Examining the Phenomenon of Information Society by Exploring the Use of Information Technology in Education

Eun-Joo Oh
Library and Information Science Department
Kyungil University, Kyungsan, Kyungsanfbook-do, Korea

ABSTRACT

This study attempted to examine the phenomenon of information society in education by exploring pre-service teachers' use of technology. Pre-service teachers from the USA and Korea participated in the study. Surveys and interviews were conducted to collect the data. The NET and ISST which are the national educational technology standards for each country were used as survey instruments. Focused interviews were conducted with 10 participants after analyzing the data for collecting more information. Based on the study results, technology is not deeply infused into education yet and the degrees of technology infusion were different in two countries. The participating pre-service teachers were not quite confident in their abilities to integrate technology into their lessons.

Keywords: Information Society, Information Technology, Educational Technology, Teacher Education, Pre-service Teachers..

1. INTRODUCTION

Society has experienced many developmental stages both socially and economically. In many cases, these developments have been initiated and spread by knowledge-related activities such as education, creativity, and inventions. Social changes were empowered by technology developments to constitute the social systems. Each stage is different in its speed of development and diffusion into society and society, in general, has changed slowly but constantly in many ways.

Compared to agricultural and industrial societies, modern society has changed more rapidly and radically. Particularly, computer technology, diffused about 6.4 times faster than the power revolution and information network systems covered the American continent 6 times faster than the railroads did [19]. By systematizing the information network, the advancement in telecommunications revolutionizes the process in creating, organizing, distributing, and utilizing information. These developments have brought about radical changes in social and economic structures, education, value systems, and social life. Therefore, today's world is described as an information society in which information is the core of society's needs and axis of its economy[14]. The phenomenon of information society is worldwide; yet, there are differences in the levels of advancement since every country varies in their phases of socio-economic development.

According to Buckland[3], an information society is an open system in which social systems, institutions, and individuals are interrelated to each other, acting upon and reacting to various events and changes in the world. Sociologists claim that society constantly is changing in both evolutionary and revolutionary manners, and adjusting to changing and changed situations. Internet networks provided a major role in an information society, both socially and economically. The network systems that are connected worldwide bring about globalization in economy, education, and the individual activities, benefiting both countries and individuals both economically and politically[2]. Development in information and communications technologies especially contributes to transform the roles of teachers and students, and the psychologies of education as well. Scholars have foreseen the coming of information society, resulting from the advanced technology. But they take different positions in analyzing and describing the changes of social phenomenon based on their measurements and focuses. There are many measuring aspects of information society and education is one of them.

Rapid changes in social and economic structures are being preceded every moment. These changes occur with different degrees in various social structures based on the needs and circumstances of each field. Researches on information society tend to focus on the changes of society in general and there are not many studies focusing on education. Information and knowledge related activities become the vital resources of our lives and schools are required to accommodate the diverse needs of information and technology related abilities and countries have focused on quality education[11]. In order to develop human resources, it is necessary to examine our education systems and see if it is changing and developing accordingly.

The purpose of this paper is to investigate the current information technology activities in the field of education. Specifically, this study tried to measure the degrees of using technologies of pre-service teachers in their learning and teaching practices in different countries. For achieving the research goal, two research questions were formulated as below;

1) To what degree do pre-service teachers integrate technology into their learning and teaching practices?
2) Are there differences in the degrees of technology integration depending on the nations?

2. LITERATURE REVIEW

2.1 Technology as an indicator of information society

New technologies are one of the most visible indicators of an information society[20]. Development in information and communications technologies including cable, satellite television, computers, network systems, smart phones, etc. has been altering economic structures and social systems. According to Masuda[14], the future information society will be built within a new framework based on computer-communications technology. He divides the development of computerization into four stages according to the areas and levels of development. : (1) big science, (2) management, (3) society, and (4) individual.

Between 1945 and 1970 computerization was developed in the field of big science. At the time, computers were mostly used in national scale projects or state level projects such as national defense and space exploration. Around 1955 to 1980, computers began to be used in both government and business areas. The expansion of computerization in management and administration contributed to an increase in the GNP by improving efficiency of system operations. In the third stage, computers are used for the benefit of society. As Masuda predicted, recent years, computer technology provides a major role in an information society, both socially and economically[9].

In 1990's computer became mass media as the Internet was spread and they become smaller, cheaper, faster and easier to use with the advancement of technology. According to the report by US department of commerce on computer and internet use, individuals continuously expand their uses of computers and the Internet. In 2001, 65.6 percent of the US population was computer users and 53.9 percent used the Internet while 53.5 percent and 22.2 percent were users of computers and the Internet in 1997[10].

As computers and communication technologies such as smart phones are pervasive in our society, most social activities are information and network–based. Network systems especially brought about changes in individuals and organizations by overcoming the barriers of time and space.

At the social level, the advancement of information technology and telecommunication systems bring about the concepts of globalization, making the world small and communications fast. Structural changes in organization and occupational distribution in society occurred as a result of information technology, replacing human labor and reducing the number of workers while increasing productivity[8]. At the organizational level, information technology contributes to save time by speeding up business processes. At the individual level, information technology influences decision-making patterns by simulating the consequences of decisions in virtual environments [11],[5],[7].

Development of information technology also enables to produce massive duplications of tangible information (i.e. documents, film, photographs, etc.) and constantly improves physical descriptions and creates a new form of information [3].

2.2 Education as an indicator of information society

Information technology also has an impact on education, especially in curriculum and delivery mode and curriculum. Education is by many measures the world's potentially largest information industry[1],[2],[6]. Society requires educational systems to accommodate students who cannot physically attend school, providing an "anytime anywhere" education. Global access to information and education changes the educational system, the concepts about education, and life patterns. As the number of students who choose to take classes online, the online industry may need to make great efforts to develop more advanced products and serve optimal services for consumers.

Distance learning is a different mode of teaching that delivers some form of instruction using the Internet as a medium. Distance education has been developed tremendously in its quality and quantity along with the development of technology over the years[4]. The earliest forms of distance education were the printed materials or videotapes depending on the mail delivery system. At that time, people have tended to perceive distance education not as equally valuable as traditional education. It was a cross-cultural phenomenon[12].

For example in Korea, some people in the field of business and education were reluctant to give an equal opportunities in terms of employment, promotion, and credentials to the people who obtained the degree from correspondence schools (a form of distance education) with people who obtained the degree from traditional schools. They devalued the degrees obtained through distance education because the quality of education had not been proven as equal to the traditional method[13].

Nowadays, along with the advancement of technology, people's perception of distance education has changed. The medium has changed to computer network that learning takes place in web-based learning environments with various materials and resources delivered on line synchronously or asynchronously. Online teaching supplements many aspects of limitations from the previous system (mail delivery) drawn by researchers. Many studies also have proven that the change of teaching mode does not affect the quality or effectiveness of education, even though there are many opponents against the effectiveness of online teaching exist. Therefore, many higher education institutes encourage faculties to transform a teaching mode into online based to reach more students, providing substantial funds[15],[16],[17].

Along with the distance education, public schools have been challenged by economic and technological changes in preparing students for societal needs. As economic structures and occupational distributions have changes, schools also

needed to reform its curriculum to serve as institutions that provide appropriate education and guidance to students. According to the data about the occupational shift [13], the number of high paying, blue collar jobs available to workers with high school diplomas and low skilled jobs have been decreasing. Instead, knowledge jobs have been newly created and have increased substantially. This occupation shift affected the required skills and levels of education as well[10], [15].

Technology is one of the parts that challenge schools in many ways. With the Internet and computer technology available to most teachers, educational technology becomes increasingly indispensable in the field of education. In today's schools, multimedia software, content- based CD-ROMs, online resources and many other technologies provide students and teachers with many new research tools, limitless wealth of information, shared professional practices, communication tools, and new modes of learning. Availability of the internet in schools enables teachers and students to have a variety of opportunities to expand the curriculum[4],[17],[18].

Today's classrooms would not be complete without computers, software, Internet connections, projectors and a variety of other high-tech devices [17]. Schools are getting equipped with the new hardware and new software everyday[16] and teacher education programs have great pressure to prepare for their pre-service teachers to adjust the rapid changes.

3. RESEARCH METHOD

3.1 Participants

Total 328 pre-service teachers in the teacher education programs participated in the study and they were divided in to two groups. Group A consists of 28 pre-service teachers who attend the T university in Knoxville, USA. Group B consist of 300 pre-service teachers who attend the K university located at the southern part of Korea. Due to the limitations to collect the data from overseas, there are big differences with the number of participants from the two countries.

3.2 Data collection procedures

Surveys and interviews were used for collecting the data, online survey instruments were uploaded on the Web and email messages were sent to the pre-service teachers to ask for their participation. When the participants completed the survey, their responses were automatically sent to the database. After analyzing the survey data, interviews were conducted with the survey participants to clarify the barriers to use technology in education and the reason why they want to use technology in their classrooms.

3.3 Instruments

Two survey instruments were used for the study and one was the NETS and the other was the ISST. The NETS is National Educational Technology Standards that were developed by the ISTE(International Society for Technology in Education) in the USA. The ISST is the ICT Skills for Standards for Teachers that were developed by the Ministry of Information and Communications in Korea. Since both instruments were nationally adopted standards, it was a valid tool to measure the skills and knowledge of technology use. For group A, the NETS was used. The NET standards were composed of 5 sections with 28 questions and 5-likert scale was used. The reliability of the instrument was 0.89.

For the Pre-service teachers in Korea, the ISST was used. It was composed of 5sections with 42 questions and 5-likert scale was used. The reliability of the questions was 0.93 and the structure of the survey instruments are as follows;

Table 1. NET standards

Sections	Questions
1. Technology operations and concepts	7
2. Planning and designing learning environments and experiences	5
3. Curriculum design	6
4. Assessment and evaluations	5
5. Productivity and professional practice	5

Table 2. ISST standards

Sections (Technology operations for..)	Questions
1. Information collection	11
2. Information analysis and modification	14
3. Information distribution	6
4. Ethics and security in the use of information	6
5. Perceptions about technology use	5

3.4 Data Analysis

In order to answer the research questions, the responses were analyzed using SPSS 19. Descriptive analysis (i.e. frequencies, averages) was used to find the general tendency in using technology and the Test was used to see if there are differences in their responses based on the standard. The data was presented descriptively with tables. The interviews were recorded and described in detail, and the interview results were analyzed by themes.

4. FINDINGS

4.1 Demographic Information

Table 3.   Group A by program

Program	Frequency	Percent
Elementary education	17	60.7%
Secondary education	11	39.3%
Total	28	100%

Table 4. Group B by grade

Grade	Frequency	Percent
Freshman	29	9.7%
Sophomore	105	35%
Junior	21	7%
Senior	21	7%

Grade	Frequency	Percent
Freshman	29	9.7%
Sophomore	105	35%
Graduate students	27	9%
Not valid	97	32.3%
Total	300	100%

From group A, total 28 pre-service teachers participated in this study. Among them, 17 students were in the elementary education programs and 11 students were in the secondary education programs. From group B, total 300 pre-service teachers participated in the study and they were all in the secondary education programs. Out of the total 300 participants, 97 participants did not share their demographic information and the rest were diverse in their grade, subject areas, and gender.

4.2 Demographic Information

4.2.1 Group A
When analyzing the responses to the NET standards (group A), it was shown that the respondents were confident in their skills and knowledge in utilizing technology in education as Table 5 indicates (*M=3.84, SD=0.682*). When conducting the T test to see, there was a significant difference in their responses among the standards (*P<0.00*). The respondents showed strong confidence in integrating technology into the curriculum (*M=4.00*) and using them for assess technology-based learning resources. However, their basic technology skills in operating computer technology were weak compared to other areas(*M=3.54*). When analyzing the data based on the seeking certificate and standards, differences were not found in their use of technology.

Table 5. Averages of the NET Standards (Group A)

Standards	Average	Standard deviation
1.Technology operations and Concepts	3.54	.693
2. Planning and designing learning environments and experiences	3.89	.737
3. Curriculum design	4.00	.667
4. Assessment and evaluations	3.93	.663
5. Productivity and professional Practice	3.86	.651
Total	3.84	0.682

When analyzing the responses in detail by questions as Table 6 presents, the respondents strongly believed that teachers should have basic knowledge of concepts and operations of computer technology for their classrooms(*M=4.5*). They were well aware of national technology standards(*M=4.04*) and can use technology to support student-centered activities(*M=4.07*). In addition, they know how to evaluate Internet resources for bias and appropriateness and had a strong belief about the importance of technology implemented curriculum(*M=4.18*). The respondents were very confident in using productivity tools(*M=4.25*) such as MS office and evaluating students' use of technology resources(*M=4.04*).

However, they were not confident in basic troubleshooting techniques(*M=3.11*) and evaluating content-based software (*M=3.61*). Averages of each standard are presented in Table 6 below.

Table 6. NET standards (Group A) N=28   Max 5 <---> Min1

Standard 1	Average	Standard 2	Average	Standard 3	Average
S1.1	4.14	S2.1	3.75	S3.1	4.04
S1.2	4.11	S2.2	3.96	S3.2	4.07
S1.3	3.64	S2.3	3.89	S3.3	3.86
S1.4	3.18	S2.4	4.14	S3.4	3.75
S1.5	3.96	S2.5	4.00	S3.5	3.81
S1.6	3.11	S2.6		S3.6	4.18
S1.7	4.50	S2.7		S3.7	
Total	3.81	Total	3.95	Total	3.95

Standard 4	Average	Standard 5	Average		
S4.1	3.61	S5.1	4.25		
S4.2	4.07	S5.2	3.68		
S4.3	3.79	S5.3	3.86		
S4.4	4.00	S5.4	4.07		
S4.5	4.04	S5.5	3.54		
Total	3.90	Total	3.88		

Based on the survey results, interviews respondents were conducted. Questions about barriers of using technology in their learning and teaching practices, and the reasons why they want to use technology were asked. When asking the questions about the barriers, they said that a lack of their skills and knowledge to integrate technology in the curriculum were the biggest problem. Since the university require only one instructional technology course to the pre-service teachers, they do not have enough to learn to use for education. Below are the statements that the respondents provided.

Time and experience are the two greatest barriers for using technology-enhanced teaching practices. We are setting standards for what young children should be learning about technology, but this is not enough. I am a senior in college and until I started this course I had no idea what a Mac was. We need required courses as freshmen that teach us how to use all of these different tools so that our experience will decrease the amount of time it takes to create new items. Also, there are many teachers in the classroom that would love to have these tools at their disposal...(student A)

There is not enough time to delve into the subjects quite as deeply as I would hope, but the fast-paced learning environment also helps us as well.(student B)

The respondents who had teaching experiences as an intern also mentioned about the barriers of using technology in the public schools. They indicated that there are still many public schools that are suffered from a lack of computers, equipment, and educational facilities. It is difficult for teachers to try technology-enhanced lessons. In addition, one of the respondents emphasized that educational opportunities are not equally given to everybody in the USA. Some areas of the

nation still suffer from the poverty and children do not have any technology access. Below are the statements from the respondents;

The number of computers in the classroom is a problem. Also, I teach underprivileged students so the lack of any basic knowledge is another problem. The other problem is the lack of knowledge that other teachers have to use the computers so my students wouldn't be reinforced by their other classes and grades.(student C)

One of the biggest barriers is the availability of technology tools in the schools. In the classrooms I have worked with, the teachers were limited to a couple of computers for the entire classroom and they expected to maintain the computers themselves. As a result the computers and software were often outdated. I am currently a pre-service teacher and I would love to implement the tools technology I have learned about into my future classroom, but I am not confident that the schools will have the resources for my students and me to use.(student D)

Technology (i.e. computers) is often non-existence in the music classroom because funding for music programs in schools is usually bleak. This is especially true for "traveling" music teachers who don't have a classroom or visit several schools a day and have to transport instruments and lesson materials with them.(student E)

4.2.1 Group B

When analyzing the responses from group B, it was found that the respondents had relatively low confidence in using technology($M=3.55, SD=0.751$). When conducting the T test to see if there is a difference in their responses among the sections, there was a significant difference among the averages ($P<0.00$). Section 4 which was about ethical issues and security matters in handling information using technology($M=3.40$) yielded the lowest score. Section 1 about the skills about collecting information using technology yielded the higher score($M=3.83$) The responses for each section are summarized in Table 7 below.

Table 7. Averages of the ISST Standards (Group B)

Sections (Technology operations for…)	Average	Standard Division
1.Information collection	3.83	.743
2.Information analysis and modification	3.45	.723
3.Information distribution	3.52	.776
4.Ethics and security in the use of information	3.40	.785
5.Perceptions about technology use	3.55	.731
Total	3.55	.751

When analyzing the data in detail, the respondents showed the highest confidence in the ability to produce text-based documents by using a word processor($M=4.16$, Section 2.1). They were competent in searching, collecting, and producing information resources by using Web browsers and search engines($M=4.14$,Section1.3,1.4,1.5). They could also communicate synchronously and asynchronously by using communication technology , e-mail, and message board

($M=4.07, M=4.04$, Section 3.6, 3.7).

However, the respondents did not perceive that technology is an effective instructional tool($M=3.55$) and showed relatively low confidence in handing technology as well.

In detail, they were not skillful in operating hardware and software($M=3.01$,Section1.11), handling the NEIS system ($M=2.83$,Section2.13), managing electronic certificate($M=2.83$, Section 2.14), and developing multimedia web pages($M=2.88$, Section 2.13). Table 8 presents detailed information regarding their abilities to use technology.

Table 8. Averages of each standard (Group B)

Max 5 <---> Min1

Standard 1	Average	Standard 2	Average	Standard 3	Average
S1.1	3.74	S2.1	4.16	S3.1	3.41
S1.2	3.88	S2.2	3.81	S3.2	3.27
S1.3	4.14	S2.3	4.05	S3.3	3.12
S1.4	4.14	S2.4	3.58	S3.5	3.25
S1.5	4.14	S2.5	3.71	S3.6	4.04
S1.6	3.82	S2.6	3.69	S3.7	4.07
S1.7	3.24	S2.7	2.99		
S1.8	4.03	S2.8	3.91		
S1.9	4.16	S2.9	3.75		
S1.10	3.80	S2.10	3.35		
S1.11	3.01	S2.11	3.20		
		S2.12	2.88		
		S2.13	2.35		
		S2.14	2.83		
Total	3.83	Total	3.45	Total	3.53
Standard 4	Average	Standard 5	Average		
S4.1	3.51	S5.1	3.35		
S4.2	3.24	S5.2	3.90		
S4.3	3.24	S5.3	3.30		
S4.4	3.26	S5.4	3.56		
S4.5	3.29	S5.5	3.70		
S4.6	3.91				
Total	3.41	Total	3.56		

After analyzing the survey data, interviews were conducted with the respondents for getting information about perceptions and barriers of using technology in education.

When asking the questions about the barriers of using technology in education, group B also said that a lack of technology and facilities in the public schools is the biggest problem as group A answered.

Regarding their perceptions of using technology, some of the respondents from group B complained that they have too many technology-related classes in the teacher education program unnecessarily. They did not agree that technology is a useful tool for teaching students since young students get easily distracted by the tools and cannot focus on the content. Some respondent said that even though technology is necessary, they do not have time to enjoy and practice the technology due to the National Teacher Certificate Exam.

When teachers use PowerPoint for their lessons, they tend to read

the content of the slides. It does not bring educational benefits and students soon lose their attention to the class and get bored easily. Furthermore, when students use the images and videos for their learning, they do not want to read the textbooks. That's a big problem. (student F)

When there is not national exam for getting the teacher certificate, we can enjoy the class using technology. However, using technology is nothing to do with the exam and I don't see any reason why we pay attention to class using or learning technology.(student G)

On the other hand, many respondents agreed that technology is great instructional media for their own learning at the university. They perceived that images, videos, PowerPoint, synchronous communications tools are excellent aid for students to understand the content area better. In addition, they responded that Learning Management System(LMS) greatly help their learning when class notes and instructional resources were uploaded since they can study with those materials after class.

I prefer using technology for my learning. Especially, I think LMS is a great instructional tool to help study. After finishing the class, I usually go to the LMS website and check the class note and other instructional materials for using my study. I also like to submit the homework online since it is fast and convenient way to get feedback.(student G)

I like the communication board. When I have questions, I can ask the questions anytime and get feedback immediately. In fact, it is very hard for us to communicate with professors or teachers in class since the class time is limited. So, online communication board is very useful and helpful to talk with each other. (student H)

4.3 Differences in the perceptions of using technology between the nations

In order to find out if there is a difference between group A and group B, the responses from the interviews were compared. Since the survey instruments were different, it is difficult to compare the details, except for the fact that the average of group A was little higher than group B. When analyzing the interview results, group A and group B showed different perceptions of technology use. Regarding the barriers of using technology, group A pointed out a lack of technology equipment and facilities in the poor school areas of the nation. They also felts they need more technology courses in the teacher education program for more experiences. Regarding the use of technology in education, group A showed strong willingness to integrate technology into their lessons since they perceive it helps student learning.

However, group B perceived that technology is not always effective in the school classrooms. Sometimes, technology hinders students' learning by distracting them with videos and slideshows, and makes them to lose their interest in reading text-based materials. In addition, group B are not motivated to learn technology since they are busy with preparing for the National teaching certificate exam. However, they prefer to use technology for their own learning. They said that technology such as LMS and the communication board are very helpful.

5. CONCLUSION AND DISCUSSION

This study attempted to explain the phenomenon of information society in education by exploring the use of technology by pre-service teachers. Two groups of pre-service teachers participated in the study. One is from the USA and the other is from Korea. Surveys and interviews were conducted to collect the data. The NET and ISST which are the national educational technology standards for each country were used as survey instruments and interviews were conducted after analyzing the data for collecting more information.

Based on the study results, technology is not deeply infused into education yet. Public schools are still in need of facilities and equipment. The levels of confidence, abilities, and perceptions of pre-service teachers were not high overall. The study results were different based on the country; the pre-service teachers from the USA showed relatively higher confidence and more positive of technology than the Korean participants. Korean participants showed low confidence and they were not motivated to learn to use technology since preparing for the national teacher certificate exam is more important for them. In addition, they did not perceive that using technology in the classroom does not help students' learning. However, interestingly, they enjoy using technology tools for their own learning in the university.

The information society challenges colleges and universities to be progressive in the area of technology integration. Rapid changes of communication technology in our lives let us feel to live in the technology flood. However, in reality, public schools still have limited availability of equipment and facilities and pre-service teachers are not quite prepared to deliver technology-based lessons. Teacher education programs in universities do not provide enough technology courses to pre-service teachers to practice their skills and knowledge for their future classrooms. Pre-service teachers did not experience effective use of technology in their teaching practices and due to the national examination, they are not motivated to learn to use technology.

It is true that today's society increasingly requires educational systems to accommodate students' diverse needs. The growth of computerization and information technologies result in automation, computer-aided systems in education and it caused an elimination of unskilled jobs and many other jobs while increasing productivity. Schools have to take their responsibilities seriously to educate human resources to have the competencies that they need for their jobs.

Both countries, Korea and the USA, try their best to improve quality of teacher education programs by adopting national project such as "Classroom advancement", "Preparing for the 21st Century classroom' and a variety of teacher training programs. In the case of USA, there are organizations(i.e. ISTE, NCATE, etc) focusing on technology implementation and professional development in education. ISTE develops the technology standards, train teachers, and conduct technology related research activities. There are technology standards for in-service teachers, pre-service-teachers, and students.

NCATE accredit teacher education programs using the technology standards that the ISTE developed. The content areas should be related to technology standards.

This study showed the differences between the perceptions of pre-service teachers. Compared to the case of the USA, our pre-service teachers are not exposed to the effective use of technology in the classrooms. Due to the circumstances that they have, students in our teacher education programs restrict their learning opportunities that are necessary in this information society. Studies constantly report that teacher-education institutions continue to employ different strategies to help prospective teachers become comfortable with the use of different technologies in classroom activities. Despite of many obstacles that each country has, the institutions are very proactive in preparing teachers to integrate information technology to support pedagogy and learning. Comparing to other countries, Korea is very competitive to achieve teaching license for sure. However, if the objectives of teacher education program stay at the same position focusing on being a teacher, it will be difficult to nurture quality teachers and quality students. Therefore, our teacher education programs try to solve the problems by improving curriculum or motivating students in some other ways. In any case, teacher education programs take the responsibility to support students to have the skills and knowledge for future classrooms. Technology, information, and communication technologies are the principal indicator in creation of an information society as the basic force by creating information[5]. Therefore, periodic examination of all curriculum areas, particularly instructional technology, should be conducted to keep the future teachers and current research and innovation.

This study attempted to conceptualize information society by examining the use of technology in education. However, the criterion is extracted from the social elements that could be observed physically, not dealing with the fundamental changes in intangible aspects. It is not appropriate to define a contemporary society with few criteria because society is such a complex organization with various variables. In addition, the discussion is focused on few developed or developing countries only, even though it is told as if an information society is worldwide phenomenon. Therefore, more careful observations may be necessary to measure a degree of technology uses in an information society in general. Reflections on how an information society influence on our everyday life may help us better understand an information society.

REFERENCES

[1]   M. Atak, and R. Erturgut, "Importance of Educated Human Resources in the Information Age and View of Information Society Organizations on Human," Procedia Social and Behavioral Sciences, vol. 2, 2010, pp. 1452-1456.

[2]   D. Bell, *The Coming of Post-Industrial Society.* New York: Basic Books, 127, 1976, pp.348.

[3]   M. K. Buckland, Library Materials: Paper, Microform,Database. *College and Research Libraries* 49, 1988a. pp. 117-122.

[4]   U.-H. Chang, and S.H. Lee, "A Study on Curriculum Development for Teacher Education in the Information Society," The Journal of Curriculum Studies, vol. 20, no. 1, 2002, pp. 123-154.

[5]   M. Castells, *The Rise of the Network Society. The Information Age: Economy, Society and Culture. Volume 1.* Malden: Blackwell. Second Edition, 2000.

[6]   S.Y. Chin, "Diverging Information Societies of the Asia Pacific," Telematics and Informatics, vol. 22, 2005, pp. 291-308.

[7]   J. W. Cortada, *Making the Information Society: Experience, Consequences, and possibilities*, Prentice Hall, New York, 2002.

[8]   B. Elsa, S. Pisano, S. D'Alessandro, S. Romagnoli, V. Parsiale, and G. Gregui, "Information Society and Information Technology: The Situation of the Public Libraries in Buenos Aires City and Surrounding Areas, Argentina," The International Information & Library Review, vol. 38, 2006, pp. 1-14.

[9]   B. Goransson, and J. Soderberg, "Long Waves and Information Technologies-on the Transition Towards the Information Society," Technovation, vol. 25, 2005, pp. 203-211.

[10] A. Grantham2, and G. Tsekouras, "Information Society: Wireless ICTs' Transformative Potential," Futures, vol. 36, 2004, pp. 359-377.

[11] F. Hamidi, M. Meshkat, M. Rezaee, and M. Jafari, "Information Technology in Education," Procedia Computer Science, vol. 3, 2011, pp. 369-373.

[12] V. Hosgorur, and P. Bilasa, "The Problem of Creative Education in Information Society," Procedia Social and Behavioral Sciences, vol. 1, 2009, pp. 713-717.

[13] M. Falch, and A. Henten, "Digital Denmark: From Information Society to Network Society," Telecommunications Policy, vol. 22, 2000, pp. 377-394.

[14] Y. Masuda, *The Information Society and Post-Industrial Society.* Washington: World Future Society. pp. vii–viii, 31–33, 1980.

[15] E. Megnigbeto, "Information Policy: Content and Challenges for an Effective Knowledge Society," The International Information and Library Review, vol. 42, 2010, pp. 144-148.

[16] L. P. Rai, and K. Lal, and J.-H. Lim, "Indicators of Information Soceity," Technology in Society, vol. 22, 2000, pp. 221-235.

[17] A. Ricci, "Measuring Information Society Dynamics of European Data on Usage of Information and Communication Technologies in Europe Since 1995," Telematics and Informatics, vol. 17, 2000, pp. 141-167.

[18] F. Shafique, and K. Mahmood, "The Role of Educational Information Systems for Survival in Information Society and the Case of Pakistan," The International Information & Library Reviews, vol. 42, 2010, pp. 164-173.

[19] R. Vord, "Distance Students and Online Research: Promoting Information Literacy Through Media Literacy," Internet and Higher Education , vol.13, 2010, pp. 170-175.

[20] F. Webster, *Theories of the Information Society.* 3rd edition. London: Routledge, 2006.

Eunjoo Oh
She received the B.S. from Sookmyung Women's university and M.S from University of Tennessee, 2001. She also received Ph.D. in Instructional Technology from the University of Tennessee, USA in 2006. Since 2009, she has been with Kyungil University. Her main research interests include e-learning, blended-learning, and instructional systems design.