Bridging the Digital Divide through Technology Integration into the Special Education Program: Faculty Attitudes toward Technology Accessibility for Diverse Learners

Abstract: The use and integration of the new technologies, such as the Internet, World Wide Web, new computer software, etc., in educational milieus have been enormously growing for nearly two decades. Not only do these new technologies make an impact in general education, but also within preservice special education teachers who work with one of the diverse groups in the societies. However, it is observed that there are divergence approaches to use and integrate the new technologies into the Special Education Programs in Turkey. The major concern in this study is to examine, analyze and define the experiences, perspectives and expectations of the Special Education faculty in the Research Institute for Handicapped toward the use and integration of the novel technologies into their curriculum.

Introduction

The use and integration of the new technologies, such as the Internet, World Wide Web, new computer software, etc., in educational milieus have been enormously growing for nearly two decades. Not only do these new technologies make an impact in general education, but also within preservice special education teachers who work with one of the diverse groups in the societies. However, it is observed that there are divergence approaches to use and integrate the new technologies into the Special Education Programs in Turkey. The major concern in this study is to examine, analyze and define the experiences, perspectives and expectations of the Special Education faculty in the Research Institute for Handicapped toward the use and integration of the novel technologies into their curriculum.

A distance education professor and a professor of Special Education at the same university in Turkey have collaborated on the use and integration of the new technologies in the Research Institute for Handicapped for studying the dynamics of change in an era of electronic technologies. They will describe the perspectives used to examine the impact of technology on this diverse society and thus on the pedagogical tools developed to enhance eventual course delivery.

This is a qualitative ongoing case study. The main purpose of this paper is to describe and analyze the Research Institute for Handicapped faculties' experiences, perspectives and expectations toward using and integrating the novel technologies into their curriculum. This case is chosen for a couple reasons: First, this study is exploratory in order to allow insights to emerge from a recursive data analysis process. The research variables are highly complex and extensive. Additionally, the research data is very dependent on context and needs to be collected in its natural environment without controls and manipulations. Second, this case will examine the phenomena in depth in its natural context by focusing on a specific case.

Purposeful Sampling and Participants

To provide the credibility issue in this study, the researchers adopted a stance of neutrality with regard to the phenomenon, the experiences, perspectives and expectations of the Special Education faculty in the Research Institute for Handicapped toward the use and integration of the novel technologies into their curriculum. In other words, they will not try to prove a specific perspective and manipulate the data from the different sources. This study is exploratory in order to allow insights to emerge from a recursive data analysis process. The researchers strongly highlighted that this is an ongoing case study. Therefore, in this paper, they present only the findings and conclusions of the pre-survey data although overall research design is a qualitative research that describes the particular phenomenon of the experiences, perspectives and expectations of the Special Education faculty in the Research Institute for Handicapped toward the use and integration of the novel technologies into their curriculum.

This study utilizes both qualitative and quantitative data to provide detailed information to the researchers for analysis. The combination of this method helps the researchers to generate new perspectives and stimulate new directions in data analysis. The combination of the methodologies is to strengthen this study design and to provide data triangulation (the use of a variety of data sources), theory triangulation (the use of multiple perspectives to interpret the data collected), and methodological triangulation (the use of multiple methods to study the focus of this research). Therefore, the researchers overcome the intrinsic bias that can come from single methods.

Through purposive sampling techniques, fifteen voluntary faculties from the Research Institute for Handicapped at a large Middle Anatolia State University are selected as participants. The six professors are asked individually to read and sign the informed consents form, which describes the research in detail. The researchers also strongly emphasize that they are interested in studying faculties' experiences, perspectives and expectations on the use and integration of the novel technologies, such as the Internet, World Wide Web, software, etc. into their teaching activities. All faculty in the Research Institute for Handicapped chose voluntarily to participate in this study. These fifteen participants in this study were asked to fill out three questioners a pre-survey given at the third of the Fall Semester-2002. They will be also asked fill out a faculty technology questionnaire given the first week of the Spring Semester-2002 a post-survey given at the end of the Spring Semester-2002.

From the purposeful sampling, toward the end of the third week of the Fall Semester-2002, fifteen faculties, thirteen females and two males, in the Research Institute for Handicapped of this University will be chosen for the interviews. These six faculties will be identified for the interviews according whether they have individual classes with the children with special needs. The main instrument of data collection in this research will be the interview protocols. Two researchers in this study will interview with six participants from the Research Institute for Handicapped at the fourth week of the Spring Semester-2002 and at the tenth week of the Spring Semester-2002. All interviews will be taped-recorded. Also, the researchers will take paper-pencil notes consisting primarily of major points during both focusing group sessions. It is estimated that each focusing group session will last approximately 60 minutes.

To provide the credibility issue in this study, the researchers adopt a stance of neutrality with regard to the phenomenon, faculties' experiences, perspectives and expectations toward the use and integration of the novel technologies. In other words, they will not try to prove a specific perspective and manipulate the data from the different sources. This study is exploratory in order to allow insights to emerge from a recursive data analysis process.

Research Site

The site of the research was the Research Institute for Handicapped in a large urban the University in Turkey. This Research Institute was chosen to analyze and describe the experiences, perspectives and expectations of the faculty for three major reasons: 1) the faculty are strongly interested in using technology as an instructional tool to communicate with their students between regular class sessions, 2) the Research Institute curriculum include rich technology-based learning activities, and 3) the faculty provide some technology-based facilities for the students with their classmates. The Research Institute for Handicapped has a brand new building surrounding with all necessary and new technology in the classrooms. Each faculty has not only individual students but also group works in the Institute.

Developing Research Instruments and Data Analysis

This research has been operated within a qualitative case study approach. The analysis of the phenomenon, the experiences, perspectives and expectations of the Special Education faculty in the Research Institute for Handicapped toward the use and integration of the novel technologies into their curriculum has been ongoing process which was started at the Fall Semester-2002 trough written the final report. The data analysis process in this study was analytic and recursive to inform further decisions on data collected. It also was pre-structured, flexible and open to the discussions with the stakeholders and reviews of related literature. The pre-survey scores were analyzed to find out the phenomenon, the experiences, perspectives and expectations of the Special Education faculty in the Research Institute for Handicapped on the use and integration of new technologies into curriculum at the beginning of the course, and then used to identify and select the interview participants. To make precise statements about the data from the pre-survey, frequency distribution was used in this study.

To investigate the experiences, perspectives and expectations of the Special Education faculty in the Research Institute for Handicapped on the use and integration of new technologies into their curriculum, the pre-survey was modified during the pilot studies by the researchers. This survey was a paper-pencil survey. They handed out to the participants in a face-to-face meeting, and the participants were asked to fill out the survey into or after the meeting.

Analysis and Discussion

The present study addressed the following main research question: *What are the experiences, perspectives and expectations of the Special Education faculty in the Research Institute for Handicapped on the use and integration of new technologies into their curriculum*? The results of this study provide in detail descriptive analysis and discussion of students' attitudes towards using technology as a function of their experiences & computing skills.

The researchers decided to look at the technology experiences and computing skills (such as anxiety, nervousness and self-efficacy, etc.) of the faculty that might affect their attitudes. Therefore, it is indispensable to begin with an overview of faculty's technology experiences and computer skills. The answers to the research question need to be placed in context. Thus, twenty items in the pre-survey provided the data regarding the faculty's previous technology experiences and computing skills. The surveys consisted of 20 items for which students were asked to rate their technology experiences and computing skills on a six-point likert scale. Values from 1 to 6 were assigned to the six-point likert scale: Strongly Disagree (SD)=1, Disagree (D)=2, Barely Disagree (BD)=3, Barely Agree (BA)=4, Agree (A)=5, and Strongly Agree (SA)=6.

As indicated in Table 1, responses were obtained from fifteen Special Education faculties in the Research Institute for Handicapped. The mean of the pre-survey scores was 6.3 out of 120. The mean and standard deviation (SD) indicated that the faculty overall had positive attitudes towards technology at the beginning of the research. The scores also indicated a continuum on attitudes towards technology, with a low of 65 and a high of 96 (Table 2).

Table 1. The Mean and Standard Deviation of the faculty Pre-Survey Scores

TOTAL

N	Valid	15
	Missing	0
Mean		84.53
Std. Deviation		9.34

The six faculties were selected from this continuum for interviews. These six represented very low, low, moderate and high experiences, perspectives and expectations towards the use of technology in the Special Education Institute. The two students with scores of 65 and 70 were chosen to represent very low and low attitudes, two faculty with a score of 80 were chosen to represent moderate attitudes, and the two faculty with high scores of 96 were chosen to represent high experiences, perspectives and expectations towards the use of technology in the Research Institute for Handicapped on the use and integration of new technologies into their curriculum.

Table 2. The Students' Pre-Survey Scores

Score	**Frequency**	**Valid Percent**	**Cumulative Percent**
65	1	6.6	6.6
70	1	6.6	13.2
76	1	6.6	19.8
78	1	6.6	26.4
80	1	6.6	33
81	1	6.6	39.6
83	1	6.6	46.2
84	1	6.6	52.8
90	1	6.6	59.4
91	1	6.6	66
92	1	6.6	72.6
93	1	6.6	79.2
94	1	6.6	85.8
95	1	6.6	92.4
96	1	6.6	100
Total	15	100.0	

The pre-survey data give some insight into what preservice teachers' experiences, perspectives and expectations towards the use of technology in Special Education, even though the statistics show no overall significant differences in total scores. The voluntary participants stated that they liked to study with technology and with the various applications of technology. They would like to virtually collaborate with their colloquies and student parents to integrate technology-based teaching methods and activities. The participants in this research, however, emphasized that face-to-face communication with their handicapped students was very important.

Conclusions

Technology provides universities with the opportunity to improve teaching milieus effectively for not only handicapped students but also their parents through integration of these multimedia-learning materials, accessibility of a variety of information data sources and experts, and nonstop interaction with instructors and peers. Universities must revise their academic and administrative structure in the era of student-centered and technologically rich environment. Technology-based classes can provide a learner-centered instructional support system which is an open system fostering more student control (Duffy & Cunningham, 1996). Moreover, technology-based class which is an application of instructional methods, strategies and activities in collaborative learning environments can support more self-directed learning environments. Therefore, technology-based class in the Research Institute for Handicapped can support collaboration and facilitation including the interaction among students, instructors, and parents.

The challenge facing the universities is to implement these improvements and restructure their teaching and learning systems through the use of technology for more utilization of current resources. Technology-based classroom in special Education requires training instructors to adapt and extend their instructional strategies, techniques. Developing the necessary technical skills of instructors maximizes potential learning and teaching benefits offered by technology.

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