# Preservice Teachers' Perceptions of Videoconferencing Utility for Observing Technology Integration in k-12 Classrooms

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**Abstract:** This study investigates preservice teachers' perceptions of the Utility of Videoconferencing (VC) technology to observe technology integration in k-12 classrooms in the United Arab Emirates. The study involved 94 preservice teachers, registered in an educational technology course at the College of Education, United Arab Emirates University, during spring 2005-2006 academic year. Participants observed via VC a series of 45 minutes classes, where technology integration was the focus of these lessons. After each VC session, preservice teachers were given a chance to interview teachers at the remote site. Later, preservice teachers filled a questionnaire about their perceptions of the utility of VC for observing technology integration in these classrooms. In addition, discussion forums on Blackboard were created to enable them to reflect more on the utility of VC technology. Results indicated a high self-perception of the utility of VC for classroom observations. Implications for United Arab Emirates schools and higher education institutions were discussed.

# INTRODUCTION

Distance education (DE) began as correspondence education and evolved to a highly sophisticated, distributed, interactive learning experience (Vrasidas and Glass, 2002). Videoconferencing technology (VC) is one form of DE technology that is being used by many institutions worldwide due to its advantages and utility (Almekhlafi, 2004b). According to Nahl (1993), VC enables real time (synchronous) communication by aural and visual means allowing the teacher (s) and students at different physically separated locations to see and hear each other. It can provide an instructional environment most closely resembling a real life classroom.

Research on the use of VC has been documented worldwide. However, its use in the United Arab Emirates has not been widely investigated, as the literature review search did not yield any studies in this regard, with the exception of Almekhlafi (2006). Therefore, the purpose of this study is to investigate the utility of VC technology from the point of view of preservice teachers at the College of Education, United Arab Emirates University.

# LITERATURE REVIEW

## Distance education (DE)

In the early studies of DE courses, DE was defined as instruction in which the learner and teacher were separated by both time and distance. Today's technological inventions can support synchronous communication and thus have made it possible for learners to be separated by only one element, either time or distance. In addition, distance education has moved away from separate isolated courses to additional components of face-to-face courses. It has become an integral aspect of many traditional courses, especially at the postsecondary level (Anglin & Morrison, 2002).

However, distance education, in its various forms (e.g., correspondence, VC), has been practiced for a long time in the past few years, this practice has widely been applied to offer distance courses to large

numbers of individuals. Statistics indicate that increasing numbers of adult learners choose distance education as a way to obtain new knowledge, to keep up with the changing world around them, or to continue with their life long learning. There has been a dramatic increase in the number and type of courses offered, as well as an increase in the levels of schooling which distance education courses provide (National Center for Education Statistics, 2002; & Jaradat, 2004).

This wide increase and acceptance of DE went through different stages of development. It has been used as a method of education in many fields including medicine (e.g., Harris & Gibson, 2006; Pesämaa et al., 2007; Allen et al., 2007; and Hanssen et al., 2007). Moore & Kearsley (1996) described four generations in the evolution of distance education. The first generation involved studying by correspondence, which included using printed materials and study guides using the mailing system only. The second generation started in the early 1970s. The use of broadcast and recorded media, distribution of open universities programs by radio, television, and audiotapes have all become an integral component of this generation. The third generation focused on the delivery of instructional materials through broadcast television, videotape, telephone, satellite, cable, or lines of Integrated Service Digital Network (ISDN). The last generation started in the 1990s with instruction delivered through computer-based multimedia workstations and computer conferencing networks.

According to Schlosser and Anderson (1994), DE research studies attest to the effectiveness of DE technology. Most research indicated that interactive DE is at least as effective as traditional classroom instruction. Students seem to learn equally well from lessons delivered with any medium, face-to-face or at a distance. Liang (2001) pointed out that most research about distance education has concentrated on the development of technological systems and on studies of their utilization.

**Videoconferencing (VC) capabilities**

The potential and growing acceptance of VC for education and training purposes have been documented in the literature (e.g. Fillion et al., 1999, Olsen, 2003, Almekhlafi, 2004b, Howard-Kennedy, 2004, O'Connell & Phye, 2005, Martin, 2005, & Almekhlafi, 2006).

Fillion et al. (1999) developed an inventory of various studies throughout the world in a continuum covering 1984-1996. Results showed various benefits for VC such as increased students' satisfaction and motivation, improved students' performance, and increased access to technology. Similarly, Olsen (2003) reported that VC supporters argue that VC has many advantages over other types of technologies. First, the synchronous nature of VC makes it a superior distance-education technology for business, education, and other social disciplines. Second, VC enables professors to make changes in their lectures up to the last minute, just as they can in traditional classrooms.

According to Almekhlafi (2004b, p. 23-24), VC technology can be used to: (1) compensate for faculty shortage, (2) overcome the geographical barriers that prevent teachers from doing certain activities, (3) benefit from experts and specialists worldwide, (4) reducing personnel costs to staging professional development activities, (5) connect students to various teaching and learning resources such as libraries and museums, (6) increase cooperation between different schools around the country, (7) save teachers' time and money that are usually required for traveling to training centers, (8) increase interaction and cooperation between teachers inside and outside the country, (9) help students who are physically disadvantaged, and (10) increase teachers experience with the use of technology.

Similarly, according to Howard-Kennedy, 2004, O'Connell and Phye, 2005, and Martin, 2005, VC provides students and teachers great opportunities to interact with experts and peers without the need to leave the classroom. It can enable teachers to bring a variety of real-world experience right into their lessons. In addition, it can reduce travel time and costs, and help in supporting the implementation of the strategies teachers have been taught.

**Videoconferencing (VC) Application**

VC has been applied around the world for a number of years in many fields such as business, medicine and education. It is being used for the delivery of mass lectures between sites (Pitcher et al., 2000, Knipe et al, 2002). Many researchers have documented the utility of VC for educational purposes such as training, preservice teachers practicum, and classroom

observations (e.g., Edmonds, 1996; Cavanaugh, 1999; Mäki, 2000a, 2000b, 2001a; 2001b; MacDonald et al., 2000; Pitcher et al. , 2000; MacIntosh, 2001; Kinnearet al., 2002; Faulkner et al., 2002; Sharpe et al, 2003; Olsen, 2003; Szente, 2003; Allen et al., 2003; Cody et al., 2004; Smyth, 2005; Martin, 2005, Phillion et al., 2005, Pesämaa et al., 2007, Allen et al., 2007; and Hanssen et al., 2007**)**.

In a study of VC at the Open Access College (Australia), Edmonds (1996) pointed out that VC research indicated that it can successfully be used to improve the quality of interaction between students and teachers, as well as, to improve the quality of learning concepts and processes difficult to teach. He concluded that VC (1) enhances the learning experiences of students disadvantaged by geographical location or medical disability, (2) increases the effectiveness of the teacher's lesson material to be delivered, (3) offers excellent opportunities for sharing visual concepts and getting an immediate response, (4), allows college-based supervisors to participate more meaningfully in their child's distance education teaching and learning. (5) provides interactive, easy, and enjoyable experiences, and (6) is a tool for modelling work.

In a series of studies, Mäki (2000a, 2000b, 2001a; 2001b) investigated the utility of VC for different educational purposes. The author investigated the possibilities of VC for practicum of teacher training at the University of Oulu in Finland, in staff development and experiences that the Ziridis School has had when teachers took part in interactive lessons instructed via ISDN-videoconference. Results showed a very positive effect of VC on learning, teaching, and training. Mäki concluded that teachers' experiences of the Ziridis Schools in the use of VC for in-service training have been very positive.

Similarly, Cavanaugh (1999) summarized a quantitative synthesis of studies of the effectiveness of interactive distance education using VC and telecommunications for academic achievement. Effect sizes for 19 experimental and quasi-experimental studies were analyzed. Results from these studies indicated that effect sizes were more positive for VC programs that combine an individualized approach with traditional classroom instruction. Studies of distance education for all academic content areas except foreign language resulted in positive effect sizes.

Kinnear et al. (2002) evaluated the effectiveness of an innovative use of VC in learning and teaching practices in a United Kingdom higher education institution involved in initial teacher education. Students had the opportunity to observe naturalistic teaching practices via VC and had the opportunity for student-teacher interaction and discussion. Five hundred and nine undergraduate students were involved in the study. Semi-structured interviews (with teacher, coordinator, and head of ICT services) together with an online questionnaire were used for data collection. Results indicated that students had noticeable gains in their concentration spans and appeared more aware of their appearances and styles of oral communication. In addition, the use of VC was also found to operate as a form of classroom control.

Following the same path, Howland et al. (2003) described a College of Education's use of Literature Clubs, Starlight Athlete read-alouds, and international classroom collaborations as approached to enhance learning through VC. Results indicated the success of these programs in bridging cultural distance, discussing and understanding similarities and differences, and building relationships.

Olsen (2003) reported four examples of VC use that universities have been using for different purposes to improve on-campus and distance education: First, Duke University uses VC to hold meetings between faculty and staff members in Durham, N.C., and Frankfurt, Germany, two locations where the university offers M.B.A. courses. Second, the University of Arizona uses VC to increase enrolment in its evening-and-weekend M.B.A. program. Third, University of Pennsylvania uses VC to improve education in its business school by bringing executives into the classroom to speak.

In a study that investigated the experiences of teachers and elementary students from the United States and Costa Rica as they participated in a VC project, Szente (2003) stated that the distance learning experience enhanced academic, technological and teamwork skills, and increased students' self-esteem and cultural awareness. Similarly, Cody et al. (2004), in a study where a series of lectures in a normal fifty-minute lecture slot were delivered via VC to a class of 300 undergraduate, second level science students, compared VC to face-to-face instruction. The authors summarized the results in three main points. First, 82% of the students reported little

difference between a videoconference and a normal lecture delivered in a large auditorium. Second, there was overwhelming support for student exposure to experts in the field and third, there was no statistical difference in student performance in a summative assessment task.

**Problem Statement**

The use of videoconferencing (VC) has attracted great attention in different fields, including medicine, business, and education (e.g, Pitcher et al., 2000, Knipe et al, 2002; Kinnearet al., 2002; Faulkner et al., 2002; Sharpe et al, 2003; Olsen, 2003; Szente, 2003; Allen et al., 2003; Cody et al., 2004; Smyth, 2005; Martin, 2005, Phillion et al., 2005, Pesämaa et al., 2007, Allen et al., 2007; and Hanssen et al., 2007**)**. With the advancement of technology infrastructure and broadband data transmission availability, using VC for educational purposes has become feasible and worthwhile.

Although, research on the use of VC technology in education and other fields around the world had been documented, such research in the United Arab Emirates is rare as literature search resulted in only one study. Almekhlafi (2006) investigated the utility of VC technology for classroom observation compared with FTF. Results showed a very high utility of this technology for classroom observation. In addition, the researcher's personal experience using VC and field visits to some schools that have VC capabilities, the researcher concluded that schools and teachers around the country could benefit from VC in different ways such as conducting seminars and workshops, and observing distinguished teachers around the country.

Investigating the utility of VC for observing technology integration in classrooms is important for the following reasons:

- The United Arab Emirates is striving to create a technological society; special efforts have been done to integrate technology into all sectors in the country including schools (Almekhlafi, 2004, 2006). VC technology is taking its place in schools as part of this effort. Ministry of Education and Youth in the United Arab Emirates has already introduced VC technology in some of its schools. Investigating the utility of VC

technology will result in the increase of its use, if it proved effective for teacher education (Almekhlafi, 2006).

- VC technology can reach remote schools that are difficult to visit by students due to time and distance. It can support observation in a variety of classrooms throughout the Emirates rather than visiting schools near the campus. It can support linkages with schools that can provide access to diversity, and technology use.[1]
- Visits to K-12 classrooms by the College of Education's preservice teachers is not easy as they live in university dorms where regulations prohibit going out without the required approval from administration. VC would facilitate doing the task without leaving the university.
- VC technology can bring new opportunities for female preservice teachers as they can observe male schools, which is not applicable in field visits at this time.
- Beginning preservice teachers are generally poor classroom observers. Using VC, pre-service teachers can make observations under the direction of a faculty member and so improve their observational skills (Almekhlafi, 2006).
- Due to the availability of VC technology, it can be a comparatively inexpensive, easily manipulated, user friendly, and flexible.

As classroom visits for preservice teachers are of a paramount importance, some barriers hinder these visits such as time limitation, transportation, and lack of supervisors who can accompany preservice teachers to the schools. Thus, VC can overcome these barriers and, hence, enable preservice teachers see classrooms in action without physically going to schools.

Therefore, the purpose of this study is to investigate preservice teachers' perceptions of the utility of VC for observing technology integration at the schools in the United Arab Emirates. Taking Almekhlafi's

[1] With the exception of local students who live with their parents, UAEU preservice students on the women's campus must be escorted wherever they travel for university initiated or required experiences.

(2006) recommendation into account, this study focused on investigating the use of VC in a course that requires field visits to enable preservice teachers observe technology integration in the classroom.

### Research Questions

This study seeks to answer four questions:

1. How do preservice teachers perceive the utility of using VC for observing technology integration in the classroom?
2. How do preservice teachers perceive the quality of interactions during VC sessions?
3. Is there any significant differences in preservice teachers' self-perception of the utility of VC due to course instructor?
4. Is there any significant differences in preservice teachers' self-perception of the utility of VC due to experience using technology?

## METHOD

### Participants

Study participants were preservice teachers studying "Educational Technology" course at the College of Education, United Arab Emirates University during the academic year 2005-2006. Ninety-four female preservice teachers were involved in the study (no male students were registered in the course). All participants had little or no experience at all with VC technology. Participants were taught by two technology instructors, with appropriate expertise in educational/instructional technology.

### Study context and procedure

Participants observed a series of 6-8 classrooms at a model school at Al-Ain educational zone, Abu Dhabi, United Arab Emirates. The focus of these classrooms was technology integration into the curriculum. The choice of the school was based on: (1) availability of a high quality VC system with fast connection, (2) school administration's willingness to cooperate

with the researcher, and (3) willingness of school's teachers to be observed. It worth mentioning that most of UAE k-12 schools are technology oriented.

A series of VC sessions were conducted, connecting College of Education, United Arab Emirates University with a local school at Al-Ain Educational Zone. Participants were able to observe the classes at the remote site and interact with the teachers and students. After VC sessions, they were given time to complete the questionnaire. In addition, they were able to reflect on this experience using Blackboard discussion forum.

## INSTRUMENTS

### Questionnaire

### Development, Validity and Reliability

The questionnaire used in the study was developed, validated, and piloted in a previous study conducted by the researcher (Almekhlafi, 2006). The questionnaire was refereed and piloted in the academic year 2004-2005. A panel of ten university professors from different specializations such as Curriculum and Instruction, English language, science, and technology refereed the validity of the questionnaire. The range of specialization was included in order to obtain different perspectives. The reliability of questionnaire using Cronbach Alpha was .92.

The aim of the questionnaire was to explore participants' self-perception and attitude towards the utility of using VC for classroom observation. The questionnaire focused on different themes related to VC such as learner-learner interaction, learner-teacher interaction, and learner-content interaction, technical quality, and advantages of VC technology.

Questionnaire items used a 5-point Likert scales extending from extremely high or extremely positive (5) to extremely low or extremely negative (1).

## DESIGN

The study used a quantitative data collection method supported by discussion forums created in Blackboard web-based system. Data were analyzed using descriptive statistics, and multivariate analysis of variance.

In addition, using content data analysis, frequency tables were created for participants' discussion on Blackboard forum and open-ended items in the questionnaire.

## RESULTS AND DISCUSSION

**Question 1** - In responding to question number 1 " How do preservice teachers perceive the utility of using VC for observing technology integration in the classroom?, descriptive statistics showed very high mean scores for the variables investigated (see table 1). Participants perceive a high utility for using VC for observing technology integration in the classroom. The mean scores range was between 3.9 and 4.8 on a 5-point scale. This indicates that preservice teachers highly regard VC technology to be effective and successful for classroom observation.

This high self perception is strongly supported by participants' satisfaction and attitude towards VC technology. Table 1 shows that participants' satisfaction with their participation in VC sessions and with VC technology in general was very high (M=4.6). Similarly, their attitude was positive (M=4.6). Their satisfaction and positive attitude towards VC were reflected by their intent to use this technology in the future (4.4). This high self-perception of the utility of, satisfaction with, and positive attitude towards VC technology could be the results of the good quality of technology used (Table 1). Mean scores for quality of pictures, sent and received audio, and VC at both sites were 4.2, 4.3, and 4.1, respectively on a 5-point scale. According to Vrasidas & Glass (2002), the quality of technology affects the success and shape the structure of the course.

Table (1)

Preservice Teachers' Self-perceptions of the Utility of VC for Technology Integration Classroom Observation

| Variable | M | SD |
|---|---|---|
| **Utility of VC Technology** | | |
| Success of classroom observations via VC | 4.6 | 0.7 |
| Information acquired from observation via VC | 4.5 | 0.7 |
| Classroom observation objectives achievement | 4.4 | 0.6 |
| Utility of VC for achieving educational goals | 4.3 | 0.8 |
| VC saves time and effort needed for field visits | 4.6 | 0.7 |
| Value of VC for the educational system | 4.5 | 0.8 |
| VC enables students to reach to remote schools | 4.8 | 0.6 |
| VC advantages precede its disadvantages | 4.0 | 0.9 |
| I can achieve the task via VC as field visits | 3.7 | 1.0 |
| Overall, VC technology is useful for COE students | 4.6 | 0.7 |
| **Participants' Satisfaction and Attitude** | | |
| Satisfaction with my participation in VC sessions | 4.6 | 0.7 |
| I have a positive attitude towards VC technology | 4.5 | 0.7 |
| Satisfaction with VC technology | 4.6 | 0.6 |
| I intend to use VC in the future for learning | 4.4 | 0.9 |
| My classmates will advice me to use VC | 4.1 | 1.0 |
| **VC Technical Quality** | | |
| Quality of pictures received | 4.2 | 0.8 |
| Quality of sent and received audio | 4.3 | 0.8 |
| Generally, quality of VC at both sites | 4.1 | 0.9 |

**Note.** Categories of questionnaire items were created by the researcher based on factor and item analysis.

In addition, this high self-perception is strongly supported by VC advantages as reported by participants in Blackboard discussion forum and open-ended questions in the questionnaire (see Table 2). Looking at the table, we find that the most prevailing advantage perceived by participants was "saving time, money, and effort needed for actual field visits (f=68). All

participants stated that VC technology could save them the time and effort needed for visiting schools. Participants saw VC technology flexible as it can enable them to observe different aspects of the teaching learning process including students behavior, classroom environment (f=30). In addition, VC was perceived as a method for distance education (f=19) where meetings, interviews, seminars, and workshops could be conducted. Furthermore, VC is a quick and effective way of communication with experts and schools nationally and internationally (f=18). Similarly, the ability to observe classroom clearly via VC (f=18) and the motivating nature of VC (f=18) were among the reasons that led to high self-perception of its utility.

Furthermore, participants reported that VC is an effective communication tool (f=17) where ideas can be exchanged with others. It can increase students' interaction with other students or with instructors. Other advantages reported by participants include "Easy to reach to a wealth of information and resources", "Overcoming geographical barriers and crowded classes ", "Exchanging experience between schools, students, and teachers", " Anytime, anywhere live technology". This result is in an alignment with a number of studies where positive attitude and satisfaction with VC was found (e.g. Pesämaa et al., 2007, Allen et al., 2007; and Hanssen et al., 2007).

It might be argued that face-to-face interaction is lost in the case of classroom observation via VC. In addition, classroom observation can be done via prerecorded video tapes. However, this might be true in some cases, a counter argument is that VC can enable students to reach to remote sites where it is very difficult to do so in normal field visits. Besides, classroom observation via VC, compared to prerecorded video tapes, is conducted live, where all participants at both sites have the chance to interact with each other. Furthermore, classroom observers have the chance to conduct interviews with the teacher and clear any ambiguities regarding what they observed.

Table 2
Frequency of VC Advantages Given by Participants (Open-ended questions and Blackboard Discussion Forums)

| Advantage | f |
|---|---|
| Saving time, money, and effort needed for actual field visits | 68 |
| Flexibility (observing different aspects of the teaching learning process) | 30 |
| Distance ed.: lectures, meetings, seminars, workshops, conferences | 19 |
| Communication with experts and schools (national and international) | 18 |
| Clarity of classroom observation (audio and video high quality) | 18 |
| Motivating, interesting experience, and attention drawer | 18 |
| Information exchange, easy and effective communication | 17 |
| Increasing student-student, and student-teacher interaction | 12 |
| Easy to reach to a wealth of information and resources | 10 |
| Overcoming geographical barriers and crowded classes | 9 |
| Exchanging experience between schools, students, and teachers | 9 |
| Anytime, anywhere live technology | 8 |
| Achieving different objectives and tasks at the same time | 7 |
| Technology availability at all times and ease of use | 6 |
| Sessions can be recoded to be viewed later | 5 |
| Can be used for instruction during emergencies for some teachers | 4 |
| Type of change in teaching methodology and technology use | 3 |

*Note*. The above-mentioned advantages were the results of Blackboard discussions and open-ended questionnaire items.

**Question 2** - In responding to question number 2 "how do preservice teachers perceive the quality of interactions during VC sessions?" descriptive statistics (see Table 3) showed that participants perceived interaction to be high and effective. As Table 1 shows, the interaction between students themselves at both sites, between students and teacher, and between students and content were high. The mean scores ranged from 3.9 to 4.2. This indicated that VC technology affected student-student, student-teacher, and student-content interactions positively. According to Vrasidas & Glass (2002), the more synchronous the interaction, the better it is.

Participants' self-perceptions of the quality of interactions during VC sessions are supported by their discussions in Blackboard forum and responses to the open-ended items in the questionnaire (see Table 2). Participants stated that VC increases interaction between students themselves and students and instructors. This interaction was very clear during VC technology sessions as preservice teachers had the chance to interact with the observed teacher and students at the remote site. This conforms with Ortiz-Rodríguez et al. (2005) results. Researchers indicated that interaction in the form of communication was the factor identified most as contributing to quality in distance education courses.

Table 3

Preservice Teachers' Self-perceptions of the Quality of Interaction during VC sessions

| Variable | M | SD |
|---|---|---|
| My interaction via VC was active | 4.0 | 0.9 |
| Student-student interaction during observation | 3.9 | 0.8 |
| Overall interaction (S_S, S-I, S-C) | 4.1 | 0.8 |
| Student-instructor interaction at the remote site | 4.0 | 0.9 |
| Student-instructor interaction at my site | 4.0 | 0.7 |
| Faculty member's ability to increase students' interaction | 4.2 | 0.8 |
| Student-content interaction | 4.0 | 1.0 |

The following is an example of the interaction that took place between preservice teachers (PT) and the observed teacher (OT) during one of VC sessions.

**PT1**: Do you think that using technology in the classroom is a must?

**OT**: Technology is a tool that the teacher should use when necessary. In other words, the teacher is not expected to use technology to explain every single concept in the lesson.

**PT2**: Do you have enough time to prepare for technology integration in your classes?

**OT**: In fact, time in one major barrier for technology integration in the classroom. Overall, teachers don't have enough time to spend for technology integration planning and usage. On the personal level, I make effort and devote some of my time to technology integration planning. Sometime, I cooperate with my colleague to produce lesson plans that integrate technology.

**PT3**: Do you involve your students in using technology or you just use technology yourself to deliver content?

**OT**: It should be clear from the lesson you have just observed that my students' involvement in technology usage is a major component that I focus on. You have seen Abdullah presenting part of the lesson to his classmates and discussing some concepts with them. This is part of students' usage of technology.

**Question 3 and 4-** To answer question 3 "Is there any significant differences in preservice teachers' self-perception of the utility of VC due to course instructor?", and question 4 "Is there any significant differences in preservice teachers' self-perception of the utility of VC due to experience using technology?", a multivariate two-way analysis of variance was run. Results did not show any significant difference between preservice teachers' self-perception of the utility of VC due to instructor or technology experience they had (see Table 4). The absence of significant differences could be explained by the fact that all participants came from a homogeneous group. All were freshmen students, have just finished the

university general requirements, and probably had the same technology experience. In addition, the instructors were similar in many aspects; each had a Ph.D. degree in educational technology. This indicates that preservice teachers' high self-perception of the utility of VC technology is stable over time. It is not a reaction to the technology per se as might happen in some situations. However, in spite of these encouraging findings, results might not be generalized to all grades and levels due to the fact that: (a) the observed classrooms were from 6-7 grades only, and (b) the study focused only on the use of VC with female preservice teachers.

Table 4

Multivariate Two-way Analysis of Variance: Differences between Preservice Teachers' Self-Perception of VC Utility due to Instructor and Experience with Technology

| Variable | F. | Sig. |
|---|---|---|
| Instructor | 0.58 | 0.1 |
| Technology experience | 0.61 | 0.2 |
| Instructor-experience | 0.68 | 0.4 |

**Conclusion and recommendations**

This study highlighted a number of issues about the use of VC in the United Arab Emirates.

1. VC technology is an effective method for technology integration classroom observation as perceived by preservice teachers.
2. Preservice teachers showed high satisfaction with VC technology and intended to use it in the future. Their attitude toward VC was extremely high.
3. Experience with technology does not have an effect on preservice teachers' perception of VC utility.

4. Instructors may not be able to influence students' self-perception of technology utility.

Based on the results of this study, the following recommendations were made:

1. Further study is recommended to investigate in-service teachers' self-perception of the utility of VC for professional development activities.
2. Another study needs to be conducted comparing male and female teachers' (preservice and in-service) self-perception of the utility of VC for academic purposes.
3. Further studies are needed to investigate the use of VC technology with all k-12 grades.
4. VC technology can be a very important delivery method. Universities and schools should collaborate to take an advantage of this technology, particularly in institutions with geographical or cultural restrictions. VC technology can be used to provide multiple opportunities to view the realities of teaching as well as real examples of the implementation of theoretical concepts.
5. As the success of VC depends on the quality of equipment, institutions concerned should have up-to-date VC technology that enables data fast transmission.
6. College of Education should apply this technology to all courses that require field visits. It should collaborate with Ministry of Education and Youth to facilitate the use of VC technology for both teachers and students.

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