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ICT SKILLS ENHANCEMENT TRAINING IN TEACHER EDUCATION: THE CASE IN CENTRAL VISAYAS, PHILIPPINES

Abstract. There are many evidence that the use of information and communication technology (ICT) in education provides effective pedagogical benefits. This paper describes the ICT skills enhancement training among faculty members in the teacher education in the four provinces, in Central Visayas, Philippines. The technology literacy training was designed for teacher educators who have the minimal or no knowledge or who have the ability to explain and discuss the task, but have not experienced the actual process of ICT operations in the classroom. It aimed to enhance skills in ICT operations and concepts using international and local ICT competency standards for teacher education. A total of 60 trainees who are coming from 30 private and public higher education institutions in the region participated in the training. The success level of the training program was measured in terms of the effectiveness of the trainers, learning level acquired by trainees, effectiveness of the administration of the training, relevance of the topic, and adequacy of information shared by the trainers. The evaluation shows that trainers were extremely efficient, and training is excellent in terms of the administration, relevance of the topic, and adequacy of information shared by the trainers. This study concludes that the training program attained its objectives, and it turned out into a big success. To ensure sustainability, a structured training program should be conducted.

Keywords: ICT in Teacher Education; ICT Integration; ICT Literacy Training; ICT Evaluation

1. INTRODUCTION

The problem setting. The Philippines has three islands and these are Luzon, Visayas and Mindanao. Each island is composed of several regions like the Central Visayas in the Visayas island. Central Visayas, also known as Region 7 has four (4) provinces, namely: Bohol, Cebu, Negros Oriental and Siquijor. In 2012, the Philippine's Commission on Higher Education (CHED) established a network called Philippine Higher Education Research Network (PHERNet). The network consists 10 private and public universities in the Philippines. Silliman University (SU), a non-sectarian university, is a member institution because of its track record in research and development. Further, PHERNet tasks to conduct a research on the priority areas under the National Higher Education Research Agenda 2, in which, education and information technology are among the said priority research areas. Motivated by the technology diffusion encountered by teacher educators and the opportunity offered by the PHERNet, CHED through PHERNet, funds a research entitled "ICT in Teacher Education in Region 7". The research is facilitated by SU through Research and Development Center and in partnership with the Center of Development in IT Education of the College of Computer Studies of the same university. Teacher education refers to degree programs such as Bachelor of Science in Secondary Education and Bachelor of Science in

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Elementary Education, offered in public and private HEIs. The study highlights four (4) phases: benchmarking, training, technology development, and evaluation. The training phase aims to offer ICT competency enhancement training program among the pilot group of teachers in the teacher education program in region 7. The training program is about ICT skills enhancement in teacher education in region 7, Philippines. It aimed to develop skills in ICT operations and concepts using international and local ICT competency standards for teachers. This technology literacy training was designed for faculty, who have limited or no knowledge or who have the ability to interpret and discuss the task, but have not experienced the actual process of ICT operations in the classroom. The training covers technology operations and concepts aimed at providing trainees literacy on current ICTs that are useful in the classroom.

Analysis of recent studies and publications. Information and Communication Technology (ICT) refer to information-handling tools used to generate, store, process, spread and share information (UNDP, 2001) [1, 2]. It is a diverse set of applications, goods and services. The Philippines' Commission on Information and Communications Technology [2, 4] defined ICT as the totality of electronic means for end-users such as computer systems, office systems and consumer electronics, as well as networked information infrastructure, the components of which include the telephone system, the Internet, fax machines and computers**.**

ICT changed the way people organize, think, and decide. It offers exceptional impact in the changing society. UNDP considered it as enabler of progress in education (UNDP, 2001). Likewise, in a final report from RTI International for the Asian Development Bank [3] states that modern ICT has the potential in reducing poverty in Asia and Pacific. Similarly, World Bank promotes access and use of ICT to stimulate sustainable economic growth, improve service delivery, and promote sound governance and social accountability. Moreover, UNESCO believes that ICT can address the challenges faced in the teacher education (UNESCO, 2011) [4, 84]. It allows teachers and students to produce, share, connect, and comment on their own knowledge and that of others (UNESCO, December 2011) [5, 4-31].

Research shows that the use of ICT in education promotes positive pedagogical benefits in teaching and learning. It provides significant benefits to the teachers as well as learners and other stakeholders. This benefits include provision of a qualitative access to education (Boyanova & Filipova, 2008) [6, 232-245], and cost reduction, self-paced training, knowledge consistency, time and place independence and access to a global audience (Anido, Valero, Santos, Picos, Burguillo, Fernández, Rodriguez, Caeiro & Llamas, 2004) [7, 129]. ICT also promotes effective sustainable strategy (Hickey & Whitehouse, 2010) [8, 123], changes in attitudes, behavior and values, as well as in the cognitive and perceptual processes (de Sousa, Sevilla-Pavón, Seiz-Ortiz, 2012) [9, 1343]. It also increases a student's attention, concentration and motivation levels, and its potential to appeal to different learning styles (Schmid, 2008) [10, 1560]. While there are numerous literatures about the intensive use of ICT in education among the students, acquiring ICT competency is the challenged by most teachers. Hus (2011) [11, 3855] asserts that among the obstacles that teachers experience in integrating ICT, are lacking knowledge, outdated equipment, lack of time and lack of technical competency. In the Philippines, higher education institutions highly prioritized teaching and learning with technology, but the extent of its implementation is moderate (Marcial, 2012) [12, 61]. Likewise, in the study of del Rosario (2007) [13] entitled "Technology Integration in Teacher Education Programs in the Philippines," revealed that the complexity of integrating technology because of several variables affects technology integration.

On the other hand, Businessdictionary.com defined training as an "organized activity aimed at imparting information and/or instructions to improve the recipient's performance or to help any person achieved a required level of knowledge or skill". Training is "a means for

enhancing skill development and improving workplace behaviors" (www.amherst.edu). Moreover, training is an on-going development activity. Effective training programs must include a definition of the objectives, content, learning environment, assessment, and evaluation (Villatoro & Patterson, 2008) [14, 419-423].

The article's goal. Phase 2 of the research was conducted hybrid, which means the training is delivered in face-to-face and online. Presented in this paper is the details of the face-to-face training. Specifically, this paper describes the experiences of the 5-day ICT skills enhancement training among faculty members in the teacher education, in the provinces in Central Visayas, Philippines. The training objectives and evaluation instruments are also presented in this paper. Moreover, this paper highlights the results of the empirical evaluation of the training.

2. METHODS OF THE STUDY

The ultimate expectations of the training are teachers can demonstrate necessary hardware and software operations, as well as productivity applications software, a web browser, communications software, presentation software, and learning management system. The training conducted in five days on May 2013. There were three batches organized in the training. The first batch was conducted in the province of Negros Oriental, particularly in Dumaguete City. It was hosted by Silliman University catering teacher educators coming from Negros Oriental and Siquijor. It is noted that there was no separate training offered in the province of Siquijor considering that there are only 14 teacher educators in the said province. The second batch of training was conducted in Cebu province, particularly in Cebu City. University of Cebu-Main Campus hosted the training catering participants from Cebu province. Lastly, the last batch of training was held in Bohol province, particularly in Tagbilaran City. Holy Name University hosted the training catering participants from Bohol province. The school's College of Computer Studies in collaboration with the school's College of Teacher Education coordinated the training.

The module of the training is designed which was based on the result of the region-wide assessment conducted in April, 2013. The topics of the training cover on technology literacy, which are based on UNESCO's ICT Competency Standards for Teachers. It specifically includes the topic: Desktop and Folder Management and Basic Hardware Operations in the Classroom (Day 1), Word Processing (Day 2), Spreadsheet (Day 3), Presentation (Day 4), and The Internet and Virtual Learning Management System (Day 5). The primary source of teaching materials was adopted from http://www.gcflearnfree.org/ while laboratory exercises of each topic were designed for this purpose. See table 1 for the outline of topics and objectives per topic.

Table 1.

Topics, Specific Objectives and Hands-on Exercise

Day/ Session	Topic	Objective/s	Hands-on Exercise
1.	Desktop and Folder Management & Basic Hardware Operations in the Classroom	Teachers should be able to explain and demonstrate the use of common hardware technologies.	Discuss and demonstrate the basic operation of various hardware technologies. Teachers will do an actual demonstration of assembling/disassembling different hardware technologies in teaching-learning.
2.	Word Processing	Teachers should be able to discuss and demonstrate the	Discuss and demonstrate the basic tasks of word processors, show how

		essential tasks and uses of word processors, such as text entry, editing text, formatting text, and printing.	they are used in teaching. Teachers should create a text document in which they use these in generating a text document.
3.	Spreadsheet	Teachers should be able to discuss and demonstrate the essential tasks and uses of spreadsheet application, such as basic and complex formulas, functions, and charts.	Discuss and demonstrate the basic tasks of spreadsheet application, demonstrate how they are used in teaching. Teachers will create a worksheet with two sheets. Sheet 1 is for a simple grading system while sheet 2 is for graphs.
4.	Presentation	Teachers should be able to describe and demonstrate the purpose and basic features of presentation software and other digital resources.	Discuss the purpose of presentation software and demonstrate its general features and function. Teachers will design a presentation on a topic using digital resources. Teachers will make a presentation about a poem.
5.	The Internet and The Virtual Learning Management System	Teachers should be able to describe the Internet and the World Wide Web; elaborate on the uses, and describe how a browser works and use a URL to access a website. Teachers should be able also to use a search engine to do a keyword Boolean search, create or use for a sustained series of email correspondence, locate web resources that match the needs of their teaching-learning, & use common communication and collaboration technologies. Teachers should be able to experience an online learning management as a networked record keeping software useful in the classroom.	A. Teachers will demonstrate and use a browser to access popular websites. B. Teachers will discuss the purposes and advantages of various communication and collaboration technologies. Teachers will experience Skyping. C. Teachers will register and demonstrate the use of Silliman Online University Learning.

Furthermore, the organizing team of ICT4TEd includes a) project leader, b) training assistant, c) training area coordinators, d) trainers, e) laboratory technician, and f) laboratory assistants.

2.1. Evaluation Methods and Instruments

Evaluation is the process of examining the various aspects of success of any training activity. Evaluation of any training program is a vital factor to determine if the goals and objectives are achieved (Farjad, 2012) [15, 2837 – 2841]. It must not only focus on the development boundary objects of the training, but also the inevitable opportunities that may come out after training (Lee-Kelley & Blackman, 2012) [16, 73-82]. Evaluation methods may involve quantitative and qualitative evaluation methods.

In this training program, the success level was measured in terms of effectiveness of the trainers, learning level acquired by trainees, effectiveness of the administration of the training, relevance of the topic, and adequacy of information shared by the trainers. Specifically, on a daily basis, the effectiveness of the trainers and the amount of knowledge gained by the trainees was measured. On the other hand, the effectiveness of the way the

training was administered, the relevance of the topic and the adequacy of information shared by the trainers were measured at the end of the training. In other words, there are two sets of evaluation questionnaires administered to all ICT4TEd trainees; these are 1) daily evaluation, 2) final evaluation. The daily evaluation administered using a questionnaire which was conducted at the end of each session/day. The questionnaire of the daily evaluation was developed using Google Form, and it was administered online. It is composed of two parts. The first part was designed to measure the trainer's mastery of the topic, the trainer's ability to develop a positive learning environment, the trainer's ability to engage in quality interactions with the participants, and the trainer's ability to respond trainees' questions in a satisfactory manner. Each trainee was asked to assess the extent of their agreement to the given statements using the alternative choices: strongly agree, agree, disagree, strongly disagree, and not applicable. Part II of the daily evaluation measures the knowledge of the trainees after completing each training session. Each trainee was asked to rate also each item using the 4 alternative choices: "I learned a lot", "I learned some", "I learned a few", and "I did not learn something new".

The other evaluation used in ICT4Ted is the final evaluation. The final evaluation was composed of three (3) parts; these are training administration, topic, and trainers. The management part was aimed to assess the achievement of the training objectives, time management, venue, training management, the organizer's attitude. The second part of the final evaluation focused on the relevance of the 5 key topics. Lastly, the trainer's overall impact particularly on the adequacy of information shared. Each participant was asked to rate each item using the five-point scale where 5 is the highest and 1 the lowest. Mean, frequency, and percentage are the statistical tools employed during the analysis of data in both evaluations.

Further, the two evaluations include qualitative remarks of suggestions and comments. Specifically, daily evaluation has a space for the trainees make other comments and suggestions. On the other hand, the final evaluation includes the following questions: 1) What aspects of training do you like best? 2) What aspects of the training do you like least? 3) What topics do you think should be included in the next face-to-face training? and 4) Other comments and suggestions. Moreover, the two questionnaires are scrutinized and undergone a rigorous critiquing and modification.

3. THE RESULTS AND DISCUSSION

3.1. Trainee's Demographic Profile

ICT4TEd trainees are full-time faculty members teaching any professional, specialization and major courses in the teacher education program, in Central Visayas. Trainees have limited or no knowledge or have the ability to explain and discuss the task but have not experienced the actual process of ICT operations related to curriculum integration. Likewise, it was a requirement that trainees must be willing to undertake part 2 of the training that is to be delivered online through an online learning management system. From the 90 invitees, 30 per batch, a total of 60 trainees responded the call. Sixteen joined in Negros Oriental; 28 joined in Cebu, and 16 joined in Bohol. Of the total number of trainees, 22 (37.7 %) are male, and 38 (63.3 %) are female. Twenty (38.8 %) trainees are 31-40 years; the youngest is 22 years old, and the oldest is 64 years old. In terms of the number of years in teaching, 35 years is the longest teaching experience while 1 year is the shortest. More than the majority of the respondents are married, and many are Master's degree holders. See appendix C for the table of the demographic profile of the trainees.

When asked about technology ownership, 38 (63.33 %) owns a desktop computer at home, of which 29 (76.32 %) with internet connection. Only 24 (40 %) have Smartphones, but all of the respondents have cellular phones. Only 9 (15 %) said that they owned a tablet computer; 44 (73.33 %) said that they owned a laptop or notebook computers. Only 49 (81.67 %) said that their school had connected with internet connection; 52 (86.67%) said they created an email account; 24 (40%) said that they openned their account at least once a day.

Furthermore, 40 (66.67%) trainees said that they have never attended a similar training like this in the past. Only 11 (18.33%) trainees said that they attended a similar training in the past while 7 (11.67%) trainees did not indicate whether they have attended ICT-related training in the past.

3.2. Success Level of the Training

The level of effectiveness of all trainers is rated excellent with an overall mean of 4.8 as shown in table 2. Specifically, the level of effectiveness of the trainers from Negros Oriental and Siquijor is rated with an aggregate mean of 4.9, described as excellent and 4.8 in Cebu and Bohol trainers. This implies that the trainers excellently possess the knowledge about the topic. This may also indicate that the trainers have the ability to develop a positive learning environment. Similarly, this signifies that the trainers have the ability to engage in quality interactions with the participants. Moreover, the result affirms that the trainers have the ability to meet the participant's questions in a satisfactory manner. On the other hand, the level of knowledge as perceived by the respondents from the training is rated with an overall mean of 3.7 which is described "I learned a lot" (see table 3). Specifically, the trainees from Negros Oriental and Siquijor ($\bar{x}$ = 3.7), Cebu ($\bar{x}$ = 3.9), and Bohol ($\bar{x}$ = 3.6) believed that they learned a lot from the training. This implies that the trainees have acquired the intended knowledge and expertise. This may suggest that the trainees believed that the training is useful in their job. It may also mean that they have acquired the courage and commitment to the training. In terms of what they learned during the first day, the trainees learned about the function of desktop and they learned also the differences between laptop computers and mobile devices. They also learned to explore the operating system, manage user accounts and parental controls, find files with search and libraries, operate security and maintenance, and work with some hardware technologies in teaching and learning. On the second day, the trainees learned to about word processing. They learned to use indents and tabs line, paragraph spacing, lists, breaks, columns, hyperlinks, shapes, text boxes, WordArt, clip art, pictures, styles and themes, headers and footers, tables, SmartArt graphics and template. The trainees learned about spreadsheet during the third day of the training. They learned to create complex formulas, work with basic functions, sorting data, filtering data and working with charts. On Day 4, the trainees learned about presentation software. They specifically learned to use indents and line spacing, insert WordArt and shapes, modify themes, format pictures, arrange objects, animate text and objects, insert videos and audio, create SmartArt illustrations, use hyperlinks and action buttons, and work with tables and charts. During the last day, the trainees learned about internet, www and email. They learned to add signature on email, manage an online learning management, communicate using Skype, and save files using Dropbox.

Based on the training's final assessment, the training is rated excellent with an aggregate mean of 4.8 in Negros Oriental, 5.0 in Cebu and 4.7 in Bohol (table 4). This implies that the administration of the training, relevance of the topic, and adequacy of information shared by the trainers are excellent. This also suggests that the expectations of the participants are highly met, and the training objectives are highly achieved.

Table 2

Trainer's Effectiveness Level

Trainers	Training Batches						Total	
	Negros Oriental & Siquijor		Cebu		Bohol			
	Overall Mean	Description	Overall Mean	Description	Overall Mean	Description	Overall Mean	Description
Day 1	4.9	SA	5.0	SA	4.7	SA	4.9	SA
Day 2	4.8	SA	4.9	SA	4.6	SA	4.8	SA
Day 3	4.8	SA	5.0	SA	4.8	SA	4.5	SA
Day 4	4.9	SA	5.0	SA	4.8	SA	4.9	SA
Day 5	5.0	SA	5.0	SA	5.0	SA	5.0	SA
Aggregate Mean	**4.9**	SA	**4.8**	SA	**4.8**	SA	**4.8**	SA

Legend: SA means **Strongly Agree**

Table 3

Trainee's Learning Level

Training Session	Training Batches						Total	
	Negros Oriental and Siquijor		Cebu		Bohol			
	Overall Mean	Description	Overall Mean	Description	Overall Mean	Description	Overall Mean	Description
Day 1	3.7	ILaL	3.9	ILaL	3.4	ILaL	3.7	ILaL
Day 2	3.7	ILaL	3.9	ILaL	3.5	ILaL	3.7	ILaL
Day 3	3.5	ILaL	4.0	ILaL	3.7	ILaL	3.7	ILaL
Day 4	3.7	ILaL	3.9	ILaL	3.6	ILaL	3.7	ILaL
Day 5	3.8	ILaL	3.9	ILaL	3.8	ILaL	3.8	ILaL
Aggregate Mean	**3.7**	ILaL	**3.9**	ILaL	**3.6**	ILaL	**3.7**	ILaL

Legend: ILaL means **I learned a lot**.

The administration component of the training is rated excellent with an overall mean of 4.9, $\bar{x}$=5.0 in Negros Oriental and Cebu, and $\bar{x}$=4.6 in Bohol. An overall mean of 4.9 which is described as excellent is reflected by the respondents in terms of the relevance of the topic, $\bar{x}$=4.9 (Negros Oriental), $\bar{x}$=5.0 (Cebu), $\bar{x}$=4.7 (Bohol). In terms of the adequacy of information shared by the trainers, the trainees rated it with an overall mean of 4.8 described as excellent, $\bar{x}$=4.7 (Negros Oriental and Siquijor), $\bar{x}$=5.0 (Cebu), $\bar{x}$=4.8 (Bohol).

Table 4

Final Evaluation Result

Evaluation Criteria	Training Batches						Total	
	Negros Oriental		Cebu		Bohol			
	Overall Mean	Description	Overall Mean	Description	Overall Mean	Description	Overall Mean	Description
Administration of the Training	5.0	Excellent	5.0	Excellent	4.6	Excellent	4.9	Excellent
Relevance of the topic	4.9	Excellent	5.0	Excellent	4.7	Excellent	4.9	Excellent
Adequacy of Information Shared by the Trainers	4.7	Excellent	5.0	Excellent	4.6	Excellent	4.8	Excellent
Aggregate Mean	**4.8**	Excellent	**5.0**	Excellent	**4.7**	Excellent	**4.8**	Excellent

4. CONCLUSION AND RECOMMENDATIONS

The success level of the ICT skills enhancement program is excellent. The training was a huge success. It made a significant impact to the trainees, trainers and organizers. The trainers were competent. The trainees learned a lot from the training and have acquired the intended knowledge, skills, attitudes, courage and commitment to the training. It enabled the teacher educators acquired competency in using ICT, and it provided them with resources that they could use, to better impart, to their students. Likewise, the training provided an avenue for trainers and organizers for community extension services to the participants.

It is recommended to conduct a thorough training program on ICT skills enhancement for teacher educators. There should be a prudent change in terms of the duration of training to avoid information overload among the trainees. There should be a common orientation, emphasizing on the teaching strategy among the trainers. It is noted that during the training the trainers were worried and apprehensive at first during the start of the training, but as the sessions went on, they were able to adapt quickly and manage the entire duration of the training. It is also recommended that a similar program will be extended to the other regions in the Philippines. Other topics should be considered emphasizing those topics stipulated in the knowledge deepening and knowledge creation approaches as described by UNESCO. Other HEIs should consider participating the training so that the opportunity will be widespread.

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НАВЧАННЯ З РОЗВИТКУ НАВИЧОК З ІКТ В СФЕРІ ПЕДАГОГІЧНОЇ ОСВІТИ: ЦЕНТРАЛЬНА ВІСАЯ, ФІЛІППІНИ

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Анотація. Існує багато доказів того, що використання інформаційних та комунікаційних технологій (ІКТ) в освіті забезпечує ефективність педагогічного процесу. Ця стаття описує професійну підготовку в сфері ІКТ серед професорсько-викладацького складу в галузі педагогічної освіти в чотирьох провінціях Центральної Вісаї, Філіппіни. Навчання з опанування технологічною грамотністю було розроблено для педагогів, які мають мінімальні знання або зовсім не володіють ІКТ, для тих, хто має уявлення, але не має досвіду з використання ІКТ під час проведення занять у класі. Навчальна програма

спрямована на розвиток навичок з використання ІКТ згідно вітчизняних і міжнародних стандартів з ІКТ компетентності в сфері підготовки вчителів. У тренінгу взяли участь 60 стажерів з 30 приватних і державних вищих навчальних закладів регіону. Рівень успіху навчальної програми вимірювали за такими параметрами: ефективність роботи тренерів, рівень навчання, яке отримали стажисти, ефективність адміністрування в процесі тренінгу, актуальність теми та адекватність інформації, яка розповсюджувалася тренерами. Оцінювання показало дуже ефективну роботу тренерів, високий рівень адміністрування навчанням, актуальність теми та адекватність інформації, яка була надана тренерами. За результатами дослідження зроблено висновок, що основні цілі навчальної програми з ІКТ грамотності успішно досягнуті і надалі вона повинна впроваджуватись у сфері педагогічної освіти.

Ключові слова: ІКТ в педагогічній освіті; інтеграція ІКТ; підготовка з ІКТ грамотності; оцінювання навчальної програми.

ОБУЧЕНИЕ ПО РАЗВИТИЮ НАВЫКОВ ПРИМЕНЕНИЯ ИКТ В СФЕРЕ ПЕДАГОГИЧЕСКОГО ОБРАЗОВАНИЯ: ЦЕНТРАЛЬНАЯ ВИСАЯ, ФИЛИППИНЫ

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Аннотация. Существует много доказательств того, что использование информационных и коммуникационных технологий (ИКТ) в образовании обеспечивает эффективность педагогического процесса. Эта статья описывает профессиональную подготовку в области ИКТ среди профессорско-преподавательского состава в области педагогического образования в четырех провинциях Центральной Висаи, Филиппины. Обучение по освоению технологической грамотностью было разработано для педагогов, которые имеют минимальные знания или вовсе не умеют пользоваться ИКТ, для тех, кто имеет представление, но у кого нет опыта по использованию ИКТ во время проведения занятий в классе. Учебная программа направлена на развитие навыков по использованию ИКТ в соответствии с отечественными и международными стандартами по ИКТ компетентности в сфере подготовки учителей. В тренинге приняли участие 60 стажеров из 30 частных и государственных высших учебных заведений региона. Уровень успеха учебной программы измеряли по таким параметрам: эффективность работы тренеров, уровень знаний, которое получили стажеры, эффективность администрирования в процессе тренинга, актуальность темы и адекватность информации, которую распространяли тренеры. Оценивание показало очень эффективную работу тренеров, высокий уровень администрирования обучением, актуальность темы и адекватность информации, которая была предоставлена тренерами. По результатам исследования сделан вывод, что основные цели учебной программы по ИКТ грамотности успешно достигнуты и в дальнейшем она должна внедряться в сфере педагогического образования.

Ключевые слова: ИКТ в педагогическом образовании; интеграция ИКТ; подготовка по ИКТ грамотности; оценивание учебной программы.