Original Article

THE IMPACT OF THE USAGE OF COMPUTER-ASSISTED TECHNOLOGY (CAT)

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DOI: 10.47750/pnr.2023.14.02.90

Abstract

This paper discusses the suitability of different approaches to computer aided education and to evaluate, discuss methods in language learning study focusing on computer-based language learning field. Several methods are used to investigate how to use computers in a learning process. Computer – assisted technology provide learners with teaching strategies, information, and multimedia platforms to make the learning process easy. However, it does not mean that whole education process replaces traditional education and teachers but improve resources and save time. By which, students can grasp new knowledge and engage themselves at their own pace in a co-relational environment. The purpose of this paper is to distinguish the advantages of computer-centered education.

Keywords: Technology integration, Uzbekistan, Technology use in classrooms, educational technology, Computer science education research, Research methods, Qualitative research, Qualitative research in computer science education.

Introduction

There is no doubt that, education and the learning process has dramatically changed since the introduction of computers. The search for information has become simpler and easier, the connectivity has expedited the data availability.

Uzbekistan is a country of over 33 million people. As a developing country, Uzbekistan has been facing many economic, social and educational problems. Because a strong educational system is considered significant to the social and economic spheres. In the last decades Uzbekistan has continuously tried to improve its educational sphere. Education is announced as the state priority policy of Uzbekistan. “Everyone shall have the right to education. The state shall guarantee the secondary education. Schooling shall be under state supervision” Article 41, The Constitution of the Republic of Uzbekistan. Country literacy indicator is one the highest in the world – 99.34%. Before gaining its Independence the State educational standards was not developed and introduced in educational process in Uzbekistan. Curricula and programs were mainly about reception of the academic knowledge, instead of on development of vital skills. Psychophysiological features and intellectual possibilities of pupils were not considered. After the independence in 1991 the State Educational standards (SES) of the general secondary education have been developed and confirmed by the Cabinet Decision (August 16th, 1991 N: 390) and introduced in educational process. Recently SES has stated that integrating technology in classrooms is a vital duty: to have a better grasp of new knowledge it is crucial to use technology in classrooms.

Today in many educational and training settings interactive classes are held with computer programs which are used to teach young students and adults. However, as indicated in the study by Merchant, Kreie and Cronan (2001), little research has been found in the literature investigating the effectiveness of computer based teaching programs. Bertz and Johnson (2000) conducted a research study to determine the effectiveness of an innovative

approach for teaching with computer programs. This innovative research approach was web-based, which was directed over the internet, self-paced which required learners' study by themselves without going to regular classroom lectures and competency-based that compared student's technical abilities versus national norms.

According to Bertz and Johnson, data gathered from 314 college students who participate the computer aided courses, it was found that the new approach for teaching with computer support was preferred approach and had merits over traditional teaching methods

In a different study by Desai, Richards and Eddy (2000) the significance of training methods and tasks in computer programs was investigated. A self-selecting and convenience sample of novice users, who were employees of a high tech company, attended to two different training programs, instructor-based training (IBT) and computer-based training (CBT), to learn the topic. IBT used a combined traditional training, stand-up lecture and the hands-on exploratory method. CBT was similar to the IBT approach except for that there was not an instructor, and that subjects directly interacted with the computer. Employees learning performance was measured at the end of the training and a month after the training, and it was found that "the CBT group's overall end-of-training and one-month-after-training performances were significantly better than IBT subject's performances." (p.242)

Mokhira, Fotima (2018) taught integrated skills to Uzbekistan State World Languages University students (one is offered as online and the other is by traditional methods). Almost fifty students participated to their classes (fifty students to one class, other fifty students to the next class). Based on a pre-post test within group comparison analysis, it was found that neither the on-line nor the traditional teaching course had significant effect on student-teachers' attitudes toward computers. An intensive literature review did not yield much research that investigated and compared subjects' both performances and attitudes who participated in computer-based and lecture-based course.

There were three central research questions for the study:

1. How does technology enhance student's knowledge?
2. How does this technology enhance teaching skills?
3. Is there proper tech support for teachers? Should it be there?
4. Are there specific subjects which require using computers?
5. What subjects are taught better without the computers?
6. How much time needed to adopt digital technologies to one class?

Research methods: Overview, Experiments, Questionnaires

Problems that have been encountered with the research:

- choosing the right methodology

- identifying potential sources of bias in study samples

- finding study participants

- dealing with the data

- time management

Research methods design

There is no doubt that, different software and online programs in ESL field is increasing dramatically, there has recently emerged interest in the ways in which the computer can be used to support language learners to improve their language knowledge in their ESL learning (Hegelheimer and Tower, 2004, Chen *et al.*, 2004 and Watson

and Wright, 2005). However, although these studies have provided evidence or suggestions concerning the use of computer programs in classes, their findings could have been strengthened if they had used other types of data, for example interviews with teachers and students. Findings from limited source of data may not be holistic because they cannot prove their results from different methods. Therefore, it is important to use various methods research to explore more sources of data (such as interviews, questionnaire and observation) to carry out an in-depth study in the CALL field.

This study explores the impact of using computers in university language centers for developing students' language skills in and out of class. It covers what kinds of computer-based tasks are used, how interactions between people emerge and what the perceptions of teachers and students are regarding using computer programs for listening and speaking. Large amount of information needs to be collected from teachers and students. Thus, an investigation in detail is required. For such research, it is advisable to draw on multiple sources of information from teachers and students to obtain in-depth understanding of a complex social phenomenon (see Stake, 1994 and Bogdan and Biklen, 1998). Tashakkori & Teddlie (1998), Tashakkori & Teddlie (2003), Creswell (2003) and Morse (2003) also suggest that the researcher can use mixed research methods to fulfil this type of research aim. Hence, an in-depth study with a variety of methods is considered to be suitable for this research.

These research methods, interview, questionnaire and observation, allow me to develop this study as comprehensively and completely as possible (Morse, 2003). Further, the analysis is based on holistic factors from various methods rather than isolated factors (Denscombe, 1998). Thus, they help me extend my understanding of the specific situation.

Participants and sampling

After a survey conducted by sending a questionnaire to the university language centers in Uzbekistan, two university language centers were selected to conduct an in-depth study. They are University A Language Center and University B Language Center. The two centers provide computer programs including software and online programs for students to improve their language. All courses focused on language skills study and had in their schedule use of computer programs in the computer room every week. This meant that both teachers and students would have opportunities to use these computer programs every week.

Observed classes:

Tashkent State Pedagogical University- Groups 209, 122, 318.

Pedagogy faculty

Advantages

- Self-paced learning modules allow students to work at their own pace
- Students can study anywhere they have access to a computer and Internet connection
- Students may have the choice of selecting learning materials that meets their level of knowledge and interest

Disadvantages

- Students with low motivation or bad study habits may easily fall behind
- Without the routine structures of a traditional class, students may get lost or confused about course activities or deadlines
- Instructor may not be available when a learner needs help
- Slow internet connections or older computers may make accessing course materials frustrating

Questionnaire

The questions were for students at the university, and it was aimed to check their experience, their opinions about how they use computer-assisted activities, tasks, if they like experiencing with such computer tools and which

way they prefer to use the technology for improving their language fluency. Of course, it is guided by several senior and professor teachers and researchers. Questionnaires can be used for exploring people's attitudes, perception, views and opinions (Black, 1999). Denscombe (1998) also suggests that the questionnaire can offer confident results with statistically significant outcomes. Further, according to Cohen *et al*. (2000, p.129), the questionnaire is more reliable than interview because of its anonymous feature, which "encourages greater honesty." More importantly, CALL research methods which can present evidence about learner's opinions on the value of the CALL task are required. These opinions can be collected by using questionnaire data (Chapelle, 2001).

The questionnaires help me gain a great amount of information through more than 100 students who study at different classes and come from different part of the country, which means they have different culture backgrounds and attitude to learning languages. I designed the questionnaires in anonymous way to ensure their reliability (Cohen *et al*., 2000). I used computer software to analyse data more quickly and to present the results via tables to obtain statistically significant outcomes (Denscombe, 1998 and Dörnyei, 2003).

Observation

Observation was used as the third research technique, because although questionnaires and interviews provide data about the perceptions of the participants, they do not provide data about what actually takes place in the classroom. As Chapelle (2003, p.97) asserts: "One approach to understanding technology use is to carefully observe learners at work." Denscombe (1998, p.139) also supports her point that observation "draws on the direct evidence of the eye to witness events first hands It is based on the premise that, for certain purposes, it is best to observe what actually happens."

In terms of types of the observation, in order to have deeper understanding about the use of computers for developing listening and speaking skills in the computer room, this research employed non-participant observations at the two university language centers because I did not intend to involve myself and participate in activities (see e.g. Burns, 1999). I only wanted to watch and record the process of activities of involved in using computers for listening and speaking in the computer room by taking field notes and a tape-recorder. Also it is impossible for me to be involved in their activities in class. Hence, I did not involve myself and participated in activities and I took the non-participant observation for this study. Thus, the aim of the observation in this study was to use my own eyes to see direct evidence and to provide information on:

- What happens in the computer room when students use computers for developing their language skills
- How students complete the computer-based tasks to practise their language
- What kinds of support teachers and supervisors provide for students' listening and speaking tasks on computers
- What kinds of collaboration between students take place in the computer room
- To observe, video camera recording, tape-recording and written recording are three main techniques (Denscombe, 1998). According to Foster (1996) and Wragg (1999), using a camera in the classroom can affect what students do and some events will be out of camera shot, because of the restricted visual range of the video. Moreover, it is sometimes not easy to obtain all teachers and students' permission for using a video in their classroom and even if permission is obtained, "reactivity will increase", which is "a serious drawback" (Foster, 1996: 87). Usually, student feel anxious if they see they are watched by cameras, and they may work unnaturally if they see video cameras recording them. That is why, taking notes and observing allows us to learn more about the case and the situation and conclude afterwards. These descriptions helped me to make detailed reports and further analyse the data. I also used a digital tape-recorder to record what teachers and students actually said and talked in the computer room after obtaining their permission. The audio recorded data helped me find examples of their speaking or discussions during the analysis. I made transcriptions from my field notes with written and audio records as soon as possible after observations, while they were easily remembered (Denscombe, 1998).

- 3 and more classes were intended to observe in the computer rooms in both language centers. During observation, what I focus more on what computer tasks and methods students completed and how associated teachers set up tasks for their students. I looked at what the students were asked to do in order to complete the task, such as listening to a lecture or a conversation and making comments. I also noted whether they worked individually or worked in pairs or groups for collaboration.

Analysis of Observations

Regarding the analysis of observation, I used a narrative description (Nunan *et al.* 1990) to explain what I observed in the computer classroom. I described what teachers and students did with the use of computers for supporting listening and speaking skills in the computer room. This descriptive analysis aimed to provide an overview of the interaction among teachers and students while using computers within the context of the computer room. As Scott (2001, 2005) suggests, the narrative description can offer an overview of the nature of the communication in the context, enrich the report of activities in the class and provide additional information related to perceptions of teachers and students in language teaching and learning.

The analysis of the observation data followed the categories of the analysis of interview data, focusing on the kinds of computer-based tasks were used, what kinds of activities teachers set for developing listening and speaking skills; how the teacher and students used computer-based tasks from computer software and online programs to support students' listening and speaking and how students interacted as they worked on the task in the computer room. It was combined with data from interviews and questionnaires.

Independent Variables

The independent variable of this study is instructional mode of the computer centered teaching course. There will be two categories of the instructional mode: Classical lecture-based instruction and in-class technology based instruction. The computer based teaching course, regardless of the instructional mode, will cover NSSP curriculum (National Standards of State Education). The classical lecture-based instruction will be given by two instructors in a classroom. There will be an instructor in the classroom who won't teach directly but answer students' questions regarding the computer knowledge and skills taught in the class

Dependent Measures

There will be three dependent measures of the study
1. Students' attitudes toward computers
2. Students' motivation toward the computer aided teaching class.

3. Students' learning performance

Dusick (1998) defined attitude as "an evaluative disposition based upon cognition, effective reactions, behavior intentions, and past behaviors which can influence future cognitions, effective responses, intentions, and behaviors" (p. 127). In this study, the Computer Attitude Scale (CAS) (Loyd & Loyd, 1985) was used to measure changes in teacher attitudes toward computers manifest after the intervention.

Hypotheses

Three hypotheses are developed based on research questions
Hypothesis 1: Students Attitudes Toward Computers.

Hypothesis 2: Student Motivation Toward Class

Hypothesis 3: Student Learning Performance

Teo (2006) discovered that students' views regarding computers have an impact on their willingness to use computers as learning tools and their future computer-related behaviors, such as using them for academic and professional pursuits. Similar to this, Zhang (2011) claimed that the success of applying computers to language learning can be heavily influenced by students' views regarding computer-assisted language learning (CALL). Additionally, according to Ajzen and Fishbein (1977), "attitudes toward targets will predict multiple-act criteria, given that the attitudinal and behavioral entities involve the same target elements" (p. 981). In the construction of computer-based curricula and the evaluation of computer courses, it would appear that knowledge of students' attitudes about computers can be "a key criterion." (1991, Woodrow, p. 165). As a result, it is important to think about computer attitudes when determining whether a technology will be accepted in the future.

Several models were created to aid in foretelling the adoption of new technologies. The most well-liked of these approaches is the Technology Acceptance Model (TAM) (McCoy, Galletta, & King, 2007). It is testable and has considerable empirical backing for being reliable and frugal in predicting technology acceptance and adoption in a range of scenarios and utilizing a variety of technologies (Teo, 2009)

This model was utilized in this study to analyze students' attitudes and the variables affecting their attitudes. Students' views and willingness to adopt the technology have a big impact on how well computers are integrated into teaching (Pektas & Erkip, 2006). We can learn more about the acceptability and use of technology in teaching and learning by researching students' perspectives.

It is common knowledge that students enter language classes with a variety of preconceptions, which have an impact on their attitude, motivation, and, ultimately, performance in the class. Foreign language learners have various views or notions regarding language learning, as stated by Horwitz (1987). Studies have shown that learners have both facilitative and inhibitive views about language learning, and that attitudes toward learning and the perceptions and beliefs that determine them may have a substantial impact on learning behavior. There are some potential actions that teachers could do to encourage wholesome attitudes and get rid of harmful ones. Bassano (1986) provided educators with six approaches for addressing students' beliefs:

1. become aware of students’ past classroom experiences and their assumptions about language learning,

2. build students’ confidence,

3. begin where the students are and move slowly,

4. show them achievement,

5. allow for free choice as much as possible, and

6. become aware of the students’ interests and concerns, their goals and

objectives.

GENERAL ATTITUDE TOWARD USING COMPUTERS

The survey's findings are consistent with the idea that kids see utilizing computers favorably. Given that students could have a tendency to respond favorably to surveys, one could contend that the higher-than-neutral scores have no significance. However, this claim is refuted by the fact that students still reported a favorable attitude about utilizing computers on seven out of the eight items that were reverse coded (requiring a negative response to indicate a good attitude). Additionally, it may be claimed that pupils responded as they thought was expected of them. However, steps were made to reduce this likelihood by keeping the poll anonymous and including items that were reverse-coded.

MOTIVATING FACTORS

The three variables identified in this survey go beyond the notion that motivation for language acquisition is either integrative or instrumental. Since it entails students desiring to engage with native speakers in foreign countries, communication—the survey's greatest factor—could be considered as being related to integrative motivation. However, it also encompasses the desire of students to converse with their classmates, their teacher, and non-native speakers in other parts of the world. Students can learn from one another, feel like they are a part of a community, develop their ideas and opinions, and learn about other people and cultures as a result of this communication.The second aspect, empowerment, is likewise difficult to categorize as either instrumental or integrative. It centers on more affective factors, addressing problems like boosting individual strength, combating loneliness, and making social engagement less intimidating.

The third component shows that pupils believe computers can make their learning more effective and independent. They believe they can learn more quickly, be more inventive, and write better essays with computers. They believe they have greater influence over their education and more chances to use English.

The similarities across students in this study were more notable than the contrasts. The sentiments of all student groups toward using computers were largely positive and fell within a fairly small range. Maybe the customized features of using computer-mediated communication can help to explain this in part. Computers may provide something for everyone by enabling students to communicate with whomever they want, when they want, and about whatever topic they choose (for an interesting discussion of this issue as it relates to gender, see Tella, 1992). The two individual criteria that did appear to be most significant in this study were computer literacy and prior e-mail usage. These variables were established using students' self-ratings, which cannot be entirely trusted. Even if accurate, the "chicken and egg" dilemma still remains: Does gaining information and experience lead to a more positive outlook, or does a good outlook lead one to acquire more knowledge and experience? The causal relationship is reciprocal, which is a reasonable conclusion that needs to be confirmed by additional research. If so, this would highlight how crucial it is for teachers to give students the time and instruction they need to learn as much as they can about how computers work. They would also need to give students the chance to engage in productive e-mail conversations with their classmates and other students (for a discussion of these issues, see Warschauer, et al., 1994).

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