

## **Collaborative work between Faculty and School in using Technology: an example from Turkey**

**Askin Asan**

Faculty of Education

Computer Education and Instructional Technology Department

Karadeniz Technical University

61080 Trabzon, Turkey

[asan@ktu.edu.tr](mailto:asan@ktu.edu.tr)

### **Abstract:**

The field experience component has always been a vital part of teacher education programs (Paese, 1989). This paper describes the collaborative work that is designed to give an opportunity to pre-service teachers to mesh theory with practice in an instructional material preparation course. Pre-service teachers were assigned to complete a computer project to be used to support classroom lessons. Classroom teachers supervised these projects at the basic education schools and the supervising professor supervised them at the college of education. As a result of this collaborative work pre-service teachers and classroom teachers practised integrating technology in subject content areas and individual curriculum units, became more comfortable with the technology and developed greater proficiency in their computer use.

### **Introduction**

Technology offers great potential in the educational environment. While the advantages of using technology have been recognized for a long time, their acceptance and integration within instructional programs have been slow. Recently there has been increasing evidence that positive results take place when carefully-designed, high-quality technology is used either as an integral part of classroom instruction and training or as the principal means of direct instruction (Kemp and Smellie, 1989).

The movement toward development of national education in Turkey revitalized interest in using computer technology in basic education. The Ministry of Education and government has made efforts to encourage the use of educational technology in education to cope with the new challenges of an information society. However, even though the provision of computers into schools has proceeded rapidly, there are many difficulties and problems in the way of effective uses of educational technology in Turkey's classrooms. There are schools still have no, or few, teachers who are well-prepared to use technology in their classroom. Computers are not fully utilized in the classroom because many teachers did not know how to operate them. Computers in education have no value at all if people don't know how to use it.

Before technology can achieve its fullest potential in the classroom, teachers must possess basic and advanced technical competencies. Today, teachers are beginning their careers in a highly technological world. School boards expect computer competency as an entry skill for new teachers. In order for schools to realize fully the educational potential offered by computers, teachers need technology training to acquire computer skills for use in their teaching practices. There is a need for inservice education programs which emphasize integration of computer use in subject content areas and individual curriculum units.

There are some obstacles in pre-service education also. Most teachers graduate from teacher preparation institutions with limited knowledge of the ways technology can be used in their professional practice. Most technology instruction in Colleges of Education involves teaching about technology as a separate subject, not teaching with technology by integrating it into other course work to provide a model for instructional use.

In this study, collaborative work is designed between preservice teachers and school teachers in order to practise integrating technology in subject content areas and individual curriculum units. Preservice teachers were assigned to complete a computer project which was used to support classroom lessons. The mentor classroom teacher supervised these projects at the basic education schools and the supervising professor supervised them at the college of education.

## **Method**

### **Participants**

Participants were 39 pre-service teachers taking an instructional material preparation core course in Computer Education and Instructional Technology Program in Faculty of Education at Karadeniz Technical University, Trabzon, Turkey. These pre-service teachers had already received background knowledge and experience in computer literacy.

The mentor teachers were classroom teachers working in basic education schools in Trabzon. They did not have a strong background or education in computer use, only an interest in learning to use technology for her/his curriculum.

The supervising professor was a researcher and instructor who works as an assistant professor at computer education in the Instructional Technology Department

### **Procedure**

The instructional material preparation course is divided into two sections. The first section of the course outlines major implications of learning theories as they are applied to development of instructional materials. It introduces all major types and formats of instructional media including audio, visual, audio-visual, computers and so on. The first part of the course also provides the necessary background and skills in selection, development and assessment of all types of instructional media.

The second part of the course provided opportunity to pre-service teachers to practise their knowledge and skills in the real school settings. The course is structured so that participants are engaged in hands-on activities to gain insights about how computers can be used to improve teachers' efficiency and productivity, and can be integrated into the curriculum. Once the participating teachers became accustomed to the new technology, they grow from their expanded use of it.

The structure of the course is designed of an ongoing reflective environment. Small study groups were determined to be a more effective way for teachers to receive individual attention and have time to practise their skills. The participant pre-service teachers are divided into working groups (3-4 students in a group). One mentor teacher assigned to a group as a subject matter specialist. The study group met once a week for 90-minutes over a period of four months. Pre-service teachers were assigned to complete a computer project to support at least one lesson plan in mentor teachers' regular curriculum. Computer projects were mainly on producing instructional materials by using available computer application

programs.

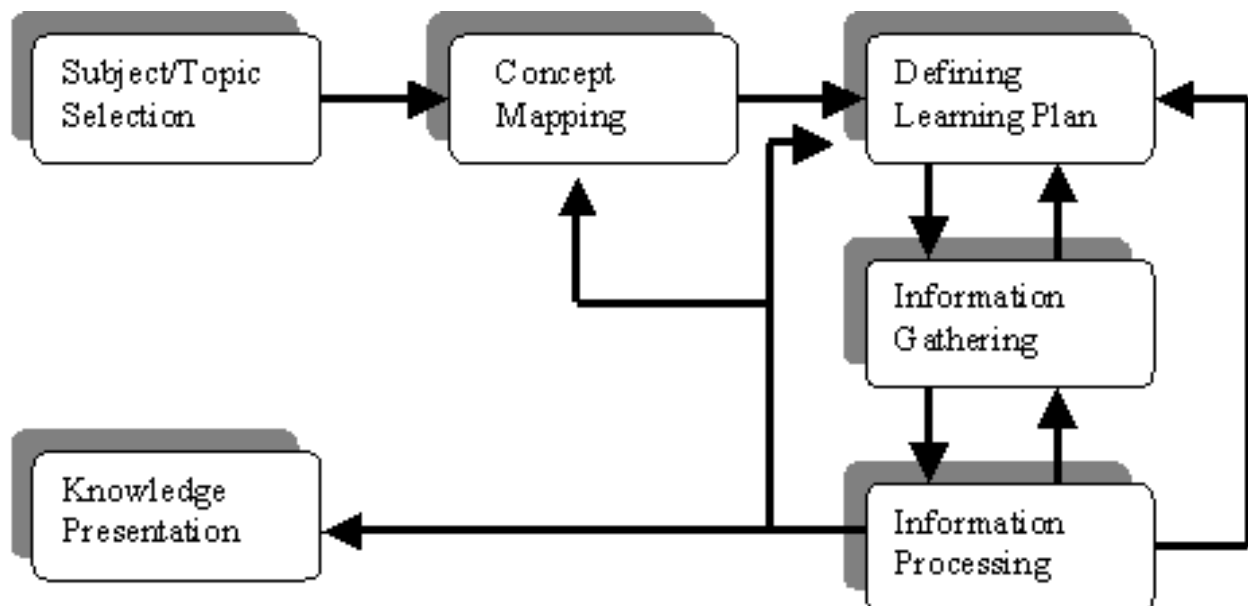
The researcher provided guidance, ideas, and suggestions during the development process. The collaborative effort was under the control of the mentor teacher, because her/his students were to be the ones receiving the computer-supported curriculum. Thus the mentor teacher was responsible for the outcome of the collaborative effort.

The researcher administered an informal survey and interviewed pre-service teachers and mentor teachers to examine further what may contribute to successful learning and how to increase teachers' appreciation of computers in education.

Descriptive data were collected from 39 preservice teachers and 10 mentor teachers. The survey questions contained items concerning attitudes toward computers, perception about the learning tasks, logistic issues, and their preferences.

## Course Structure

The process of the course is based upon the following model of the learning (Levy,1999):



## Choosing a Subject

The first step was to select a subject area to work in. Every group of preservice teachers worked with mentor teachers who were subject matter experts and familiar with the subject content and the general needs of students in that field. Any chosen general subject area was too broad a topic to deal with in a single instructional material, so dividing the topic in the subtopics was a logical second step. This is done by examining curriculum guides, textbooks, and standardized tests in the field to determine exactly what the curriculum consists of.

After identifying a potential topic the team considered what kind of instructional media could help to teach the subject and what were the other instructional needs relative to that topic. Mentor teachers played very important roles in determining the instructional needs.

## Concept Mapping

Concept mapping is a technique that visually represents relationships among ideas (Collette&Chapetta, 1989). Upon selection of a topic, the team worked on concept mapping and explored the roots of the subject, into its relations to other topics, areas or fields. Students graphically placed broad general concepts at the top and the more specific concepts at the lower levels. The picture showed the students the super-ordinate and sub-ordinate relationships of the topic. Students placed key concepts in ovals and placed the linking words along the lines connecting the major ideas. Concept mapping promotes meaning through active learning because the students must make connections between the ideas in the picture and those in their minds. During the concept mapping, the pre-service teachers determined pathways for organizing meanings. Mentor teachers negotiated meaning with students, pointed out misconceptions. The concept-map helped students to make reasonable and sensible selections on what to focus in the learning project.

## **Defining (Learning Plan)**

### **Defining the learner characteristics**

The purpose was to determine which of the required enabling skills the learners bring to the learning task. Some learners will know more than others, so the designer must choose where to start the instruction (Gagne, Briggs & Wagner, 1992). The characteristics of the learner-those who will be seeing, using, and learning from the material- is identified by the help of mentor teacher. Preservice teachers were informed that learner characteristics - as age and educational level; knowledge of the subject; skills relating to it; attitude toward it; cultural context; and individual differences within the group - all have bearing on the objectives and the treatment of the topic.

### **Stating objectives**

At this stage, it is necessary to translate the needs and goals into performance objectives that are sufficiently specific and detailed. One reason for increased detail is to make possible planning and development of the materials and the delivery system (Gagne, Briggs & Wagner, 1992). Pre-service teachers state objectives in terms of the performance expected of the learner. Mentor teachers assisted pre-service teachers when formulating objectives. They tried to state objectives so clearly and unambiguously that any competent person who reads it should have the same understanding of what is expected.

**Generating evaluation measures:** After carefully examining the performance objectives, students stated the appropriate measures to determine whether the learner has obtained the desired behavior and met the objective. Early determination of performance measures helps to focus on the goal of student learning and on the instruction needed to facilitate that learning.

### **Listing available information resources**

Students stated what are the resources they are going to exploit in order to obtain the information and data needed to accomplish the project. They listed all the information resources needed for the project such as printed materials; books, textbooks, teacher worksheets, and digital materials; Internet, utility software, electronic portfolios, etc... To develop materials, the team decided to use Office tools such as MS Word, MS Excel, and MS Power Point.

After completion of the learning plan, the team divided a labor among the group members. The group began to collect all the information and data needed for the material.

## **Information Gathering and Processing**

The amount of information available is growing at exponential rates with the quantity doubling every few years. Along with this rapid growth in the sheer quantity of information, the means for assessing this information has become easier (Caffarella, 1998). In an information society, the focus becomes the generation and distribution of information. A technological revolution is changing our way of life. The cornerstone of this revolution, the computer, is transforming the way we communicate and learn. The spirit of sharing has prompted people all over the world to make available large databases on a wide variety of topics (Long & Long, 1997). There remains however the need to develop the skills needed to get to the right information, to organize and manage the information, and to transform it to knowledge.

Resources such as books, textbooks, curriculum guides are used to collect data needed to accomplish the project. Also Internet is used as a major source of digital information. Pre-service teachers worked together in groups to think (and talk) through the detailed steps to organize the project.

They organize all the data in digital files, in directories and sub-directories; and move, erase, and retrieve files to manage the information and data. The direct and immediate access to all kinds of forms of data they collected made the information processing part of the learning much more useful.

Categorization and information management is the heart of the learning process. It deals with the integration of ideas, with the formation of relations between concepts, and with the evaluation of the knowledge developed.

## **Knowledge Presentation**

The process by which the knowledge obtained becomes a presentation is not only a technical procedure, it is a reflective process of learning (Levy, 1999). To produce the presentation, pre-service teachers recapped the entire learning process, about their thinking, re-considered their consequences, decided what is significant and what is redundant concerning the aims of their project. Mentor teachers assisted preservice teachers to clarify the integral logic of the ideas of the presentation. The team re-considered and planned what they wish to say, show, present, etc.

A tutorial lesson was designed by the researcher to familiarize preservice teachers and mentor teachers with the technical aspects of constructing their own presentations. A step-by-step simplified set of instructions was given to each team. After a tutorial lesson, each team began to create their projects which would be the material for mentor teachers' classrooms during the following academic year.

They imported documents from scanned artifacts, from Internet resources and combined their ideas on a slides by using MS Power Point. This application program made it possible to construct a much better lecture, lesson, presentation and show. Using text with graphic or pictures helped a great deal in the construction of an idea.

Important consideration was given to message clarity when developing presentations, because text displays are the predominant means of conveying information. Mechanical features of the text are also very important. Pre-service teachers carefully selected type size, line length, spacing, type style, justification, break points, and text attributes such as boldface and underline. They also combined text with computer visuals to provide a means to motivate learners, clarify concepts, enhance retention, and promote transfer of information presented to the learner. The quality of computer visuals is based on content, layout, arrangement, use of colour, and lettering, so the pre-service students considered balance,

shape, emphasis, contrast, colour, and harmony when preparing a layout for a visual.

## **Findings**

Mentor teachers did not have a strong background or education in computer use. Most of them did not even know how to turn on a computer. They were aware of the useful aspects of technology for their classroom, but they were in need of a nurturing environment and coaching. Pre-service teachers already had extensive professional experience working with a computer. They were in need of time to acquire, practise, and transfer their computer skills. Both preservice teachers and mentor teachers expressed positive attitudes towards the power of computers and value of using computers in education.

Both preservice teachers and mentor teachers seemed to have strong motivation. They found computer tasks interesting and useful, and showed higher appreciation of the computer resources.

Mentor teachers came up with good ideas to apply computers in their everyday class, and demonstrated higher appreciation of the possibilities of computers. When engaged in some practical tasks for productivity purposes, mentor teachers expressed great excitement.

Pre-service teachers did not have the practical school experience but after the collaborative work they understand the urgent need to improve their work with computers. Pre-service and mentor teachers' positive attitudes helped contribute to more meaningful learning and higher appreciation about computer tasks.

Pre-service teachers had access to the campus computers on a frequent basis. Also during group working pre-service teachers and mentor teachers had easy access to computers at their school. Access to the Internet provided a host of opportunities for exploration and resources on an endless variety of topics for students and teachers.

Both pre-service teachers and mentor teachers enjoyed working on a computer with a group. Learning in a cooperative setting was fun. They found the tasks interesting and they felt encouraged, producing quality products.

Pre-service teachers had the opportunity to work with experienced teachers and took advantage of the technology which helped to improve their productivity.

Use of technology provided unrestricted access to a large amount of video, graphical, audio, and textual material. While working on the project, participants obtained the technical skills and knowledge needed for working with a wordprocessor, spreadsheet, presentations, internet; exploited the potential of computer use and the ability to integrate this technology into teaching situation. Pre-service teachers and mentor teachers agreed together that this is one way to expose students to a learning environment in which they can experience aspects of classroom teaching from a range of perspectives, and to view a multitude of important ideas and representations of knowledge.

## **Conclusion**

There is a strong emphasize today on computer integration into the classroom with a usual focus on the available technologies. In addition to being proficient in employing effective instructional materials teachers who are fully prepared to succeed in today's world must also have technology skills.

One of the problems in teacher education is disconnection between theory and practice during the

process of student teaching. Giving an opportunity for pre-service teachers to work with teachers in a real school setting however facilitates the construction of more powerful and generative understanding of the teaching process - the sort of understanding that will be needed when the pre-service teacher moves into his or her own classroom. There is also a challenge for classroom teachers to use and incorporate technology into their classroom activities.

This collaborative work helped pre-service teachers and classroom teachers to become more comfortable with the technology and develop a greater proficiency in their computer use. The classroom teachers were willing to commit to in-service training that would expand and enrich them in their profession. Pre-service teachers explored new teaching methods in an environment of collaboration with experienced teachers. It appeared that collaboration in learning worked well for classroom teachers as well as for pre-service teachers.

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