such as the amount of having knowledge about source coding, having knowledge about internet Worldwide Web (www) and the amount of using the master sources is 3.16 out of 6 which is an indicator of the low information literacy level of students of this course (Bakhtyarzadeh, 2002).

A research entitled "Information literacy Skills of the 2nd Year Students in the Field of Radiography" was done by Madeleine C. Shanahan in 2007. The plan for online electronic information skills was prepared to improve the information literacy skills of students. Evaluation of learning results was an indicative of growth in information literacy skills of students. Results were indicator of growth in basic skills for obtaining the information in relation to the subject matter of students and even a few months after performing this program,

students continued using scientific information and information literacy skills in relation to their own work (Shanahan, 2007).

A research entitled "An approach to curriculum" for improving the Information literacy Skills and academic Writing of Students in the Field of nursery in Hong Kong" was done by Tarrant Dodgson & Law in 2008. In this research a curriculum was prepared to improve and develop the information literacy abilities and academic writing of students. Prior to the beginning of this program, students reported low levels of information literacy skills and academic writing especially in case of obtaining and search the information data bases, however, post-test results showed significant increase in information basic skills and scientific writing. This curriculum showed that structured, but flexible, activities can result in growth in information literacy (Tarrant, 2008).

A research entitled the "Effect of Metacognition on performance of Problem Solving" was done by Masooeh Esmaeeli in 2001. Results from this research showed that teaching the metacognition strategies improves problem solving (Esmaeeli, 2000).

Results from the research entitled "The Effect of Teaching Metacognition strategies on Students Comprehension with Difficulties in Reading Understanding" that was done by Pakdaman Savoji in 2000, showed that teaching these strategies had positive effects on reading performance of students (Savoji Pakdaman, 2000).

A research title by "Studying the Relationship between Metacognition and Understanding of Learning with performance of learning English by students of pre-university centers of Yazd City" was done by Salehi in 2001. Results from this research shows that metacognition, understanding of learning, and understanding of learning English have relationships with learning performance in this subject matter. Also, it was known that there were significant differences among the weak and strong students in English subject matter. However, considering the sex there wasn't any significant difference among them (Salehi, 2001).

A research entitled "Studying the Role of Teaching the Parts of Metacognition Knowledge on Solving Mathematical Problem" has been done by Rahimpour in 2001. Results from this research show that teaching the metacognition has positive effects on ability to solve the problems by students and it is an efficient method for learning mathematics in high schools (Rahimpour, 2001).

A research entitled "Studying the Effect of Teaching Metacognition strategies on Achievement Motivation of Students of Arak University" has been done by Fahimzadeh in 2003. Results from this research show that teaching the metacognition strategies in short term doesn't lead to significant increase in students' motivation for advancement. Also, it became clear that teaching these strategies doesn't lead to improvement in educational performance (Fahimzadeh, 2003).

A research entitled "Metacognition: An intervention for academically unprepared College Students" was done in Capella University by Thompson, (2007). The purpose of this study was studying the effect of education and teaching the way of using metacognition strategies in curriculum, on educational performance of unprepared students who are termed risk taking students. At-risk students in the study were those who were at-risk of failing academically in a college or university setting. Such students were not prepared to succeed in college courses and were also not able to use the metacognition learning strategies. Although findings from this research didn't support the theory made by the researcher bearing the meaning that using metacognition strategies, relates to the educational performance, concerned literature showed that teaching the metacognition strategies affect the improvement in educational success of students. Study made by Al-Hindi, (1997) shows that teaching awareness of metacognition to 1st year students in the field of reading and writing causes metacognition strategies, to be efficient.

In 2008, Lupton studied the ways of information literacy experience among the students when they were searching for a subject and writing an article. Information literacy experience was the interrelationship among the article, information and learning. The way that students experienced was concentration on learning, concentration on writing the article, and using the information in writing the article and using different points of view in discussing. Students experienced the information literacy when they were searching for their articles or thesis as follows: search for documents and evidence in order to support the present discussions and reasoning, using the previous information for offering a reasoning and discussion and applying learning to solve the environmental problems. Furthermore, this study showed that information literacy can be considered as a learning approach (Lupton, 2008).

In 2009, a research entitled "The Effect of Using Learning Journals on the development of Metacognition in Undergraduate Students" was done in Capella University by Rincon Gallardo. This research used the quasi-experimental research method to investigate the effect of undergraduate students' use of learning journals on metacognitive development and academic achievement. Results from the research showed a significant effect

for students' use of learning journals and metacognitive development, however, there weren't any significant differences in academic achievement between the students who used learning journals and those who didn't. In this research, by "metacognition" it is meant the students' ability to reflect upon, understanding, and controlling the learning process (Rincon, 2009).

In 2009, a research entitled " Metacognition and performance in Accounting Classroom" was done by Schleifer and Dull in Coleman University. The researchers use data collected over the course of a decade (1995–2004) to examine this association. Students in a variety of accounting courses completed a questionnaire to assess their metacognitive knowledge and self-regulation.

Results from this research shows that there is a strong relationship among attribution and metacognitive attitudes, educational performance and interaction between the metacognition parts. Also, results from this research show that metacognitive attribution is related to the academic achievement in accounting courses (Schleifer, 2009).

In 2010, a research entitled "Classifying the Metacognitive Knowledge of teenagers during the Process of Searching for Information" was done by Bowler. This was a case study that was done on 10 teenagers (16-18) who needed to search, select, and use the information for accomplishing their research projects. The aim of this research was, studying students' metacognitive knowledge during searching for information. 10 participant in this study used wide range of metacognition resources to complete their own work for searching for information and the researcher obtained 13 components or documentaries in relation to metacognitive knowledge related to the process of searching for information. Some of the above said components are being aware of weak points and strong points, balancing, building a base, communicating, parallel thinking and scaffolding (Bowler, 2010). Researcher, also focuses on teaching the students how to search for information, it is necessary to teach them how to use search means such as indexes, search engines, and catalogues, how to evaluate information validity, how to recognize resources and prevent plagiarism.

Considering the above said matters, this research is to study the effect of teaching internet information literacy on the growth of students' metacognition skills. In doing so, the following questions are offered in this research:

Research Questions:
1. Regarding the declarative knowledge, is there any significant difference between students who are familiar with internet information literacy and those who are not?
2. Regarding procedural knowledge, is there any significant difference between students who are familiar with internet information literacy and those who are not?
3. Regarding the conditional knowledge, is there any significant difference between students who are familiar with internet information literacy and those who are not?
4. Regarding the ability to plan for homework and self learning, is there any significant difference between students who are familiar with internet information literacy and those who are not?
5. Regarding the ability to manage self learning, is there any significant difference between students who are familiar with internet information literacy and those who are not?
6. Regarding the ability to monitoring on the homework and self learning, is there any significant difference between students who are familiar with internet information literacy and those who are not?
7. Regarding the strategies for self learning debugging, is there any significant difference between students who are familiar with internet information literacy and those who are not?
8. Regarding the ability to evaluate self learning, is there any significant difference between students who are familiar with internet information literacy and those who are not?

Research Methodology:
The present research is of quasi-experimental type. Sample groups (control and experimental) concerning the field of study, entrance year, teacher and course, have been homogeneous and the only different variable has been familiarizing students of a class with internet information literacy as the experimental group and keeping the control group away from this variable. It seem natural that since the under consideration group has been human being, despite a lot of attempts the researcher hasn't been able to control all of the effective variables.

In this study experimental group has held its class for 11 weeks in computer site of the university. During classes they were taught the way of searching required information in Google site and other search engines, using digital library of the university and the way of communicating information and being in communication with others through email and weblog as the internet information literacy components. Also, this group has

been encouraged to use internet at home, too when required. However, control group classes have been held in their own classrooms and without using internet. In this research, pre-test and post-test design has been used in case of control group. Pre-test in case of dependent variable has shown the similarity of the two groups before completing the independent variable.

The research population includes all students of bachelor course in the study field of experimental sciences in Islamic Azad University, Ardebil Branch in academic year 2009-2010and their numbers have been 250 students.

Statistical sample in this research has been composed of 50 students that have been selected using the simple random sampling method. The sample selection unit in this research has been the class. In order to select the samples, a single class from among different entries – that have in themselves been composed of two classes – has randomly been selected as statistical sample and then from among the considered sample, also a class as the experimental group (22 students) and another class as the control group (28 students) have randomly been selected.

In this research, in order for gathering the data related to metacognitive skills of the students the questionnaire of being aware of metacognition, prepared by Schraw & Dennison in 1994, was used (Schraw, 1994). This questionnaire includes 52 two- optional (True – False) questions and contains the two main elements of metacognition. These two elements are knowledge about cognition and regulation of cognition. Knowledge about cognition includes three sub-processes: declarative knowledge (meaning having knowledge about self and also about other strategies), procedural knowledge (meaning having knowledge about the way of using strategies) and conditional knowledge (meaning having knowledge about the time and the reason why we use strategies). Regulation of cognition also includes some sub-procedures that facilitate learning control. The five skills of regulation of cognition are as follows: planning, information management strategies, monitoring, debugging strategies, and evaluation. Stability of this questionnaire has been obtained using $\alpha = .90$.

Findings and Results from the Research:

Using the spss16 software, at first in order to be sure about the sameness of ability and information of the two groups before performing the independent variable, pre-test data for the two groups was studied and compared, then after performing the independent variable and post-test at the end of the research, using the method of analyzing the differences between the pre-test grades – post-test in case of the two groups was analyzed, and obtained results are shown in the following tables.

Table 1: Descriptive study of pre-test data for the two experimental and control groups in case of metacognition components.

Metacognition Components	Groups	N	Mean	Std.Deviation
Procedural Knowledge	Experimental	22	6.78	0.96
	Control	28	6.8	0.91
Declarative Knowledge	Experimental	22	13.94	1.62
	Control	28	13.81	1.66
Conditional Knowledge	Experimental	22	8.7	1.05
	Control	28	8.92	0.76
Planning	Experimental	22	11.52	1.52
	Control	28	11.16	1.64
Information Management Strategies	Experimental	22	17.88	1.3
	Control	28	17.72	1.77
Comprehensive Monitoring	Experimental	22	11.78	1.18
	Control	28	11.72	1.53
Debugging Strategies	Experimental	22	8.56	1.23
	Control	28	8.7	1.1
Evaluation	Experimental	22	10.15	1.5
	Control	28	9.92	1.25

Considering the following metacognition components, results from table 1 and 2 show that before performing the independent variable the two groups haven't had any significant differences, and both control and experimental groups have had the same amount of procedural knowledge, declarative knowledge, conditional knowledge, planning, information management strategies, comprehensive monitoring, dubbing strategies, and evaluation:

Procedural knowledge (t(df = 48) = - 0.08, p< 0.05), Declarative knowledge (t(df = 48) = 0.38, p< 0.05), Conditional knowledge (t(df = 48) = - 1.24, p< 0.05), Planning (t(df = 48) = 1.18, p< 0.05), Information management strategies (t(df = 48) = 0.50, p< 0.05), Comprehensive monitoring (t(df = 48) = 0.21, p< 0.05), Dubbing strategies (t(df = 48) = 0.61, p< 0.05), Evaluation (t(df = 48) = 0.84, p< 0.05).

Table 2: Studying pre-test data in case of the two experimental and control groups in metaconition components.

Metacognitive components		Leven's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig.(2-tailed)
Procedural knowledge	Equal variances assumed	1.29	0.25	-.08	48	0.93
	Equal variances not assumed			-.08	48	0.93
Declarative knowledge	Equal variances assumed	0.08	.76	.38	48	0.7
	Equal variances not assumed			.38	48	0.7
Conditional knowledge	Equal variances assumed	1.49	.22	-1.24	48	0.21
	Equal variances not assumed			-1.22	48	0.22
Planning	Equal variances assumed	0.07	.77	1.18	48	0.23
	Equal variances not assumed			1.18	48	0.23
Information management strategies	Equal variances assumed	1.92	.16	.50	48	0.61
	Equal variances not assumed			.51	48	0.6
Comprehensive monitoring	Equal variances assumed	1.2	.27	.21	48	0.83
	Equal variances not assumed			.21	48	0.83
Dubbing strategies	Equal variances assumed	1.15	.28	-.61	48	0.53
	Equal variances not assumed			-.61	48	0.53
Evaluation	Equal variances assumed	1.39	.24	.84	48	0.39
	Equal variances not assumed			.84	48	0.4

Table 3: Survey the descriptive data about analyzing the grade differences pre and post test for the two groups of control and experimental in metacognition components.

Metacognitive components	Groups	N	Mean	Std. deviation
Procedural Knowledge	Experimental	22	.60	1.18
	Control	28	0.01	1.32
Declarative knowledge	Experimental	22	1.02	1.96
	Control	28	0.19	2.22
Conditional knowledge	Experimental	22	0.67	1.43
	Control	28	0.02	1.22
Planning	Experimental	22	1.53	1.63
	Control	28	1.51	2.00
Information management strategies	Experimental	22	0.88	1.47
	Control	28	0.06	2.39
Comprehensive monitoring	Experimental	22	1.12	1.32
	Control	28	0.73	1.85
Dubbing strategies	Experimental	22	0.58	1.49
	Control	28	-0.13	1.49
evaluation	Experimental	22	0.57	0.99
	Control	28	0.2	1.73

Table 4: Studying data about analyzing the grade differences pre and post test for the two groups of control and Experimental in metacognition components.

Metacognitive components		Leven's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig.(2-tailed)
Procedural knowledge	Equal variances assumed	0	0.93	48	2.41	0.01
	Equal variances not assumed			48	2.41	0.01
Declarative knowledge	Equal variances assumed	0.66	0.41	48	2.02	0.04
	Equal variances not assumed			48	2.02	0.04
Conditional knowledge	Equal variances assumed	1.91	0.16	48	2.51	0.01
	Equal variances not assumed			48	2.49	0.01
Planning	Equal variances assumed	3.41	0.06	48	0.06	0.95
	Equal variances not assumed			48	0.06	0.95
Information management strategies	Equal variances assumed	1.94	0.15	48	2.11	0.03
	Equal variances not assumed			48	2.15	0.03
Comprehensive monitoring	Equal variances assumed	4.15	0.07	48	1.24	0.21
	Equal variances not assumed			48	1.26	0.21
Dubbing strategies	Equal variances assumed	0.19	0.65	48	2.48	0.01
	Equal variances not assumed			48	2.48	0.01
Evaluation	Equal variances assumed	1.94	0.15	48	1.33	0.18
	Equal variances not assumed			48	1.36	0.17

Question 1 – Concerning the Procedural Knowledge, Is There Any Significant Difference Between Students Who Have Knowledge about Internet Information Literacy and Those Who Have Not?

Results from the analysis show that there is a significant difference between experimental and control group considering procedural knowledge, (t(df = 48) = 2.41, p> 0.05). Mean of the two groups shows that the Mean of procedural knowledge of experimental group (Mean = 60) is significantly more than that of control group (Mean = 0.01).

Question 2 – Concerning the Declarative Knowledge, Is There Any Significant Difference Between Students Who Have Knowledge about Internet Information Literacy and Those Who Have Not?

Results from the analysis show that there is a significant difference between experimental and control group considering declarative knowledge, (t(df = 48) = 2.02, p> 0.05). Mean of the two groups shows that the Mean of declarative knowledge of experimental group (Mean = 1.02) is significantly more than that of control group (Mean = 0.19).

Question 3 – Concerning the Conditional Knowledge, Is There Any Significant Difference Between Students Who Have Knowledge about Internet Information Literacy and Those Who Have Not?

Results from the analysis show that there is a significant difference between experimental and control group considering conditional knowledge, (t(df = 48) = 2.51, p> 0.05). Mean of the two groups shows that the Mean of conditional knowledge of experimental group (Mean = 0.67) is significantly more than that of control group (Mean = 0.02).

Question 4 – Concerning the Planning, Is There Any Significant Difference Between Students Who Have Knowledge about Internet Information Literacy and Those Who Have Not?

Results from the analysis show that there is no significant difference between experimental and control group considering planning, (t(df = 48) = 0.60, p< 0.05). Mean of the two groups shows that the Mean of planning in case of experimental group (Mean = 1.53) is similar to that of control group (Mean = 1.51).

Question 5 – Concerning the Information Management Strategies, Is There Any Significant Difference Between Students Who Have Knowledge about Internet Information Literacy and Those Who Have Not?

Results from the analysis show that there is a significant difference between experimental and control group considering information management strategies, (t(df = 48) = 2.11, p> 0.05). Mean of the two groups shows that the Mean of information management strategies of experimental group (Mean = 88) is significantly more than that of control group (Mean = 0.06).

Question 6 – Concerning the Comprehensive Monitoring, Is There Any Significant Difference Between Students Who Have Knowledge about Internet Information Literacy and Those Who Have Not?

Results from the analysis show that there is no significant difference between experimental and control group considering comprehensive monitoring, (t(df = 48) = 0.42, p< 0.05). Although the difference in Mean in case of the two groups is not significant, the Mean of the two groups shows that the Mean of comprehensive monitoring in case of experimental group (Mean = 1.12) is more than that of control group (Mean = 0.73).

Question 7 – Concerning the Dubbing Strategies, Is There Any Significant Difference Between Students Who Have Knowledge about Internet Information Literacy and Those Who Have Not?

Results from the analysis show that there is a significant difference between experimental and control group considering dubbing strategies, (t(df = 48) = 2.48, p> 0.05). Mean of the two groups shows that the Mean of dubbing strategies of experimental group (Mean = 0.58) is significantly more than that of control group (Mean = - 0.13).

Question 8 – Concerning the Evaluation, Is There Any Significant Difference Between Students Who Have Knowledge about Internet Information Literacy and Those Who Have Not?

Results from the analysis show that there is a significant difference between experimental and control group considering evaluation, (t(df = 48) = 1.33, p< 0.05). Mean of the two groups shows that although evaluation Mean of experimental group (Mean = 0.57) is less different from that of control group (Mean = 0.20), this difference is not significant.

Discussion and Conclusion:

This research results showed that compared to students without internet information literacy, students with internet information literacy were different regarding some metacognitive components such as (procedural knowledge, declarative knowledge, conditional knowledge, information management strategies, dubbing strategies and evaluation) and considering the highness of Mean in case of experimental group it can be said that they had better performance that students without having knowledge about internet information literacy, although, obtained results in some metacognitive components (planning and comprehensive monitoring) didn't show any significant difference between experimental and control group.

Regarding the type of homework, way of teaching and learning environment, metacognition changes. Results from the present research are consistent with those of Hanson's and Williams' (2008). They found that using written homework through available equipments in internet leads to improvement in metacognitive skills of students.

Results from the present research are also consistent with results from Georghiades's research (2000). In his research, he concluded that using internet information literacy leads to online interaction and correlation of students and this increases their metacognitive skills. Results from several researches have shown the effect of metacognitive skills on motivation (Fahimzadeh, 2003), on solving mathematical problems (Fahimzadeh, 2003), the relationship between metacognition and language learning (Salehi, 2001), and effect of metacognition on problem solving (Esmaeeli, 2000).

Results from the present research are consistent with Bowler's research (Bowler, 2010). In his research, Bowler came to the conclusion that during searching for information, learners use some of metacognitive skills such as determining weak and strong points etc. Results from this research are also consistent with results from Rincon Gallardo, (2009). In his research Rincon Gallardo came to the conclusion that using learning journals effects on the growth of students' metacognitive skills. Also, in the present research the researcher obtained learning equipments such as internet on the growth of students' metacognitive skills. Some other researches have also shown the relationship between metacognitive skills and educational performance (Schleifer, 2009; Thompson, 2007). Considering the results from above said researches and other ones in this field it can be found that growth in metacognitive skills of students, makes them ready to encounter difficulties and challenges in ever changing world. Students who have metacognitive skills are independent and self-confidence. They have gained skills on the way of learning and this can be helpful for them during their lifetimes. Metacognition is lifelong learners' characteristics. "Effective learners know that how, when, where and why they learn in a desired manner and that, in different situations what creates the results of desired learning" (De La Harpe, 2000). Teaching methods and educational environments that are integrated to improve metacognitive skills of students help students and their learning to be motivated during their whole life. Using internet information literacy is among the valuable means that can help to encourage the students to think about their own thinking and about the learning processes.

Applied Recommendation:

According to findings from the present research following cases are proposed:

1. University is advised to make the faculty members acquainted with internet information literacy and other information resources by holding in-service courses for them. In this way teachers will be able to guide their students to enjoy internet and information resources.
2. University is advised to inform the students and faculty members of scientific information resources such as digital libraries of universities by printing, and distributing brochure among them.
3. Since the present research was a semi-experimental research and the number of samples was limited, researchers are advised to do similar researches to compare the results and to find validity for them.

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