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APPRAISING THE ATTITUDE TOWARDS INFORMATION COMMUNICATION TECHNOLOGY INTEGRATION AND USAGE IN KAZAKHSTANI HIGHER EDUCATION CURRICULUM

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ABSTRACT

Aim/Purpose	The purpose of the study is to examine and understand the attitude of Kazakhstani universities' instructors towards ICT integration into the curriculum and to find out the relationship between instructors' attitudes towards ICT and their actual usage of ICT for teaching and learning processes.
Background	The Kazakhstani government has taken initiatives and developed state programs to integrate information communication technologies (ICT) into all levels of education. According to previous research studies, instructors' negative attitude towards ICT integration into curriculum can affect the implementation of ICT-related initiatives in education including higher education. Therefore, this research study examines the attitudes of Kazakhstani higher education instructors towards ICT integration into curriculum.
Methodology	The study implemented an explanatory sequential mixed methods design. For quantitative and qualitative data collection paper-based questionnaires and semi-structured interviews were used, respectively. Convenience sampling was conducted, and the sample consisted of 102 instructors working in two universities in Kazakhstan. In quantitative data analysis, descriptive and inferential statistics were used; Spearman's rho correlation coefficient was used to identify the relationship between variables.
Contribution	Understanding instructors' attitude towards ICT in education and exploring reasons behind attitudes might be beneficial in accomplishing aims and purposes of governmental ICT-related programs in the higher education system.
Findings	Quantitative data analysis reveals that instructors generally possess positive to very positive attitude towards using ICT in education. Instructors often use simple basic tools such as multimedia presentation software; however, they very rarely use more advanced tools such as discipline-oriented software. No statistically significant relationship was found between attitude and advanced ICT tools. Qualitative data analy-

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	sis identifies several barriers to ICT usage: insufficient or lack of provision of ICT tools and software, lack of technical support, and lack of technical knowledge among instructors.
Recommendations for Practitioners	As a result of the study, it is firstly recommended to university administrations to create and add positions of information technology (IT) specialists, to each department and on a permanent basis. Secondly, it is recommended to provide faculty members with training courses that focus on ICT in pedagogy. Thirdly, universities could ask for guidance from their existing faculty members who are advanced ICT integrators, that is to say, collegial learning should be encouraged more strongly. Finally, universities are recommended to reward those faculty members who are active and effective in their attempts to integrate ICT into teaching.
Future Research	<p>As I was not able to interview those instructors who possessed negative attitude towards ICT in education, I would recommend filling this gap in the future. Interviewing instructors who are reluctant to integrate ICT into teaching can help identify more issues related to using ICT in education which were not discovered in the current research study.</p> <p>Also, the current research study did not investigate instructors' attitudes in relation to their demographic background. Further research studies can examine how instructors' age, gender, place of study, place of work, academic degree, or subject area of teaching influence their attitude towards using ICT in education and their actual usage of ICT in teaching practices.</p>
Keywords	ICT integration into curriculum, attitude towards ICT use in teaching, barriers to integrating ICT into teaching, ICT in higher education

INTRODUCTION

Globalization and technological change are the processes that have accelerated concurrently over the past couple of decades, and which have established a new global economy “powered by technology, fueled by information and driven by knowledge” (Tinio, 2002, p. 3). The beginning of this new global economy has significant implications for the purpose and nature of educational institutions worldwide as well as in the Republic of Kazakhstan. In Kazakhstan, the implication of information and communication technologies (ICT) in the education system, including higher education institutions, is carried out in the framework of the state policy of Informatization of society and education. Informatization of education is a process of implementing a set of measures that transform the educational process through the introduction and integration of ICT into training. Informatization of society and education is considered as the most important mechanism of formation of competitiveness of the national economy in the Message of the ex-President of Kazakhstan, Nursultan Nazarbayev, “Strategy Kazakhstan-2050: new political course of the established state” delivered in 2012, December 15. An important direction of the state policy of informatization of society and education is boosting computer literacy of the general public and professional communities with aims to raise the human capital of the country, to enhance the personal competitiveness of people in the global labor market, and to improve country's competitiveness. Thus, specific areas of informatization of education, including higher education, embodied in the “Concept of entering the top 30 most developed countries” are:

- a. Development and improvement of regulatory and legal support to informatization of society and education;
- b. The development of info-communication infrastructure in educational institutions;
- c. Technological and technical infrastructure support in educational institutions.

To achieve the goals set by the Strategy Kazakhstan-2050 and the Concept, the state programs “Informational Kazakhstan – 2020” and “Informatization of Education” were developed. The priorities of these programs were built upon the purpose of solving the current problem of the educational system identified in the State Program of Education Development 2011-2020 - “underdeveloped informatization of

education” (The Ministry of Education and Science of the Republic of Kazakhstan [MESRK], 2010). Also, as part of the State Program of Education Development 2011-2020, educational organizations are to be equipped with new computers, digital educational resources, necessary hardware and software, and broadband internet. All of these initiatives are being taken because many research-based studies have shown various advantages of using ICT in education. It can play a variety of roles in the learning and teaching processes. For instance, ICT may assist in increasing students' motivation (Osborne & Collins, 2000), facilitate clearer thinking, and develop data interpretation skills (Newton & Rogers, 2003). ICT has other potential benefits such as tools for enhancing science teaching and learning in classrooms (Skinner & Preece, 2003). All of the aforementioned state programs and initiatives imply strong intention of the government to introduce and integrate ICT into education to raise human capital and competitiveness of the country, as well as to influence personal benefits of students in higher education.

However, the provision of equipment only by itself is not enough for successful ICT integration into education. The process of integrating ICT into curriculum is a more complex endeavor than a mere provision of ICT in institutions and requires the active involvement of all stakeholders, main importantly, educators. Educators in Kazakhstan are making progress in learning and using technology, but there is a long way to go. Currently, underuse of ICT and unwillingness to use it from the part of the instructors were observed by several researchers. For example, according to the Organization for Economic Co-operation and Development (OECD) report (2014), the potential of ICT to support innovative teaching is not yet being completely used in Kazakhstan. It says that the review team did not see evidence of technology's regular use in subjects other than computer studies, or of students being encouraged to use them to develop research skills. Also, the report claims that the Kazakhstani government, as part of its modernization effort, is training educators to integrate ICT into classroom activities, but when e-learning was observed in action, students seem to be doing a traditional memory-based test of knowledge, “except that the questions appeared on a computer screen rather than on a blackboard” (OECD, 2014, p. 95).

Moreover, the research conducted in the East Kazakhstan State University named after S. Amanzholov indicates that 67% of instructors were reluctant to use ICT (Sakhariyeva & Serebryanikova, 2012). As instructors do play one of the greatest roles in integration and enhancement of ICT usage among students, this figure of 67% instructors, who are not inclined to use ICT, is too adversely high. The reluctant attitude of the instructors might affect the implementation of the important governmental reforms such as Informational Kazakhstan – 2020 or Informatization of Education. Although the aforementioned study covers only one higher education institution in Kazakhstan, the findings demand further investigation at other Kazakhstani universities.

In summary, if instructors' negative attitude towards ICT integration into curriculum impinges on their usage of ICT for educational purposes, it will lead to wasted money and wasted effort from the part of the government; additionally, students might suffer from the instructors' underuse of ICT as they will not be able to gain necessary technology skills. Therefore, it is important to investigate higher education instructors' attitudes towards ICT integration into curriculum and to find out the relationship between their attitudes and actual usage of ICT in teaching. Finally, to understand the problem more in-depth, the underlying reasons for instructors to possess positive or negative attitudes should be explored.

The purpose of the study was to examine and understand the attitude of Kazakhstani universities' instructors towards ICT integration into the curriculum and to find out the relationship between instructors' attitudes towards ICT and their actual usage of ICT for teaching and learning processes.

There are three research questions to be answered in this study.

- 1: What are the instructors' attitudes towards ICT integration into curriculum?
- 2: How frequently do instructors in Kazakhstani higher education use various ICT tools in teaching?
- 3: Is there a relationship between instructors' attitudes towards ICT integration into curriculum and their usage frequency of ICT in classroom?

LITERATURE REVIEW

Since the purpose of this study is to investigate the attitudes of instructors towards ICT integration into curriculum, the concepts of “ICT” and “attitude” are important to be defined.

There are given many definitions of the concept of ICT in the literature. I will heavily draw on Michiels and Van Crowder (2001), and Zuppo (2012) as they define the term ICT in relation to education. Zuppo (2012) states that mainly education-related studies refer to the term ICT in a broad manner including PCs (personal computers), desktops, laptops, handheld devices and other types of wireless or cable-connected equipment (p. 16). According to Michiels and Van Crowder (2001), “ICTs are technologies that facilitate, by electronic means, the acquisition, storage, processing, transmission, and disseminating of information in all forms including voice, text, data, graphics, and video” (p. 8). In other words, this definition mainly focuses on the importance of ICT that enables new forms of knowledge reception, assimilation, and interactivity.

Similarly, a review of the literature on psychology displays diverse definitions of the concept of “attitude.” Allport’s definition is chosen to be the most appropriate for the context of this research. He defined attitude as “a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual’s response to all objects and situations with which it is related” (as cited in Al-Zaidiyeen, Mei, & Fook, 2010). Putting it differently, attitude is the state of one’s mentality derived from his/her experience which influences one’s response to an object or a situation.

Several studies were conducted to find out whether there is a relationship between instructors’ attitudes towards ICT and their usage of it for educational purposes. As observed by Christensen and Knezek (2008), since the early 1980s a large number of studies have been conducted on attitudinal factors towards ICT in education, and many attitude surveys have shown that there is a strong link between educators’ attitude and use of ICT. For example, Al-Zaidiyeen, Mei, and Fook (2010) and Hue and Ab Jalil (2013) conducted empirical research intending to explore the correlation between these two variables: attitude and usage of ICT. After carrying out surveys with 460 educators in Jordan, Al-Zaidiyeen et al. (2010) concluded that there is a substantial significant relationship between educators’ attitudes to ICT and their usage of those technologies in teaching practices. Whereas Hue and Ab Jalil’s (2013) results of Vietnamese lecturers’ inquiry also showed an analogous situation, the relationship was found to be only slightly significant. Potosky and Bobko (2001) also studied the relationship between attitude towards computers and computer use and concluded that the more positive attitude towards computers predicts the greater computer use. Also, in 2016, Sadaf, Newby, and Ertmer studied preservice teachers’ intention and their actual use of Web 2.0 tools during their student teaching practice, and their findings similarly revealed a significant positive relationship between students’ intentions and their subsequent behaviors.

On the contrary, there are other research studies that show the opposite results. For example, Barak (2007) studied a post-secondary institution’s instructors’ perceptions of ICT and their activities when practicing new technologies. He observed instructors in practice and discovered that only 30% of those who expressed positive attitudes towards technology actually used it for teaching and learning processes. Therefore, Barak concluded that the instructors’ positive attitude towards ICT is not an absolute predictor of their active use of ICT. It is equally important to mention that participants in Barak’s study realized their underuse of computers and expressed strong intention to increase the utilization of ICT in the future as they thought that ICT could promote students’ understanding of their courses.

RELATED THEORIES

Many scientific theories deal with the attitude-behavior relationship in the psychological literature. In this section, the studies most relevant to the objectives of the current research paper are reviewed. Most of the theories related to the attitude-usage relationship regarding ICT are derived from or integrated with the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975). TRA is a model that finds its origins in the field of social psychology. TRA postulates that a person’s behavior is determined by its behavioral intention to perform it, and the intention itself is determined by two basic determinants; first being the attitude towards the behavior, and the second being the subjective norm, which is the person’s perception of the social pressure put on him/her to perform or not perform the behavior. In general, according to

TRA, people are most likely to perform a behavior if they evaluate it positively and if they believe that specific individuals think they should perform it.

In 1985, Ajzen extended TRA to the Theory of Planned Behavior (TPB) by adding another determinant of the behavior – behavioral control. According to TPB, a person will intend to perform a behavior, if he/she positively evaluates the behavior and his/her important others think he/she should perform it, but a person will only be able to turn intention into action if he/she has sufficient control over internal and external factors that affect the performance of the intended behavior.

Unlike TRA and TPB, which are social psychological theories that do not concern ICT directly, the Technology Acceptance Model (TAM) developed by Davis (1989) is a measurement scale for predicting a person's behavior towards using computers. According to TAM, two variables that are fundamental determinants of computer usage are perceived usefulness and perceived ease of use. The perceived usefulness is defined as “the degree to which a person believes that using a particular system would enhance his or her job performance”, and the perceived ease of use is “the degree to which a person believes that using a particular system would be free of effort.” In 2000, Venkatesh and Davis extended TAM to TAM2 by adapting TRA and TPB and adding another predictor of usage – subjective norm.

Apart from the TRA-based studies, there is Model of Personal Computer Utilization (MPCU) developed by Thompson, Higgins, and Howell (1991). MPCU derives from the Theory of Human Behavior (THB) (Triandis, 1977), which presents a competing perspective to that proposed by TRA and TPB. Thompson et al. (1991) adapted MPCU from THB and applied it into ICT domain and to predict individuals' personal computer usage. MPCU consists of six core constructs: job-fit, complexity, long-term consequences, effect towards use, social factors, and facilitating conditions. Job-fit is “the extent to which an individual believes that using [a technology] can enhance the performance of his or her job”; Complexity is “the degree to which an innovation is perceived as relatively difficult to understand and use”; Long-term Consequences are “outcomes that have a pay-off in the future”; Affect Towards Use is “feelings of joy, elation, or pleasure, or depression, disgust, displeasure, or hate associated by an individual with a particular act”; Social factors are “the individual's internalization of the reference group's subjective culture, and specific interpersonal agreements that the individual has made with others, in specific social situations”; and one example of Facilitating Conditions is “the provision of support for users of PCs” (Thompson et al. 1991).

Finally, there is The Unified Theory of Acceptance and Use of Technology (UTAUT), which integrates elements of different previous theories and models (Venkatesh, Morris, Davis, & Davis, 2003). UTAUT presents four direct determinants of ICT acceptance and usage and provides key moderators and specifies their roles. The four constructs that play a significant role as direct determinants are performance expectancy, effort expectancy, social influence, and facilitating conditions. Performance expectancy is the degree to which a person believes that using the system will help him/her to attain gains in job performance. Effort expectancy is the degree of ease associated with the use of the ICT, similarly to perceived ease of use in TAM. Social influence is the degree to which an individual perceives that important others think he/she should use the ICT, similarly to the subjective norm in TRA. Facilitating conditions are defined as the degree to which a person believes that an organization infrastructure is enough to support the ICT use, similarly to behavioral control in TPB. Also, UTAUT identifies such variables as gender, age, experience and voluntariness of use as key moderators of intention and behavior towards ICT.

REASONS AND IMPORTANCE OF INSTRUCTORS' POSITIVE ATTITUDES TO ICT

In 1983, Harvey foretold that the effective integration of ICT in the educational sector might be one of the most significant factors in determining a country's success in the future. The effectiveness of ICT integration, in turn, is determined by many factors. For example, sufficient provision of access to technology, technical support, time, training, and presence of positive attitude towards ICT play an indispensable role in the enhancement of ICT integration into educational processes (Bingimlas, 2009). In 2002, Baylor and Ritchie's study of factors related to educational technology showed that “regardless of the amount of technology and its sophistication, technology will not be used unless faculty members have the

skills, knowledge, and attitudes necessary to infuse it into the curriculum” (p. 398). It means that despite the given appropriate provision of technology and technical support, the full potential of ICT to support innovative teaching in educational organizations cannot be completely used unless instructors have a positive attitude towards it as well as necessary skills and knowledge.

The level of positivity of educators’ attitudes can differ depending on several factors (Gilbert & Kelly, 2005; Kale & Goh, 2014; Teo, 2009; Teo, Lee, & Chai, 2008). For example, according to Gilbert and Kelly (2005), who studied TAM, university teachers’ “desire for adoption” of ICT heavily depends on perceived ease of adoption and perceived usefulness of ICT for enhancement of teaching and learning processes both in and out of classroom activities. Also, many researchers and educators have contributed to the investigation of the importance of instructors’ attitudes when integrating ICT into educational environment, and in most cases they agree with the point that instructors’ attitudes towards ICT are among the major factors that influence both the acceptance of ICT and future behavior regarding the ICT usage (Baylor & Ritchie, 2002; Christensen, 1997; Kersaint, Horton, Stohl, & Garofalo, 2003; Kluever, Lam, Hoffman, Green, & Swearingen, 1994; Player-Koro, 2012; Watson, 1998; Woodrow, 1992)

Another benefit of instructors’ positive attitudes towards ICT was identified by Kluever et al. (1994); the researchers studied whether instructors profited from computer training courses and collected pre-course and post-course tests. They had an interesting finding that less technologically capable instructors who had positive attitudes towards computers were more successful in learning the skills necessary for the implementation of technology-based activities in the classroom.

Additionally, the research conducted by Christensen (2002) in Texas, the USA, shows that instructors’ attitudes towards computers affect not only their own computer experiences but also the experiences of the students they teach. It was suggested that attitudes towards computers affect both instructors use of computers in the classroom and the likelihood of students’ benefiting from training (p. 412). Finally, as claimed by Woodrow (1992), any successful transformation in educational practice requires the development of positive attitudes from the micro-level of educational environment i.e. from instructors and students.

RELUCTANCE TO USE ICT IN EDUCATION AND ITS REASONS

It goes without saying that not all teachers share the same perspectives and opinions about ICT and its benefits. Besides positively disposed standpoints of some, there is another group of instructors that are not willing to integrate technologies into their teaching practices. This unwillingness defined to be one of the most difficult barriers for effective ICT integration (Ertmer, 2005; Galanouli, Murphy, & Gardner, 2004; Mumtaz, 2000; Sife, Lwoga, & Sanga, 2007). Therefore, many studies were conducted to explore the underlying reasons for the negative attitudes of some educators at educational institutions towards ICT usage in teaching. For example, the building blocks of reluctance to use ICT might be faculty’s lack of sufficient technology training and faculty’s self-efficacy (whether an instructor believes or not in her/his technical competency) (Reid, 2014).

Other “affective components” identified by Jegede, Dibu-Ojerinde, and Ilori in 2007 include instructors’ “possible fear ... hesitation or discomfort in computer use” (p. 173). All in all, if an educator does not find a computer useful or easy to use, or if one feels discomfort using technology or is afraid to use it, then most possibly he or she will have a negative attitude towards ICT and will not be willing to integrate it into classroom activities. Jegede et al. (2007) distinguish yet another component that can affect instructors’ attitudes towards ICT, which is perceived control (p. 173). The researchers claim that a user’s perceived capability to control technology may greatly influence his/her attitudes towards a technology; moreover, person’s frequency of computer usage can also be impacted by a person’s belief about his/her ability to manage and operate ICT safely (p. 174). Finally, an increase in workload was identified among reasons for instructors’ reluctance to teach using ICT by some researchers. For example, Cuban, Kirkpatrick, and Peck (2001), Keengwe, Onchwari, and Wachira (2008) and Bingimlas (2009) stated that due to time limitations and workloads connected with their jobs, instructors become unwilling to use ICT in teaching. However, instructors’ feelings on whether ICT makes their jobs easier or adds to their workloads differ from one study to another. Thus, for example, Balanskat, Blamire, and Kefala (2006) maintained

that ICT helped educators to work more time efficiently, particularly through its feature of quick information access.

All in all, ICT implementation in higher education and frequency of its usage by faculty members might be restricted by instructors' reluctance or negative attitudes towards ICT usage in teaching, and reluctance or negative attitude might, in turn, be caused by other factors. As stated by Kreijns, Vermeulen, Kirschner, Buuren, and Acker (2013) variables that might affect ICT integration into curriculum include – micro-level factors (individual differences, incentives to change, gender), meso-level factors (ICT infrastructure, technical support, educational organization policies), and macro-level factors (national ICT in education policies, government financial support). Similarly, Mahdum, Hadriana, and Safriyanti (2019), who studied teacher perceptions of ICT use in Indonesia, also observe that because of meso-level factors, a positive perception of teachers cannot guarantee successful ICT use in teaching and learning activities. The current research study does not neglect these additional factors. During the qualitative data collection and analysis phases, these factors were brought up by the participants; they were taken into consideration and analyzed (see Discussion part).

Regarding the situation in Kazakhstan, Fimyar, Yakavets, and Bridges (2014) claim that instructors in Kazakhstan still tend to utilize “e-learning resources as an extension of the textbook rather than as something offering a much more diverse, interactive and challenging resource for learning” (p. 64). While the study by Fimyar et al. (2014) concerns secondary school instructors, there is only one research conducted on the instructors' attitudes toward ICT use in higher education. According to Sakhariyeva & Serebryanikova (2012), 67% of instructors in East State Kazakh University were reluctant to use ICT for educational purposes. This figure represents only one particular university instructors' unwillingness to use ICT, and no research is found to study other Kazakhstani universities' faculty's attitude towards using ICT in teaching.

Additionally, the Kazakhstani Independent Agency's for Quality Assurance in Education (IQAA) issued the National ranking of the best technical universities in the Republic (as cited in Zerde, 2016). According to Zerde (2016), the analysis of these ratings showed that the professional retraining ICT courses addressing higher education instructors lag far behind the requirements of the modern age.

In conclusion, some researchers observed and stated that the problem of teacher underuse of ICT exists in Kazakhstan. However, there is a scarcity in studies about Kazakhstani higher education instructors' attitudes towards integrating technology into curriculum and its relationship with the actual usage of ICT in a classroom. As it becomes clear from the literature review, educators' attitudes affect their behaviors and have a significant effect on reflecting and implementing changes; moreover, it becomes clear that instructors' attitudes have been found to be the main predictor of the ICT usage for instruction. Therefore, it is important to study Kazakhstani HE instructors' attitudes towards ICT integration into curriculum and the use of ICT in the classroom in order to have an entire vision of current level of ICT integration and to have an opportunity to predict instructors' future behavior towards ICT as well as the successfulness of ICT integration into higher education curriculum.

RESEARCH METHODOLOGY

RESEARCH DESIGN

A mixed methods approach was used to address the research questions. According to Creswell (2014), researchers employ mixed methods “when one type of research (qualitative or quantitative) is not enough to address the research problem or answer the research questions” (p. 565), or, in other words, a mixed methods study is conducted when “more data is needed to extend, elaborate on, or explain the first database” (p. 565). There are several designs in which a mixed methods approach can be carried out. For this current study, an explanatory sequential design was used. An explanatory sequential mixed methods design consists of two phases. First, quantitative data is collected, and then qualitative data is collected to elaborate on the quantitative results (Creswell, 2014, p. 572). So, the explanatory sequential design is an appropriate research design for this study as this study aims to identify general tendencies of instructors' attitudes towards ICT integration into curriculum and their usage frequency of ICT (quantitative phase)

and to understand the reasons behind attitudes and usage frequency (qualitative phase). Thus, employing explanatory sequential design is an appropriate way to accomplish the purpose of this study.

SAMPLING

To select the participants for the study convenience sampling was used. The two universities participated are the largest in Nur-Sultan; one has over 15000 and another over 5000 students. 20 departments within two universities were chosen as a result of convenience sampling; all the instructors who were available, when I visited the two universities, participated in the survey, totaling in 102 participants. The specialization of the faculty/participants varied from Mechanics and Mathematics, Architecture and Civil Engineering, Physics and Technology, Transport and Energy to Law, Philology, Economics, and Journalism.

The participants for the qualitative phase of the research were also identified by their availability. At the end of the questionnaires, the respondents were asked to leave their names and contacts to voluntarily participate in interviews. Twenty-five respondents left their contacts, and nine of them were interviewed due to their availability.

INSTRUMENTS

The survey instrument for the research was drawn from two existing questionnaires (Appendix A). The first section of the questionnaire measures instructors' usage frequency of different ICT tools in teaching. It was adapted from Isleem (2003), who studied innovation acceptance of university lecturers in Ohio, the USA. The second section of the questionnaire was used to measure the attitudes of university instructors towards ICT integration into curriculum. It was adapted from Jamieson-Proctor, Watson, Finger, Grimbeek, and Burnett (2007), who underpinned the instrument by a sound theoretical basis and conducted an extensive evaluation process of the instrument. Finally, to ensure that all respondents have a complete understanding of the instrument used, the questionnaires were translated from English to Kazakh and Russian languages. The questionnaires were prepared in two languages so that participants could choose the language they are confident with; 100% of all respondents preferred the questionnaires in the Russian language. An interview protocol was developed as an instrument for the qualitative data collection (Appendix B).

DATA COLLECTION PROCEDURES

After identifying and selecting sites and participants, creating the instrument for the study, I visited the research sites; the survey was distributed in paper-based form. I was inclined to choose paper-based form rather than online form because according to Nulty (2008), "online surveys are much less likely to achieve response rates as high as surveys administered on paper" (p. 302). Concerning the structure of the administered survey papers, the beginning part of the survey describes the research study briefly, guarantees confidentiality to a person, and asks a person to proceed if he/she agrees with the ethics.

The questionnaire described above was handed out and the instructions on how to complete them were provided. In general, each respondent took approximately 20 minutes to complete the questionnaire. Finally, all the data were collected and prepared for quantitative data analysis.

For qualitative data collection, the participants were contacted individually and asked for further voluntary participation in the research. After getting agreement for the interview, the place and time of the interview were agreed with individuals. A one-on-one semi-structured interview was employed to get qualitative data for the research because one-on-one interviews have several advantages over other forms of interviews, for example, synchronous communication in time and place, which gives an advantage of getting social cues. The interviews were recorded, and audio was transcribed into Microsoft Word Program; then I explored the general sense of the data by memo-ing ideas and concepts. The next step was coding the data by dividing it into segments such as open coding, axial coding and gathering codes into themes. Finally, codes and themes derived from the data analysis helped to form the main idea of the database.

ETHICAL CONSIDERATIONS

The research was carried out in compliance with ethical principles and standards. Participation in the study was on a voluntary basis; therefore, I made participants of the survey aware that they were free to decide not to participate or to withdraw at any time without any consequences. Then, the participants were informed about the study, its purpose and nature.

The potential risk for the participants is that they can be given disapproval or criticism from the part of their administrators in case the responses reported in the paper are dissatisfactory for management. Therefore, I protect the participants' identities. Neither names of participants, nor the names of the universities and departments where they teach are disclosed in the papers. To ensure the rights of participants, I developed an Informed Consent Form. The Informed Consent Form describes the purpose, nature, and risks of the study, research participants' rights, participation time, and provides contact information for special cases.

FINDINGS OF THE QUANTITATIVE PHASE

Cronbach's alpha reliability coefficient (α) was calculated to estimate the reliability of the responses to the questionnaire measuring the attitude of instructors towards ICT. According to George and Mallery, the rule of thumb for interpreting the Cronbach's reliability coefficient is "Excellent (greater than 0.9), Good (greater than 0.8) Acceptable (greater than 0.7) Questionable (greater than 0.6), Poor (greater than 0.5), and Unacceptable (less than 0.5)" (as cited in Gliem & Gliem, 2003). The Cronbach's reliability coefficient estimated for the questionnaire measuring attitude is 0.92, so the internal consistency of the given questionnaire items - that is -the measure of how closely a set of items in the questionnaire are related as a group is high (see Table 1).

Table 1. Cronbach's Alpha

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.923	.924	19

In order to analyze the data collected, I have implemented the descriptive statistics; namely, the mean value (M) is used to determine the central tendency, standard deviation (SD) is used to show the variability of the responses, and finally grand mean value is calculated to identify the actual attitude of instructors towards ICT integration into curriculum. Grand mean of 0 means very negative attitude, 0.1-0.9 – negative, 1-1.9 – neither negative nor positive, 2-2.9 – positive, and 3-4 very positive attitude towards ICT integration into curriculum. The result of the questionnaire is as following (see Table 2):

Table 2 reports that the mean values for all items in the questionnaire range from the minimum score of 2.51 to the maximum score of 3.14. On a scale of 0 to 4, where 0 represents strong disagreement and 4 means strong agreement, we can see that instructors mostly agreed with seven items of the questionnaire.

Table 2. Means and Standard Deviations for Instructors' Attitudes towards ICT Integration into Curriculum

ICT INTEGRATION INTO CURRICULUM HELPS STUDENTS TO...	M	SD
1. acquire the skills to deal with an ongoing <i>technological change</i>	3.14	0.64
2. develop functional competencies <i>in a specified curriculum area</i>	3.02	0.77
3. synthesize their knowledge	3.01	0.71
4. actively construct their own knowledge in collaboration with their peers and others	3.05	0.69
5. actively construct knowledge that integrates curriculum areas	2.90	0.82
6. develop a deep understanding about a topic of interest relevant to the curriculum area/s being studied	3.04	0.77
7. develop a scientific understanding of the world	2.90	0.88

ICT INTEGRATION INTO CURRICULUM HELPS STUDENTS TO...	M	SD
8. to provide motivation for curriculum tasks	2.85	0.86
9. plan and/or manage curriculum projects	2.97	0.81
10. integrate different media to create appropriate products	2.72	0.85
11. engage in sustained involvement with curriculum activities	3.08	0.77
12. demonstrate what they have learned	2.90	0.85
13. undertake formative and/or summative assessment	2.82	0.90
14. acquire an awareness of the global implications of ICT-based tools on society	2.55	1.00
15. gain intercultural understanding	2.51	0.90
16. critically evaluate their own and society's values	2.83	0.85
17. communicate with others locally and globally	3.03	0.89
18. to engage in independent learning through access to education at a time, place and pace of their own choosing	2.91	0.84
19. understand and participate in the changing knowledge economy	2.88	0.87

As each item alone does not represent an instructors' attitude entirely, the responses from each were aggregated into a grand mean score. Table 3 shows the grand mean of attitudes toward ICT from all respondents.

Table 3. Grand Mean Score for Instructors' Attitude towards ICT Use in Teaching

	MINIMUM STATISTIC	MAXIMUM STATISTIC	GRAND MEAN	SD OF GRAND MEAN
The aggregate of the scores to the questionnaire items	2.51	3.14	2.90	0.17

Table 3 reports that the grand mean value for the questionnaire is 2.90, and the standard deviation is 0.17. According to the scale provided on page 7, the grand mean value of 2.90 indicates that the respondents in this study generally possess positive attitude towards ICT integration into curriculum. Taking into account that 68% of the scores fall between +1 (34%) and -1 (34%) standard deviations from the mean, and 95% of the scores fall between +2 (34%+13.5%) and -2 (34%+13.5%) standard deviations from the mean, we can see that 95% of all respondents in the study have positive or very positive attitude towards ICT integration into curriculum. The following calculation identifies the range of scores of two standard deviations above and below the grand mean (2.90):

$$2.90 + 0.17*2 = 3.24$$

$$2.90 - 0.17*2 = 2.56$$

So, the respondents falling in +2 standard deviations possess very positive attitude, and the respondents falling in -2 standard deviations possess positive attitude towards ICT integration into curriculum. Therefore, from the data analysis above, one can see that 95% of all instructors surveyed under this research study have positive to very positive attitude towards integration of ICT into education.

Frequency of ICT usage

To answer the second research question, which is about the instructors' usage frequency of different technology tools in teaching, I have analyzed the second part of the questionnaire, which was adapted from was Isleem (2003). The output of the descriptive statistics is shown in the following table:

Table 4. Usage Frequency of ICT Tools

ICT TOOLS	Very often	Often	Sometimes	Rarely	Never
1. Multimedia presentation tools	21.1%	41.1%	28.2%	4.7%	4.7%
2. Internet, web applications	25.8%	37.6%	17.6%	11.7%	5.8%
3. Simulation tools	7%	20%	24.7%	16.4%	31.7%
4. Graphics	5.8%	30.5%	24.7%	21.1%	17.6%
5. Spreadsheet program	9.4%	23.5%	34.1%	16.4%	16.4%
6. Word process	50.5%	24.7%	16.4%	3.5%	4.7%
7. Drill and practice software	9.4%	21.1%	27%	18.8%	23.5%
8. Discipline oriented software	3.5%	29.4%	30.5%	14.1%	22.3%
9. Authoring tools	4.7%	12.9%	23.5%	23.5%	35.2%
10. Interactive whiteboard	20%	18.8%	17.6%	21.1%	22.3%

Some examples of the tools presented in Table 4 are: Simulations - Sinumerik 840D for mechanical engineering, SolidWorks for architecture and construction; Drill and practice software – Quizlet, Math Board, Flashcard+; Discipline oriented software - ArcGIS for geography, MatLab for mathematics; Authoring tools – Adobe Captivate, Knowledge PresenterX, GoAnimate.

Table 4 reports that the most frequent tool used among higher education instructors in Kazakhstan is Word processing tools (50.5% and 24.7% of the respondents answered that they use Word processing tools very often and often, respectively). Then, Web applications are reported to be used very often by 25.8% of instructors, and often by 37.6% instructors in universities. The third most often used tool is Multimedia presentation tools; 21.1% and 41.1% of surveyed instructors responded that they use Multimedia presentation tools very often and often respectively in their teaching activities.

The lowest frequencies of ICT usage are seen in items such Simulations (31.7% and 16.4% of participants answered they never and rarely use Simulation tools, respectively), and Discipline oriented software (22.3% of participants answered they never use Discipline oriented for teaching purposes).

To answer the third research question about the relationship between instructors' attitude towards ICT integration into curriculum and their actual usage of ICT in classroom, and to test the null hypothesis - H_0 : there is no relationship between instructors' attitude towards ICT integration into curriculum and usage frequency of ICT - inferential statistics were used. According to Muijs (2010) when researchers need to find whether there is a relationship between one ordinal and one continuous variables, they need to use Spearman's rho rank-order correlation coefficient. Thus, I have calculated the correlation between instructors' attitude towards ICT integration into curriculum and their actual usage of ICT using SPSS program and running Spearman's rho correlation coefficient and set an alpha level of 0.05 for this statistical test; the output is provided in the following table (see Tables 4a and 4b).

Table 5a. Relationship between Attitude and Usage Frequency of ICT Tools

			Multimedia presentation tools	Web Applications	Simulations	Graphics	Spreadsheet Program
Spearman's rho	ATTITUDE	Correlation Coefficient	.249*	.265*	.183	.120	.153
		Sig. (2-tailed)	.022	.014	.095	.275	.161
		N	85	85	85	85	85

*. Correlation is significant at the 0.05 level (2-tailed).

Table 5b. Relationship between Attitude and Usage Frequency of ICT Tools

			Word Process	Drill & Practice Software	Discipline Oriented Software	Au- thoring Tools	Interactive White-board
Spearman's rho	ATTITUDE	Correlation Coefficient	-.090	.122	.140	.174	.168
		Sig. (2-tailed)	.413	.265	.202	.111	.123
		N	85	85	85	85	85
*. Correlation is significant at the 0.05 level (2-tailed).							

Part A and Part B of Table 5 report about the relationship between instructors' attitudes towards ICT integration into curriculum and their usage of different ICT tools. A two-tailed test of significance indicated that there was a significant positive relationship between respondents' attitude towards ICT integration into curriculum and usage frequency of only two ICT tools. First, a significant positive relationship is found between respondents' attitude towards ICT integration into curriculum and usage frequency of Multimedia presentation tools $r_s = .245$, $n = 85$, $p < 0.05$. Similar pattern is identified about instructors' usage of Web applications $r_s = .265$, $n = 85$, $p < 0.05$. The more positive attitude is possessed by the instructors the more frequently they are inclined to use Multimedia presentation tools and Web applications. As for testing the null hypothesis significance threshold was set at 0.05, and as the two-tailed test of significance identified p -value to be less than 0.05 for the relationship between respondents' attitude and usage frequency of Multimedia presentation tools and Web applications, I reject the null hypothesis regarding these two tools.

However, Spearman's' rho rank-order correlation coefficient identified that the instructors' usage frequency of the remaining eight ICT tools are not correlated to their attitudes towards ICT: Simulations ($r_s = .183$, $n = 85$, $p = .95$), Graphics ($r_s = .120$, $n = 85$, $p = .275$), Spreadsheet program ($r_s = .153$, $n = 85$, $p = .161$), Word processing tools ($r_s = -.09$, $n = 85$, $p = .413$), Drill and practice software ($r_s = .122$, $n = 85$, $p = .265$), Discipline oriented software ($r_s = .140$, $n = 85$, $p = .202$), Authoring tools ($r_s = .174$, $n = 85$, $p = .111$), and Interactive whiteboard ($r_s = .168$, $n = 85$, $p = .123$). This conclusion is based on p values that exceed the significance threshold set at 0.05. Therefore, I fail to reject the null hypothesis regarding these eight tools.

In summary, statistical analyses show different results according to different ICT tools. On one hand, only the usage of Multimedia presentation tools and Web applications showed a significant relationship with instructors' attitudes towards ICT integration into curriculum. On the other hand, usage of the other eight ICT tools did not show any relationship with instructors' attitudes towards ICT integration into curriculum. However, keeping in mind that the concept of ICT was defined to include all the variety of technology tools, meaning not merely presentation tools and internet, I conclude that instructors' attitude towards ICT integration into curriculum does not predict usage frequency of different advanced ICT tools in teaching.

DISCUSSION OF THE QUANTITATIVE AND QUALITATIVE FINDINGS

KAZAKHSTANI INSTRUCTORS' ATTITUDE TOWARDS ICT INTEGRATION INTO CURRICULUM

To answer the first research question about instructors' attitude towards ICT integration into teaching, instructors of two universities in Nur-Sultan were surveyed. The results of the survey revealed that 95% of instructors under this study possessed positive and very positive attitude towards integrating ICT in curriculum. Foremost, this finding contradicts with the findings of Sakhariyeva & Serebryanikova (2012),

who found that 67% of university instructors in East Kazakhstan were reluctant to use ICT for educational purposes. This contradictory finding may be due to several factors. For example, different survey instruments used in my and their research studies might have influenced different outcomes, or, in fact, positive attitude toward using ICT in teaching and unwillingness to use ICT in teaching might be influenced by the fact that participants of my research study work in universities in the capital city, whereas Sakhariyeva's and Serebryanikova's (2012) participants were from the regional university. According to the President of National Centre of Informatization of Education, Nurgaliyeva (2009), there are no standards on universities' ICT infrastructure approved on the national level in Kazakhstan. Informatization of higher education programs is localized and is regulated by local conditions and various financial opportunities i.e. educational institutions in the capital city might have access to better ICT resources, which, in turn, can contribute to instructors' positive attitude. Therefore, possibly the difference in instructors' attitudes towards using ICT in education is related to different levels of informatization of education in different regions of the country. Finally, this mismatch between Sakhariyeva's and Serebryanikova's (2012) study and mine might happen due to sampling techniques. As implementing random sampling presented many challenges, I eventually employed convenience sampling. Thus, my participants might have had a mainly positive attitude possibly due to the nature of the sampling procedure.

Additionally, findings derived from qualitative data analysis elaborate on the quantitative findings about instructors' positive attitude towards ICT usage in teaching. Interviews with the participants helped to understand what makes instructors willing to integrate ICT into education. The most constantly mentioned reason was meeting the demand of the Technology Age, i.e. instructors recognized that in the 21st century, higher education has to provide and teach ICT skills to students in order to make them competitive in a global labor market and contribute to a country's competitiveness as well, which has become especially necessary in the era of globalization. It means that instructors agree with the thoughts reflected in the ex-President's Message "Strategy Kazakhstan - 2050" delivered in 2012; this message identifies the informatization of education as the most important mechanism of formation of competitiveness of the national economy. Also, this kind of view is not unique to Kazakhstani higher education instructors. In her discussion of rationales and influencing factors for worldwide policies about ICT in education, Tilya (2008) maintains that for most countries, developing human capital and raising wealth and competitiveness are among the main driving forces for the introduction and integration of ICT in education.

From the qualitative findings, only one factor was identified that could affect instructors' attitude towards using ICT in teaching: increased workload. As evident in the Literature Review chapter, instructors' feelings on whether ICT makes their jobs easier or harder differ from one study to another. In this research study, interviewees also differed in their views on whether teaching with ICT takes too much time or not. Whereas one participant thought it was a problem for her, all others did not consider it as a problem. Therefore, the research finding refutes Keengwe et al.'s (2008) and Bingimlas's (2009) conclusion, which state that because teaching with ICT requires more time than teaching with traditional methods, instructors are likely to become unwilling to teach with ICT. However, it neither conforms to Balanskat et al.'s (2006) conclusion, which states that ICT helps instructors to work more time efficiently. It is because the participants in my study did not articulate that ICT helps them save time and work more efficiently, but they just maintained that added workload or more preparatory time do not affect their attitude towards teaching with ICT.

In 2005, Gilbert and Kelly found that an instructor's attitude towards ICT usage in teaching depends on perceived usefulness and perceived ease of ICT use. The qualitative findings of the current research study do not totally correspond to Gilbert and Kelly's (2005) findings. Whereas half of the interviewees said that they have sufficient technology training to run ICT tools and software of any complexity, another half said that they would need additional training to run complex ICT tools and software; however, all of them had very positive attitude to ICT usage in teaching. To reiterate, although some participants of the study reported a lack of technology training, their attitude towards ICT use in teaching was nevertheless just as positive as of those with perceived sufficient ICT training. Similarly, the finding also only partially corresponds to Reid's (2014) judgment, who wrote that if faculty has low self-efficacy in ICT skills, he/she will most likely have negative attitude towards ICT use in teaching. Some participants expressed high confidence in their ICT skills, while some others said that they would need to improve their ICT skills to be confident ICT users; however, all of them had very positive attitude towards using ICT in

teaching. Therefore, the findings of this study disagree with previous studies which state that those faculties who lack sufficient technology training and have low self-efficacy will have negative attitude towards using ICT in education. This mismatch between other and my research studies might again happen due to the sampling procedure. As a result of convenience sampling, I could end up surveying mostly those instructors who strongly advocate for ICT integration into education, notwithstanding their technical knowledge or skills.

Furthermore, the qualitative findings of the research study also provide another factor which can influence instructors' attitude towards ICT use in teaching that was not covered in the literature previously. Namely, "students' positive feedback" was the factor mentioned by the participants. Specifically, interviewees said that they use different ICT tools to increase students' interest in studies and activities in the class, and admitted that seeing students' positive reactions make them more enthusiastic about integrating ICT in teaching. Thus, in addition to "perceived ICT usefulness" and "perceived ease of use" suggested by Gilbert and Kelly (2005), "students' reaction" is another factor contributing to instructors' attitude towards ICT integration into teaching processes.

FREQUENCY OF ICT USAGE IN KAZAKHSTANI HIGHER EDUCATION

To answer the second research question about instructors' usage frequency of different ICT tools, the data collected from the survey questionnaires were analyzed. According to quantitative data analysis, participants of the research study use word processing tools very often, and web application and multimedia presentation tools often in their teaching practices.

However, other more advanced tools such as discipline oriented software, authoring tools, and simulations are used much less among instructors. The qualitative data analysis identified some possible reasons for this discrepancy in usage frequency of different ICT tools. As it was mentioned in the Literature Review chapter, even if instructors possess positive or very positive attitude towards ICT integration into curriculum, they may still face barriers that prevent frequent use of ICT. Ertmer (1999) categorized these barriers as first-order (extrinsic) and second-order (intrinsic) barriers. In interviews, the participants reported having both types of barriers. For example, the main first-order barriers (extrinsic) faced by the participants were lack of technical provision and lack of technical support. The instructors possessed positive to very positive attitude towards integrating ICT into their teaching, also they perceived having sufficient knowledge to use ICT tools effectively in teaching; however, the obstacle to employ their attitude and knowledge was lack or insufficient technology provision and lack of technical support in their universities. For example, Participant 1, who teaches economics, expressed dissatisfaction with current ICT provision in her university; she said:

When I worked in Almaty, we had a specific software package, which demonstrates macroeconomic indexes. For example, there is a package where students can just set parameters in, and produce ready graphs out. By using this software, students would be able to find index values by themselves . . . I asked the university [to order these packages], but it is not working yet.

Also, many participants were unhappy with the technical support of their universities. For example:

I think the university should pay more attention to the level of technical support . . . I am personally not satisfied with the current conditions. We have serious problems with technical defects happening often, with computers not recognizing the simplest formats, with projectors sometimes lacking power, and with the internet which has too slow speed. All of them create barriers to effective ICT integration into teaching. (Participant 2)

These thoughts were reflected in another participant's comments:

For teaching, we use software called MatLab, but working with this software takes so much time. It is too old, we need to update it. To update it, we need IT specialists . . . Indeed, in terms of using information technologies [in education], we are lagging behind. Decent attention should be paid to technical support for enhancing the situation. (Participant 6)

Thus, the unavailability of advanced ICT tools, poor quality of available software, and lack of technical support hinder instructors from frequent and effective use of various ICT tools. This finding corresponds

with previous studies (Ertmer, 1999; Jegede et al., 2007; Jones, 2004; Young, 2004) which state that lack of ICT provision and technical support directly affects ICT integration into curriculum.

Furthermore, qualitative findings report that even if instructors wanted to utilize available ICT tools frequently and effectively, they could not because of inadequate technical knowledge. For instance, one participant mentioned a software called ArcGIS, which is available in her department. However, she could not use it because she had no adequate knowledge to utilize that software. She said:

ArcGIS allows creating maps based on existing ones or new maps; however, we cannot do that because our faculty members do not have enough qualification. We can only do basic things like processing, decrypting, and lashing. Therefore, our students only get superficial knowledge, meaning only basics, because we cannot give them highly professional knowledge. (Participant 4)

She explained that to be a confident user of ArcGIS one should obtain special training on it because this software is very difficult to use. The basic knowledge that the faculty learned is achieved through their self-study and personal initiatives. In addition to Participant 4, other four respondents, who thought they needed to improve their ICT skills, made a recommendation to provide general and specific (as with ArcGIS) training courses to those faculty members who have difficulties with teaching with ICT or are interested in improving their current qualification level because inadequate level of instructors' technical knowledge is creating underuse of available ICT tools. Also, some instructors recommended providing courses that are really applicable to their universities' contexts. For example, Participant 7 said that her university once offered a course that introduced specific software in teaching. However, Participant 7 found this course pointless and useless because the software was not available in their university, and now since she never used that software afterward, she had forgotten everything from that course. Finally, interviewees mentioned another problem regarding training courses. According to interviewees, the process of participant selection for training courses or the process of issuing certificates should be more rigorous because people tend to attend courses not because of the intention to learn, but because of certificates. "When you talk about training courses, the first thing instructors would ask is 'will we be given certificates?'" said Participant 6. This thought was agreed by Participant 1. "I have taught many training courses for instructors myself," said Participant 1 "and can say that there is a level of dilettantism among some instructors. They are not really interested in getting knowledge; for example, when there is a course that requires passing some pre-requisite courses to understand it, people would skip pre-requisite things to learn. They just nominally want to get a certificate." To solve this problem, interviewees recommended improving participant selection and certificate issuing processes.

From the literature review, it was found that instructors might underuse ICT tools even if the technology is available and the instructors have positive attitude towards ICT use in teaching. In this case, the second-order barriers (intrinsic) can play a great role. Lack of technological competence was cited among main barriers to ICT integration into curriculum by many researchers (Bingimlas, 2009; Pelgrum, 2001; Goktas & Yildirim, 2009) and was identified as the most significant obstacle for Syrian instructors (Albirini, 2006). Now, from analyzing quantitative and qualitative findings of the current study one can conclude that lack of technological competence might be one of the main barriers to ICT integration into Kazakhstani higher education as well. Therefore, the instructors recommended providing special ICT training courses for in-service instructors. They also made other useful recommendations, which should be taken into consideration while organizing future ICT training courses. They are discussed in the following chapter – Implications of the study.

Finally, the current research study identified another factor that influences instructors' frequency of ICT usage that was not covered in the literature previously. It is a university administration influence. The qualitative findings reported that university administrators often encouraged instructors to use ICT. Universities conduct monitoring every month and require quarterly reports on instructors' teaching practice and implementation of innovative ways of teaching with ICT tools. It should be noted here that interviewees did not express any complaints or anxiety regarding this kind of control and oversight; instead, they agreed that these measures could assist more frequent and effective ICT integration into higher education.

RELATIONSHIP BETWEEN ATTITUDE TOWARDS ICT AND USAGE

The quantitative findings on the third research question about the relationship between attitude and frequency of ICT usage identified different results according to different ICT tools. Only usage frequency of web applications and multimedia presentation tools showed a statistically significant relationship with attitude, whereas the usage of other eight tools such as authoring tools and discipline-oriented software did not show any relationship with instructors' attitude. It is not surprising that association was found only with multimedia presentation tools and web applications because these are the simple and basic ICT tools, which are the most frequently used tools in all levels of education. As only two simple tools were related to attitude, one can conclude that instructors' positive to very positive attitude towards ICT integration into curriculum does not guarantee integration of all different ICT tools into their teaching practices. In this regard, the finding corresponds to Barak's (2007) study, which states that positive attitude towards ICT use in teaching is not an absolute predictor of active ICT use in teaching.

Although, the relationship between instructors attitude towards teaching with ICT had no relationship with instructors' usage of various advanced ICT tools, I do not refute findings of previous studies (Hue, & Ab Jalil, 2013; Al-Zaidiyeen, Mei & Fook, 2010; Potosky & Bobko, 2001) that found strongly significant relationship between these two variables. This can be explained by the theory derived by Winter, Chudoba, and Gutek (1998). As mentioned in the Literature Review chapter, Winter et al. (1998) maintained that there might be circumstances when attitude is related to type and frequency of ICT usage, and equally possible that attitude will not be related to type and frequency of ICT usage. This difference can occur due to other factors that could moderate the relationship between attitude and use of ICT. The factors that moderated the relationship between attitude and use in this study were identified to be such problems as lack or insufficient provision of technology, poor quality of available technology, lack of technical support, and inadequate level of technology training among instructors. In general, what the current research study proves is that the attitude towards ICT integration into teaching will not be related to the usage of advanced ICT tools in teaching when instructors are not free to act according to their attitudes due to different contextual and environmental obstacles they face.

IMPLICATIONS OF THE STUDY

Keeping in mind the government's focus on informatization of education (The Ministry of Education and Science, 2010), the findings of the study have contributed to the body of knowledge that might help to realize the current condition of higher education informatization in the country and to understand the challenges that educators are facing in this road. This knowledge has some implications for the government and policy-makers in education. In addition, although the limitation of the study in some respects does not allow generalizing the findings to the whole population of Kazakhstani instructors and implications are relevant only to two universities in Nur-Sultan, several recommendations can be made to university administrations as well. On the whole, based on the results and conclusions of the study, the following recommendations were set forth.

RECOMMENDATIONS FOR UNIVERSITY ADMINISTRATIONS

In introducing and integrating ICT in higher education, the university administration plays undoubtedly essential role. It was confirmed by the results of this study as well. Based on the study's results, it is recommended to university administrations to create and add positions of information technology (IT) specialists, to each department and on a permanent basis. Software malfunctions, technology breakings and unavailability of just-in-time problem-solving support can affect instructors' usage of ICT in teaching. Many participants were complaining about lack of technical support in universities. Establishing IT specialist positions in departments would eliminate this problem and possibly assist for more frequent and effective ICT usage in a classroom.

The second recommendation is about training courses. As Keengwe et al. (2008) observed, successful integration of ICT in education "requires commitment from administrators; administrators should strive to provide in-depth professional development to the faculty" (p. 563). Also, according to the results of the study, lack of technical competence and knowledge is constraining instructors from frequent and effective

ICT integration into teaching. Therefore, it is recommended to provide faculty members with training courses that focus on ICT in pedagogy. Three main suggestions were made regarding training courses provided by universities.

Firstly, the content of training courses should accord to the context of the universities, i.e. software that is unavailable in the university and that is not planned to be supplied shortly should not be taught because anyway instructors will forget what they have learned because of lack of practice. Instead, training courses should teach how to use available hardware and software in teaching to those faculty members who are interested in using them but lack special knowledge. Second and third suggestions are related to the organization and the formation of training courses. It is recommended to make process of selecting participants more rigorous, so that only those faculty members who are interested in getting knowledge, not the certificates, are accepted. Also, university administrations are recommended to improve the process of issuing certificates. After finishing the courses, participants should pass some type of examination to show whether they have achieved expected learning outcomes, and certificates should be given only to those who showed satisfactory results. Following these recommendations would possibly help to decrease the number of instructors “pursuing certificates” and give more opportunity to those who are in pursuit of knowledge and competence. In addition to training courses, universities could ask for guidance from their existing faculty members who are advanced ICT integrators, that is to say, universities should more strongly encourage collegial learning. Advanced technology integrators should be encouraged to teach and share their experience with their less experienced colleagues.

Finally, universities are recommended to reward those faculty members who are active and effective in their attempts to integrate ICT into teaching. A reward can be provided not only in financial form, but also other forms of incentives can be employed such as providing more release time or certificates of honor.

LIMITATIONS AND DELIMITATIONS

The research study has some limitations and delimitations. Firstly, since random sampling technique presented many challenges during implementation, eventually, convenience sampling was implemented instead. This change in sampling technique limits the research study in the way that it cannot be generalized to the population. Therefore, the results of the study are relevant to two universities in Nur-Sultan. Next, it would give more comprehensive data if participants of both types – with positive and negative attitudes towards ICT integration into curriculum – were interviewed. Unfortunately, those who reported having negative attitude according to the survey results did not leave their contact information for the interview. Therefore, I was not able to interview them.

RECOMMENDATIONS FOR FURTHER RESEARCH

While the research study answered all the research questions, it also discovered several opportunities for further research. The first two recommendations derive from the limitations of the study. Firstly, it is recommended to conduct a research study on attitudes with other Kazakhstani universities implementing random sampling technique to collect data and findings that are generalizable to the population of Kazakhstani instructors. Secondly, as I was not able to interview those instructors who possessed negative attitude towards ICT in education, I would recommend filling this gap in the future. Interviewing instructors who are reluctant to integrate ICT into teaching can help identify more issues related to using ICT in education that were not discovered in this research study.

In addition, further research can focus on the qualitative findings of the current research study, namely, on the barriers that constrain instructors from frequent and effective usage of ICT. Examining the scale of these problems and to what degree these problems really affect instructor’s usage of ICT in teaching would provide more comprehensive knowledge on the current condition of ICT integration into Kazakhstani higher education and provide the government and university administration with more precise information on problems.

Moreover, the current research study did not investigate instructors’ attitude in relation to their demographic background. Further research studies can examine how instructors’ age, gender, place of study,

place of work, academic degree, or subject and area of teaching influence their attitude towards using ICT in education and their actual usage of ICT in teaching practices.

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APPENDIX A

SURVEY INSTRUMENT

Attitudes towards ICT Integration into Curriculum and Usage in Kazakhstani Higher Education

The purpose of the research study is to examine university instructors' attitudes towards ICT integration into curriculum and their usage of ICT in teaching practices. To answer the survey questionnaire will take approximately 15-20 minutes. Your participation is not likely to benefit you personally, but it will definitely help in examining the general tendency of instructors' attitudes towards ICT in education, and thus it will fill the gap in existing knowledge. Your identity will never be disclosed; this questionnaire will be de-

Appraising the Attitude towards Information Communication Technology Integration

stroyed after the data is input into the researcher's personal computer. Thus, the researcher guarantees your anonymity.

Your participation in the survey is voluntary and you have the right to withdraw your consent or discontinue participation at any time without penalty. The alternative is not to participate. The results of this research study may be presented at scientific or professional meetings or published in scientific journals.

Part 1: Attitudes towards ICT integration into Curriculum

Please check the boxes in order to identify to what extent you agree or disagree with the statements below.

ICT integration into curriculum helps students to...

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
1. acquire the skills to deal with an ongoing technological change					
2. develop functional competencies in a specified curriculum area					
3. synthesize their knowledge					
4. actively construct their own knowledge in collaboration with their peers and others					
5. actively construct knowledge that integrates curriculum areas					
6. develop deep understanding about a topic of interest relevant to the curriculum area/s being studied					
7. develop a scientific understanding of the world					
8. provide motivation for curriculum tasks					
9. plan and/or manage curriculum projects					
10. integrate different media to create appropriate products					
11. engage in sustained involvement with curriculum activities					
12. demonstrate what they have learned					
13. undertake formative and/or summative assessment					
14. acquire awareness of the global implications of ICT-based tools on society					
15. gain intercultural understanding					
16. critically evaluate their own and society's values					
17. communicate with others locally and globally					
18. engage in independent learning through access to education at a time, place and pace of their own choosing					
19. understand and participate in the changing knowledge economy					

Part 2. Frequency of ICT usage for educational purposes.

Please rate your usage frequency of the following items in teaching activities:

	Never	Rarely	Sometimes	Often	Very often
1. Multimedia presentation tools					
2. Internet, web applications					
3. Simulation tools					
4. Graphics					
5. Spreadsheet program					
6. Word process					
7. Drill and practice software					
8. Discipline-oriented software					
9. Authoring tools					
10. Interactive whiteboard					

If you are interested in further participation in this study (an interview of about 30 min.), please, leave your contacts (name and phone number):

APPENDIX B

INTERVIEW PROTOCOL

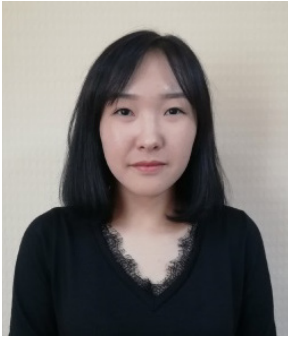
Introductory part: The research study focuses on understanding the reasons for instructors' to possess positive or negative attitudes towards ICT integration into curriculum, and to explore their usage of ICT in teaching. This study does not aim to evaluate your techniques or experiences of using ICT. Rather, I am trying to learn more about underlying reasons why instructors would or would not use ICT in teaching activities.

To facilitate further data analysis, I would like to audio tape our conversations today. Please sign the informed consent form. Essentially, this document states that: (1) all information will be held confidential and (2) your participation is voluntary and you may stop at any time if you feel uncomfortable. For your information, only I will be privy to the tapes which will be eventually destroyed after they are transcribed. I have planned this interview to last no longer than 30-40 minutes.

Interview questions:

1. According to the results of the survey you are/are not inclined to use ICT in your teaching activities. Is that right? Why? Where do these attitudes come from?
2. What can you say about your experience of using ICT in teaching?
3. Do you consider yourself a confident user of ICT? Why/Why not?
4. Have you ever taken any technology-related training?
 - If yes: What kind of training? What kind of influence did it make to you?
 - If no: In your opinion, could your attitude towards ICT integration into curriculum change if you had one?
5. In your opinion, what function of ICT is the most useful for educational purposes (if there are any)? (E.g, easier to present information, emailing students etc.)
6. What can be/ are the drawbacks of ICT usage in education?
7. Have you always possessed positive-negative attitudes, or has it changed over time?
 - If yes: who/what has influenced your attitude? How?
8. How does administration of the university influence faculty's usage of ICT for teaching activities?

BIOGRAPHY



Nazym Suleimen holds Master of Science degree in Educational Leadership majoring in Higher Education (Nazarbayev University, Kazakhstan). Currently employed at NJSC Holding Kasipkor, she is awarded with a Letter of thanks from the Ministry of Education and Science of the Republic of Kazakhstan for her contribution to Kazakhstani professional education development.

Nazym's research interest areas include ICT in education, distance learning in vocational education, and development of online professional advancement courses for instructors.