



The Effects of Internet Use in the Classroom on Reading Comprehension, Metacognitive Awareness, and Motivation

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ABSTRACT

The primary objective of the current study is to investigate how internet use in the classroom in conjunction with metacognitive instruction affected students' metacognitive awareness, reading comprehension, and motivation. 40 pupils were randomly chosen from two eleventh-grade courses at Novin high school in Tabriz, Iran and split into two groups as follows: (a) experimental group called internet group – received metacognitive instruction along with the internet use; and (b) control group – received metacognitive teaching in a regular class. The findings indicate that although the students' motivation towards English study as a foreign language was significantly affected by the internet environment, their metacognitive awareness and reading comprehension were not affected. The results of the present study have some implications for syllabus designers, curriculum developers and language teachers.

1. Introduction

Traditional theories about classroom learning emphasize static learning instruments and fixed curriculum, and argue learning becomes possible through rote memorization and repetition. The teachers' role in a traditional learning classroom are providing direction to the students versus facilitating learning. As the technological instruments become more common in educational institutions, it becomes necessary to integrate technology in classrooms to aid teaching and learning. Because the extensive and various technologies are available to educational



institutions, many teachers are trying to take initiatives in order to take advantage of these technologies.

Significant attention has been paid to the integration of technology in educational institutions in the last decade. Recently, the internet has attracted a lot of attention, particularly in light of its value as a tool for education, and has moved up the list of priorities for policymakers and educators. In schools, internet usage is common, mostly in the developed countries as the result of the modern advance in digital technology (Kelch and Karr-Kidwell 2000). Meanwhile, without giving equal thought to its practicality, the emphasis on using the internet as a teaching tool and as part of the curriculum has continued unabatedly (Cohen and Castner 2000). Furthermore, the rush to connect has occurred without a thorough examination of how the internet would impact the learning environment.

Godwin-Jones believes that the internet can solve educational problems. Traditional EFL teaching can be supplemented and improved by the internet. (Wise 1996) mentioned that because the internet provides a wide range of learning experiences and chances to the learners, and helps instructors to have access to authentic materials, it has been starting to play a major function in education and has shifted the nature of learning and teaching (Warschauer, Shetzer et al. 2000). It is known that utilizing Internet in classes creates and improves motivation, offers authenticity, adapts learning to the learners, provides channels of communication, makes experiential learning possible, enhances achievement, enables critical thinking skills, supplements exercises and feedback and enables individual and group projects (Ruschoff 1997) . As (Hubbard 2004) discusses three reasons why the Internet has been rapidly expanded into language instruction. The first reason is that interactive language learning is encouraged for both instructors and students by many internet applications such as e-mails. The second reason is that language teaching and learning are facilitated through the instrument and resources available on the internet. The third reason for using the internet in the classroom is to help students improve their language abilities by interacting with a variety of online apps and use the internet effectively to look for different language learning materials that match their expectations, goals, and needs.



Teachers are looking at methods to use the internet in their classes as institutional settings like schools develop internet capabilities and educational technology facilitates global connectivity (Finnemann 1996). According to researchers, access to authentic materials over the internet benefits both students and teachers' access to cultural knowledge, which can improve meaningful learning and affect students' motivation (Fetterman 1998; Hellebrandt 1999 and Lee 1997). The findings of web-based environments studies for educational purposes show how experience-based discussion but not theory-based argumentation result from network interaction in most of learning studies (Fabos and Young 1999). These results show that computer learning environment designers should not assume that providing advanced technologies for learning is always accompanied with metacognitive practices (Kramarski 1999). The questions: how can we promote meaningful learning through utilizing interactive technologies should be taken into account? What pedagogical techniques are used when using that technology? Some scholars have focused on how metacognition can increase comprehension (Armbruster, Echols et al. 1983; Baker 1984) and (Flavell 1979). It is established that the quick advancement of science has improved educational standards (Darling-Hammond, et al. 2020). This situation (the quality of instruction) has therefore prepared the way for the switch from teacher-centered instruction to student-centered one, completely altering the way that we traditionally think about education (FARD 2018). The key components of student-centered instruction also include some of the study techniques, in which students make use of their metacognitive awareness, are motivated, and manage their own study techniques. Some terms that are associated with metacognition are metacognitive experiences, metacognitive beliefs, metacognitive knowledge, metacognitive awareness, metacognitive skills , high-level skills and upper memory (Veenman, Hout-Wolters et al. 2006) and (Yeşilyurt 2013). Providing a lot of information and knowledge to the students and making them to become independent and effective learners who are successful in their studies, have self-regulatory skills, and are successful in their life in general are the main educational goals of 21st century. (Wolters 2003) argued that the self-regulated learners as “the persons who have the cognitive, metacognitive abilities as well as motivational beliefs required to understand, monitor and direct their own learning”.



The advancement of computer technology and the widespread use of the internet in the classroom have had an impact on education over the past 10 years. This shows that internet technology can serve as a mediating tool for educational settings that emphasize students and make use of technology (Watson 2006). Although the Internet has been around for about 30 years, its increasing popularity has caused educators and scholars to recognize its worth as a teaching tool (Abdi and Mahmoudi 2012). One benefit of using the Internet can be the development of one's reading and writing skills (Fox, 1998) and (Singhal 1997).

Researchers have examined the impact of metacognitive instruction on reading comprehension (Mayer 1998; Palinscar and Brown 1984; Pressley, et al. 1992; Salomon, et al. 1989); they also examined the impact of metacognitive instruction on metacognitive awareness (Masui and De Corte 1999) and (Mevarech and Kramarski 1997). The connecting thread throughout these investigations is the formulation and resolution of a few self-addressed metacognitive inquiries. Poor readers' comprehension improved, according to (Palinscar and Brown 1984), when they were taught to forecast, inquire about, clarify, and sum up what they had read. It is assumed that implementing metacognitive teaching in internet classes would have many positive impacts on students' metacognitive awareness and reading comprehension than providing metacognitive teaching in regular classes, because it is believed that the internet environment can contribute to learners motivating and can increase reliable practice of English language and culture.

According to certain studies, online reading teaching for EFL/ESL students can be enhanced. The impact of an internet-based learning system on students' motivation, contentment and reading comprehension was researched by Pan and Huang in 2009. Their study's objective was to develop an internet-based reading outside learning system for Taiwanese university students, allowing them to access internet-based learning and pursue independent learning. The results showed that the web-based learning system greatly increased student happiness, improved reading comprehension and motivation to study English. At the Middle East Technical University in Turkey, Simsek (2008) performed a second study to look at the students' opinions toward the integration of information and communication technologies (ICTs) into a reading comprehension course. The findings showed that students'



satisfaction levels increased and they began to have favourable opinions of online classrooms as a result of the usage of ICTs in reading classes. A study by (Lan, et al. 2006) indicated that pedagogical challenges of conventional EFL reading classes can be solved by the internet -based instruction. So in order to improve online collaborative EFL reading and to provide EFL learners with a chance to learn and teach with each other, they designed a wireless peer-assisted learning system for early EFL reading. Data analysis revealed that, compared to students who did not use the system, pupils' reading comprehension was increased by the wireless peer-assisted learning system. Although research on the efficiency of the Internet for language learning has been ongoing in modern nations, it is still somewhat of a novelty in Iran. Therefore, the present study had two objectives: (a) to compare the reading comprehension of students who received metacognitive instruction in an online class to those who received it in a traditional classroom; and (b) to examine the differences in the effects of the two instructional approaches on students' metacognitive awareness and motivation.

Based on the background above, the research questions to be answered in this study were formulated as follows :

1. What are the relative effects of online instruction and traditional instruction on Iranian EFL learners' reading comprehension?
2. What are the relative effects of online instruction and traditional instruction on Iranian EFL learners' metacognitive awareness?
3. What are the relative effects of online instruction and traditional instruction on Iranian EFL learners' motivation?

2. Literature Review

2.1 Metacognition

Metacognition is defined by Flavell (1979) as the conscious regulation or control of a person's knowledge and as the awareness or knowledge of a learner's cognitive processes, their operation and their results. Metacognitive knowledge is the understanding of the variables influencing the results of cognitive processes. These include tasks, individuals and tactics. Declarative knowledge (knowing what), procedural knowledge (knowing how) and conditional knowledge are the three



variables that make up metacognitive knowledge with reference to the deployment of strategies (knowing why). (Mayer 1998) emphasizes the significance of metacognition by pointing out that, combined with motivation and aptitude, metacognitive information can serve as a predictor of successful problem-solving. Therefore, the importance of metacognition in reading ability is extremely valuable. (Boekaerts and Corno 2005) mentioned that language learners should actively participate in the learning process. They should be able to plan, control and regulate their cognitive procedures regarding to their behaviors and attitudes. As a result, language learners require to have high metacognition skills in order to be engaged actively in the learning process and to succeed. Learners' academic intrinsic motivation that functions a major role in human's life activities and in the learning process contributes learners to perform their academic activities excellently. Learners must be active participants in the learning process and also they should be information recipients from psychologists' point of view, which needs deep involvement and full engagement of students. A lot of studies showed that if students possess true interest and the intrinsic motivation in the subject they learn, the optimum learning outcomes are achieved (Cerasoli, Nicklin et al. 2014); (DePasque and Tricoli 2015) and (Ryan and Deci 2000). It is because of the fact that students can encounter academic difficulties and challenges with the suitable adaptability and flexibility if they are equipped with intrinsic motivation.

Students can get benefit of utilizing the strategies under metacognition strategies. Besides, students can use metacognitive skills to enhance their learning (Fisher, Goddu et al. 2015) and (Barenberg and Dutke 2019). According to Pintrich, it is more likely that students will use a variety of thinking, problem-solving and learning processes. Additionally, it is essential to offer pupils extensive metacognitive knowledge, (Pintrich 2002). Two recent studies have provided unique methods for improving metacognition (McGuire 2015); (Medina, et al. 2017). Suggestions for teaching metacognitive skills in the didactic setting include cognitive apprenticeships, exam reviews, modeling of metacognitive skills, thinking out loud protocols, reflection assignments, self-explanation methods, and judgment of understanding assignments. Investigated as well is the association between students' metacognitive level and demographic characteristics like grade point average (GPA) and academic



achievement (Mokhtari, Dimitrov et al. 2018 and Özsoy and Ataman 2009). According to Erenler and Cetin (2019), undergraduate students shown higher cognition knowledge, however graduate students demonstrated higher knowledge cognition when compared to undergraduates (Medina, et al., 2017).

Teachers' commitment is regarded as the major indicator to endorse success or failure in the educational system. Language learners lose their self-efficacy because of teachers' minimal commitment. As a result, in the first years of learning students instead of using deeper strategic approach move towards using surface learning approach (Güvendir 2016). Many teachers do not help or develop the motivation of the students appropriately so that their motivation is decreased. Hence, teachers' behavior is important element in increasing the students' motivation. Specifically, it is argued that students' motivation is increased by autonomy behavior whereas the behavior of control reduces it (Hallinger, Hosseingholizadeh et al. 2018). Furthermore, it is believed that the learning condition and environment are more effective for the educational motivation than individual student's behavior and teachers' behavior. Similarly, the institutes practices and the classmates perceptions are important as well (Hanus and Fox 2015). Besides, it is found that the tentative nature of the extrinsic motivation is its main downside but achieving prize or reward causes that the extrinsic motivation to disappear (Hofferber, Basten et al. 2016).

2.2 Reading

Reading can be seen as a source of both learning and enjoyment (Meng 2009). It assists second language development, because it is an exposure to the language (Day, et al. 1998). However, since the language learning system in Iran is partially based on the conventional Grammar Translation Method, the second language input sources are frequently scarce for EFL students. The traditional approach to teaching English reading places a strong emphasis on students' syntax and semantic proficiency, but frequently ignores their synthesis comprehension. They make use of non-authentic textbooks and materials with false writing styles, which contain exercises that don't make any sense and don't concentrate on language proficiency. Other factors influencing reading comprehension achievement could be due to environmental constraints, such as class size, time constraints, the diversity of reading abilities

among students, and resources that are available, such as audio-visual materials and, more recently, the use of internet resources in class that are very effective in student achievement and motivation. (Schulz 1981) argues that reading is the least understood process and the most thoroughly studied in education today.

3. Methods and Data Collection

3.1 Participants

40 students within the age range of 16-18 were randomly chosen from two eleventh-grade classes at Novin high school in Tabriz, Iran and split into two groups: (a) the experimental or internet group, which received metacognitive instruction integrated into an online course; and (b) the control group, which received metacognitive instruction in a traditional class. English was taught to both groups by the same instructor.

3.2 Instrumentation

Three questionnaires were utilised in the current study to assess reading comprehension, metacognitive awareness, and motivation. The control group and the experimental group were both visible.

For a reading comprehension test: At the beginning and conclusion of the study, learners' reading comprehension was evaluated using a 12-item open-book assessment. The test's reading strategy questions were built on the metacognitive education the students received. The students received ratings that ranged from 0 to 100. The Kuder-Richardson reliability coefficient for this measurement was 0.79.

Motivation questionnaire: A 15-item questionnaire was utilised to assess the learners' motivation for studying English (e.g., "I enjoy my English lessons"). It was modified from the survey used in a study conducted by (Kramarski and Feldman 2000). Each question had a 5-point Likert scale, with 1 being the strongest agreement and 5 being the least agreement (Strongly Agree). Scores on this test for students varied from 1 to 75. This measurement's Kuder-Richardson reliability coefficient was 0.82.

Questionnaire to assess metacognitive awareness: Seven forced-choice items with five choices were used to assess the students' metacognitive awareness in relation to their reading comprehension (e.g., "What do you do if you notice a word that is



unknown to you?"). This questionnaire was modified from one that was used in a study by (Carrell 1989). Scores on this questionnaire for students varied from 0 to 100. The metacognitive awareness measure's Kuder-Richardson reliability attained a 0.78 level.

Observations: To observe students' learning behavior, from each study group four pairs of learners were randomly selected and observed during four lessons. Three criteria were used during observation: technical skills, motivation, and metacognitive awareness.

3.3 Procedure

The study was done during 12 sessions. Each session lasted for about 1 hour twice a week. At the beginning of the research, the reading comprehension questionnaire was given to all of the participants and then started their learning practices according to their particular learning method.

Both groups practiced reading comprehension while using the same metacognitive learning methods. The metacognitive learning was built around the four steps of a metacognitive strategy: task identification, planning, performance, and assessment (Polya, 2004). They also practised reading comprehension techniques like scanning, using context clues, and skimming. The difference between the groups was the literature that each group used to study them. The experimental group worked in a computer lab. They practised fundamental and technical aspects of using the internet, such as looking for information across different websites. They chose a few texts from an online hypertext resource that their teachers suggested. After that, they used those texts to practise their metacognitive techniques. However, the control group used the same metacognitive techniques with passages picked out of their own textbooks.

Observation was carried out during the study. Metacognitive Awareness, the Reading Comprehension, and Motivation questionnaires were given to both groups at the end of the study.

4 Results

Investigating reading comprehension of the both groups was the first goal of the present study.

Reading comprehension pretest and posttest mean scores, standard deviation, and T-test results are shown in Table 1.

Control Group (n=20)			Experimental Group (n=20)		
T	S.D	Mean	S.D	Mean	
0.205	11.2	65.8	11.1	67.8	Total-pretest
0.841	9.89	76.1	9.79	74.6	Total-post-test
878	3.20	20.91	3.94	19.94	Strategies on post-test:
					Finding items by scanning
0.341	3.95	19.61	2.98	19.99	Accepting the main idea by skimming
0.185	5.58	25.47		5.01 26.01	Interpreting words with contextual clues
2.001*	3.97	13.47		4.09 12.43	Finding author's meaning

According to the results, there was no discernible difference between the experimental and control groups' total reading comprehension scores at either the pre-test (0.205, $p > 0.05$) or the post-test (0.841, $p > 0.05$). Unexpectedly, the control group did better than the experimental group overall ($M = 76.1$; $S = 9.89$; $M = 74.6$; $S = 9.79$). It was discovered that the groups' approaches to deciphering authors' meaning varied significantly. In comparison to the experimental group, the control group did much better ($M = 13.47$; $S = 3.97$; $M = 12.43$; $S = 4.09$). In relation to the strategies use including interpreting words with contextual clues, understanding the

main idea by skimming and, finding items by scanning no difference was found between the groups.

Comparing the differential effects of two metacognitive methods on metacognitive awareness and motivation for learning was the second aim of the present study. Table 2 shows standard deviation and the mean scores for motivation – Erbil and metacognitive awareness.

Table 2 T-test, mean scores and standard deviation on motivation and metacognitive awareness

Control Group (n=20)			Experimental Group (n=20)		
T	S.D	Mean	S.D	Mean	
2.397*	9.17	49.00	7.16	55.23	Motivation
3.491**	6.95	75.61	13.65	63.82	Metacognitive awareness

*p< 0.01, *p<0.001*

Since the experimental group outperformed the control group, there were significant differences for the two groups' combined motivation scores (2.397, p 0.01). Additionally, there were noticeable differences between the two groups for metacognitive awareness (3.491, p 0.001) because the control group outperformed the experimental group.

The qualitative analysis results regarding observations of the students are provided in table 3.

Table 3 Description of the observations in each group

	Control Group (n= 20)	Experimental Group (n=20)
Motivation	No enthusiasm about the lessons Happiness when the lesson was finished	Enthusiasm about the technological tool Willingness to continue and engage in the lesson
Metacognitive Awareness	Working deeply with metacognitive strategy deeply Utilized the class period to its fullest extent	Hardship to implement the metacognitive strategy with the open learning environment concentration problems



Technical problems	No technical problems	Pitfalls of high text level of internet Unknown Internet commands Students’ trying to utilize the class period for CHAT options
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It was discovered that the traditional class and the online class had different learning environments. The control group students were less enthusiastic about the new technology in their learning but successfully applied the taught metacognitive strategy in the regular class, whereas the experimental students demonstrated their motivation about the use of the internet but encountered more technical problems and difficulties in integrating the taught metacognitive strategies in their learning.

5 Discussion

The main goal of the current study was to investigate how internet use and metacognitive education affected students' reading comprehension, motivation and awareness of metacognition. It was discovered that kids' reading comprehension was not considerably impacted by internet use. The experimental group failed to acquire metacognitive reading comprehension strategies, and observation also supported this conclusion. The experimental group did not successfully apply the metacognitive technique, according to observations. Moreover, the students in the experimental group faced some technical difficulties that decreased students’ concentration so they were not able to manage the time allotted for the task. One fact must be taken into account that studied students were at age (16-17) and they are often in struggle with concentration difficulties and adherence to goals, particularly in relation to new frameworks. Due to this dilemma, pupils have to demonstrate higher levels of competency in foreign languages than they typically do by the time they reach the eleventh grade. These details lend credence to research showing that students in the control group outperformed those in the experimental group in terms of metacognitive ability. According to observations, the control group students were able to fully comprehend the model, work with it and make efficient use of the time



provided. These findings support the cognitive-metacognitive approach to learning. It is argued that the metacognitive strategies use contributes to self-monitoring , metacognitive awareness and self –controlling of the cognitive processes that influences reading comprehension (Mevarech and Kramarski 1997); (Pressley, Harris et al. 1992). The experimental group students showed higher degree of motivation than the control group students. These findings are in consistent with the results of (Smith 1995), (Liu 2007) and (Yang, et al. 2008) who showed that the use of internet in classroom that contained meaningful and authentic materials resulted in an increase in motivation. Their findings revealed that participants showed enthusiasm about the technological instruments and true willingness to engage in the classroom tasks as well.

However, the results are different from those of some other studies of (Pan and Huang 2009), (Simsek 2008)and (Lan, Sung et al. 2006) who showed that students' English reading comprehension can be improved by online EFL learning systems.

(Backer 1998) addressed how using the internet fosters an environment that is inspiring and helpful for learning English as a foreign language. It was suggested that teachers be pushed to use the internet in all classes, but especially in those where students struggle with motivation. In addition, internet should be used in the classrooms from elementary years so that the students not only can become competent in internet use but also internet use excitement in the classroom cannot interfere in the actual lessons. In short, a positive relationship between student accomplishments and metacognitive awareness was found. The findings of the present study showed that the internet use in the class resulted in students' higher motivation towards English as a foreign language but it did not improve the metacognitive awareness and reading comprehension of the learners.

The results of the present study have several practical implications for syllabus designers, language teachers and curriculum developer. The findings revealed that advanced technology use cannot be regarded as a panacea in order to increase students' reading comprehension. According to the constructivist theory, learners should get metacognitive education that improves their ability to self-regulate, self-regulate, and be aware of their cognitive processes in order to use new technologies efficiently. Therefore, it is essential to incorporate metacognitive methods as a core



component of technology applications (Kramarski 1999). Based on the results of the current study, it is crucial to create metacognitive educational techniques that are appropriate for internet use in various domains, such as language learning and other pertinent subjects.

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کاربگه ریبه کانی به کارهینانی ئینتەرنیت له پۆلدا له سەر تیگه یشتن له خویندنه وه، هۆشیاری میتاکۆگنیتیف و پالنەر

پوخته

ئەم توێژینه وه یه کار ده کات له سەر پشکنینی کاربگه ریبه کانی به کارهینانی ئینتەرنیت له پۆلدا له گه ل فیرکردنی میتاکۆگنیتیف له سەر هۆشیاری میتاکۆگنیتیفی فیرخووانان، تیگه یشتن له خویندنه وه و پالنەر ئامانجی سهره کی ئەم توێژینه وه یه یه. 40 خویندکار له دوو پۆلی یازدهه م به شیوه یه کی هه ره مه کی له یه کی له ئاماده یه کان هه ل بژێردران و به سهر دوو گروپدا دابه شکران: (ا) گروپی تاقیکاری که یی دهوتریت گروپی ئینتەرنیت – رپنمای میتاکۆگنیتیفیان وه رگرت له گه ل به کارهینانی ئینتەرنیت؛ و (ب) گروپی کۆنترۆل – فیرکاری میتاکۆگنیتیفیان له پۆلیکی ئاساییدا وه رگرتووه. دۆزینه وه کان ئاماژه بان به وه کرد که هه رچه نده پالنەرکانی خویندکاران به ره و خویندنی ئینگلیزی وه ک زمانیکی بیانی کاربگه ریبه کی به رچاوی هه بووه به هۆی ژینگه ی ئینتەرنیته وه، به لام هۆشیاری میتاکۆگنیتیف و تیگه یشتنی خویندنه وه یان کاربگه ری نه بووه. ئەنجامی ئەم توێژینه وه یه هه ندیک کاربگه ری له سەر دیزاینه رانی مه لزه مه، گه شه پیده رانی مه نه هج و مامۆستایانی زمان هه یه. وشه سهره کییه کان: به کارهینانی ئینتەرنیت، تیگه یشتن له خویندنه وه، هۆشیاری میتاکۆگنیتیف، پالنەر

آثار استخدام الإنترنت في الفصل الدراسي على فهم القراءة والوعي وراء الإدراك والتحفيز

الملخص

الهدف الرئيسي للدراسة الحالية هو فحص تأثيرات استخدام الإنترنت في الفصل الدراسي جنبًا إلى جنب مع التدريس ما وراء المعرفي على وعي المتعلمين ما وراء المعرفي وفهم القراءة والتحفيز. تم اختيار 40 طالبًا من فصلين من الصف الحادي عشر عشوائيًا من مدرسة ثانوية واحدة وتم تقسيمهم إلى مجموعتين: (أ) مجموعة تجريبية تسمى مجموعة الإنترنت - تلقوا تعليمات ما وراء المعرفية جنبًا إلى جنب مع استخدام الإنترنت ؛ و (ب) المجموعة الضابطة - تلقت التدريس ما وراء المعرفي في فصل دراسي عادي. أشارت النتائج إلى أنه على الرغم من أن دافع الطلاب نحو دراسة اللغة الإنجليزية كلغة أجنبية قد تأثر بشكل كبير ببيئة الإنترنت ، إلا أن وعيهم وراء المعرفي وفهمهم للقراءة لم يتأثر. نتائج الدراسة الحالية لها بعض الآثار المترتبة على مصممي المناهج الدراسية ومطوري المناهج ومعلمي اللغة.

الكلمات المفتاحية: استخدام الإنترنت ، فهم القراءة ، الوعي ما وراء المعرفي ، الدافع