# USING OF LEARNING STRATEGIES BETWEEN TRADITIONAL AND VIRTUAL UNIVERSITY STUDENTS

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## Abstract

The purpose of this study was to compare the use of learning strategies between traditional and virtual university students. Sample was comprised of 394 (207 traditional and 187 Virtual) students who were selected by quota sampling. Data was collected individually using a self-report questionnaire, Motivated Strategies for Learning Questionnaire (MSLQ) that assess 9 scales of learning strategies. The results showed that virtual university students are different from traditional students in using learning strategies. The virtual students were higher in using rehearsal, elaboration, critical thinking, metacognitive self-regulation, time and study environment management, and effort regulation, as learning strategies components. The results support the idea that e-learning is more learner-centred than traditional learning. Educational implications and suggestions for future researches are discussed.

**Keywords**: Learning strategies, e-learning, traditional teaching.

## 1 INTRODUCTION

Distance education has evolved over many years and now includes the use of Internet. Availability, accessibility, and more common acceptance of the Internet for course delivery have resulted in the development and offering of online courses and degree programs in a wide range of subjects and disciplines (Hadidi & sung, 2000).

The recent spread of new technologies is transforming the concept of education. This new perspective on education is important in the light of constructivist approach that emphasizes the role of the learner in the learning process. In this point of view the learner constructs his /her own knowledge on the basis of prior experiences, unlike previous educational viewpoints where the responsibility rested with the instructor to teach(Palo, Sinatra, Tanucci, & Monacis, 2012).

The constructivism theory is pioneered by Jerome Brunner in 1966. His main theme of the theory is that learning is an active process where students construct knowledge or new concepts based on their experiences. Students are said to construct knowledge by using their cognitive structure. Constructivists would agree that learning construct within the mind of the learner and transfer of knowledge is more likely occurs when the emphasis is shifted from activities that teachers do to those that students should perform. The purpose of learning is for an individual to construct his or her own meaning, not just memorize the right answers. This implies that the theory of constructivism stresses on active learning when the student's role is more important than teachers (Sejzi& Aris, 2012).

Historically, distance education goes back to Open Universities in the twentieth century in England. According to this plan, applicants by using television programs could access training and obtain university degrees. In early 1980's by offering online unites in the United States, Virtual University was founded. In 1988, the first software as a Digital-Professor was suggested and used in America. Since then, many developments in Virtual University have created. Today, distance education has a widespread application all around the world (Tabatabaie, 2010).

In Iran, Payam Noor University in 88's for the first time used distance education system. At 1991, Ministry of Higher Education found a virtual university as a non-profit institution, and following that some universities entered electronic education in their programs. In last decade, the popularity of distance education and e-

learning has grown rapidly in Iran, but many fundamental issues are still in debate. Despite the many positive aspects of e-learning, education based on computer and Internet create the problems for training; excessive dependence on technology and physical problems of long-term working with computers are among disadvantages (Tabatabaie, 2010).

There is a good deal of research dealing with e-learning; the findings prove conclusively that e-learning is "as good as" traditional education (Phipps & Merisotis, 1999). For example, the study of Hadidi and Sung (2000) revealed that, the pedagogy that can be maintained in online instruction is at least as good as what can be achieved with traditional instruction. Based on their data, there was no significant evidence to indicate that students' evaluations of the online courses were different from the traditional courses. However, a closer look at the evidence suggests more cautious view of the effectiveness of e-learning. Phipps & Merisotis (1999) mentioned that there are several important issues regarding the effectiveness of online education that require further investigation. For example, the researchers did not take in to account differences among students. A lot of research has been conducted to demonstrate no significant differences in achievement levels between virtual and traditional students. However, learners have a variety of different characteristics; the factors influencing these differences could include educational experience, motivation, learning strategies, etc.

It has become evident among researchers of virtual learning environments that it is no longer enough to compare these types of learning to traditional, face-to-face classroom environments. Each environment holds unique qualities. Many researchers have started to focus more specifically on how learners learn in online environments in an attempt to better understand the unique learner needs. So, further researches needs to focus on how students learn in virtual compare to traditional settings of education, rather than comparing the two systems together. As human factors are an integral part of e-learning, there is a need to examine those individual characteristics that can potentially affect the design of human-computer interaction. According to Colorado (2006) students who succeed in traditional settings may not do well in online courses. This could be attributed to student motivation, self-discipline, or any number of learner characteristics. Palo, et.al. (2012) mentioned that researches has generally focused on gender differences (Plumm, 2008, Tsai, &Tsai, 2010), prior knowledge (Lee& Chen, 2009), and cognitive styles (Calcaterra, Antonietti, &Underwood, 2005; Chen, & Liu, 2008), but there are no reliable data concerning learning strategies as important predictors of subsequent study performance. Very little research has looked at how students engage with their courses, especially in terms of learning strategies.

Self-regulated learning has been defined as, " an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behaviour, guided and constrained by their goals and the contextual features of the environment" (Pintrich, 2000, p.453). Learning strategies are techniques, principles, or rules that facilitate the acquisition, manipulation, integration, storage, and retrieval of information across situations and settings. It would be appropriate to affirm that learning strategies are actions taken by learners to assist in learning more effectively. The term learning strategies is understood as focused conscious procedures which we use to ensure and facilitate the acquisition, memory, processing, recalling and application of various information and its integration into the body of knowledge. It includes many different procedures which result in effective learning process, being able to learn includes not only what to learn, but also how to learn. Distinguish significant from insignificant, useful from useless, necessary from unnecessary. Being able to learn also means, when, where, how and with what kind of resources, equipment, instruments, styles, and methods we work or which environment is more beneficial for us: the real one or the virtual one.

Learning strategies can be distinguished in categories such as cognitive and metacognitive strategies. Cognitive strategies result from a rational or empirical basis, such as analysis, synthesis, induction, reasoning, abstraction, generalization, etc. metacognitive strategies includes learning organization, control and select attention, feedback mechanisms in the form of self-reflection, etc. A virtual learning environment creates a complex structure that needs students to be able to use and apply these strategies (Semradova & Hubackova, 2012).

Several scholars have suggested that Self-regulated learning skills may be particularly important for students participating in online learning (Hartly & Bendixen, 2001; Hill & Hannafin, 1997). Schunk and Zimmerman (1998) mentioned that effective Self-regulated learning strategies may be critical in online learning situations due to the high degree of student autonomy resulting from the instructor's physical absence. They recommended that future research investigate the specific strategies that allow for effective and efficient online learning.

As the learning process is usually affected by diverse factors, this study examined those constructs that

are mostly unstudied in similar investigations, i.e., learning strategies. It was expected that results confirmed a significant difference between e-learners and traditional learners. The purpose of this study was to evaluate how learners differ in learning strategies at different learning environments. The objective was to determine is there a difference in learning strategies between virtual and traditional university students?

## 2 METHOD

### 2.1. Participants

Participants were 394 (207 traditional and 187 virtual) university students who were study at Iran University of Science and Technology (IUST) situated in Tehran. It was chosen because of offering online courses and undertaking majors in both forms of traditional (face-to-face) and virtual (on-line) forms.  According to register records 770 students were enrolled in Web-based undergraduate courses in IT. Engineering, Software Computer Engineering, Computer Science and Industrial Engineering. Adding the students who enrolled in the same majors in traditional form (1001), the research population was estimated 1771. The sample selected by quota sampling, considering the major of students and the type of education they had enrolled. The sample included 128 women (%32.3) and 266 men (%67.7) with a mean age of 24 years.

### 2.2. Instrument

*Motivated Strategies for Learning Questionnaire (MSLQ)*: The MSLQ was developed at the National Centre for Research to improve postsecondary teaching and learning at the University of Michigan. The instrument has been under development since 1986 when the centre was founded.  It was designed to assess college student's motivational orientations and their use of different learning strategies in college courses.  MSLQ comprises two sections, a motivational section and a learning strategies section. As the scales are modular and can be used to fit the needs of the instructor or researcher (Pintrich, Smith, Garcia, & McKeachie, 1991), learning strategies (cognitive and metacognitive) section had been used in this research that included 9 scales of learning strategies: rehearsal, elaboration, organization, critical thinking, metacognitive self-regulation, time and study environment management, effort regulation, peer learning and help seeking. Pintrich, Smith, Garcia, & McKeachie (1993) mentioned that scale reliabilities are robust, and confirmatory factor analyses demonstrated good factor structure. In addition, the instrument shows reasonable predictive validity to the actual course performance of students. Internal consistent coefficients (Cronbach's Alpha) at present study support it as well (r=.64-.88). Responses will scored using a 7-point Likert type scale, from 1(not at all true of me) to 7 (very true of me). Scale scores are determined by summing the items and taking an average.

## 3 RESULTS

The data was collected within the final exams which is held in campus for both Traditional and virtual university students. Multivariate analysis of variance (MANOVA) was conducted to examine differences between the two group's learning strategies. The results are presented in table 1.

MANOVA was performed after confirming requirement of homogeneity of covariance matrix, BOX' M= 63.303, (F(45,494302.2)=1.48, P=.02).   Although MANOVA's are robust to this presumption.  Results indicate a statistically significant difference between two groups, Hotling Trace=.09, (F(9,384)=4.156, P<.001).  Furthermore, univariate F-tests indicate that rehearsal, elaboration, organization, critical thinking, metacognitive self-regulation, time and study environment management, and effort regulation, were significantly different in two groups and virtual group had higher means in all scales. There was no significant difference between traditional and virtual groups on peer learning and help seeking scales.

Table 1. MANOVA for learning strategies in traditional and virtual groups of students

| Learning strategies | | traditional | virtual | F | sig | η2 |
|---|---|---|---|---|---|---|
| Rehearsal | *M* | 4.02 | 4.50 | 15.713 | .000 | .039 |
| | *SD* | 1.29 | 1.21 | | | |
| Elaboration | *M* | 4.44 | 4.92 | 17.656 | .000 | .043 |
| | *SD* | 1.07 | 1.12 | | | |
| Organization | *M* | 4.52 | 4.87 | 7.194 | .008 | .018 |
| | *SD* | 1.43 | 1.33 | | | |
| Critical thinking | *M* | 4.48 | 4.94 | 14.716 | .000 | .036 |
| | *SD* | 1.16 | 1.16 | | | |
| Metacognitive | *M* | 4.44 | 4.82 | 15.942 | .000 | .039 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Self-regulation | *SD* | .77 | .91 | | | |
| Time and Study environment management | *M* | 3.82 | 4.20 | 16.913 | .000 | .041 |
| | *SD* | 1.03 | .98 | | | |
| Effort regulation | *M* | 3.86 | 4.30 | 9.788 | .002 | .024 |
| | *SD* | 1.24 | 1.19 | | | |
| Peer learning | *M* | 3.51 | 3.49 | .004 | .951 | .000 |
| | *SD* | 1.53 | 1.68 | | | |
| Help seeking | *M* | 3.93 | 3.06 | .387 | .534 | .001 |
| | *SD* | 1.31 | 1.35 | | | |

## 4  CONCLUSION

The results of this study showed that mean scores of virtual students were significantly higher in all subscales of learning strategies except peer learning and help seeking. This finding was expected, due to the differences between two educational systems. Traditional students see their peers regularly in campus, but for virtual students maybe the only time that they can visit each other is during the final exams, when they are in campus. Although virtual students can have more online relations during semester through virtual classes and conferences, but they cannot be a good replacement of face-to-face classes due to problems with Internet connections. So, virtual students cannot have a good interaction with their classmates and seek their help for solving academic problems and learn from each other in different settings.

According to Zimmerman (1994) using of self-regulated learning strategies is facilitated in the environments that the learner has control over time, task, and strategies. Williams and Hellman (2004) believed that in virtual education, students at least can choose the place and time of study that are two important components of self-regulated models represented by Pintrich, 1999 and Zimmerman, 1999.

These results can propose the application of the constructivist approach in virtual universities. Based on the main aspect of constructivist approach, traditional universities and classroom cannot provide the conditions for learners to construct the knowledge for themselves, but virtual universities can implement constructivist strategies in the process of teaching and learning. Today the communication and information technologies bring new challenges and opportunities to design education which require the consideration of new pedagogical approaches. New technologies, such as the use of Internet, can afford rich opportunities for constructivist approaches in the field of education. The assumption of this approach is that knowledge is constructed by the students themselves, the knowledge is constructed not transmitted and the students actively learn (Sejzi and Aris, 2012).

By applying the constructivist approach in virtual university can provide the opportunities for exploration an d manipulation in the virtual environments, and provide opportunities to actively build skills and knowledge in relation to their interest. Focusing on what participants want is very important to designing any type of learning environment, so researchers should study the personality characteristics of users who find virtual university of value. With adopting the constructivism in to the virtual university, students will earn the opportunities to construct their own knowledge by using their different cognitive abilities to learn an interact with others.

one of the main aspects of the constructivist approach which can be used as guidelines for designing the virtual classrooms is social learning, as Vygostsky, 1978, mentioned that knowledge is rooted not only on biological and neurological mechanisms, but also on social and cultural interaction among people who agree on a common perception of a given subject; virtual classrooms should design in a way that increase interaction between peers and classmates. For examples by using virtual learning applications like computer-conferencing and videoconferencing and chat rooms can provide constructivist conditions for learning.

The finding of this research is consist with other researches; for example, Cennamo & Ross (2000) mentioned that in a web-based course, rehearsal and self-evaluation were the most effective self-regulated learning strategies and the absence of using social support and help seeking of instructors were due to isolation of students in such environments. Diaz & Cartnal (1999) in their study of comparing learning styles in online-learners and on-campus learners showed that e-learners were more independent in their learning process. Young (1996) mentioned that, learners need more self-regulated learning skills in the web-based instruction. Also, Mc Manus (2000) mentioned that self-regulated learners had better achievement in web-

based environments where they had more control on their learning. The results of the studies of Whipp &Chiarelli(2004), Azevedo, Guthrie & Sibert (2004), are supported the finding of present study as well.

### Educational implications

The limitation of this research was the application of a self-report instrument to measure students' learning strategies. MSLQ, like any questionnaire, has reliability and validity limitations. In particular, social desirability bias is considered a significant threat to the construct validity of any self-report instrument. The use of alternative research methods, such as content analysis of online discussion boards, might be especially useful.

Results of the present study suggest some implications for online educational administrators. In particular, online instructors may be able to utilize a survey like the modified MSLQ used in the present study as a diagnostic tool. For example, an instructor could administer the survey early in an online course to help assess which students are likely to have adaptive learning strategies, and thus, which students are more likely to be suitable for online learning. Using this simple, proactive approach, online instructors could gain important insights and know ahead of which students are likely to need more help for their online learning experience.

These findings suggest that faculty of online courses should design their instruction and learning requirements in a manner that helps learners not only appreciate the value or importance of content or skills but also support their learning strategies towards learning.

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