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Prospective Teachers' Lived Experience on Computer-based Instructional Materials: A Phenomenological Study

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ABSTRACT The purpose of this phenomenological study is to unveil the qualitative rather than the quantitative factors in student-teachers' experiences on instructional material development for their future classrooms. The participants of this study were nine student-teachers who took "Science and Technology Teaching" course at Classroom Teacher Program. The data sources of this qualitative analysis were the interview transcripts, observation notes, and developed materials. A careful analysis unveiled the following themes: lack of technical skills, lack of instructional design experiences and skills, peer influences, and feeling the novelty. The implications of these identified themes were found important for education community to effectively integrate new educational tools in lessons.

INTRODUCTION

The "instructional materials" term has been used when the first formal teaching took place. In general, instructional materials refer to tools or equipments that teachers use to teach or students use to learn. From stones to modern computers, there are various materials used for the purpose of instruction throughout the history of human beings.

Until the last century, there were limited options for selecting different instruction materials for lessons. With technological developments in the last century, television and radio have been used as instructional tools. In the last decades, computers also became part of education. With more options, educators have looked different options of instructional material selection for their specific purpose of education (Baytak 2010).

Even though there were discussions on whether or not the role of instructional tools, specifically computers, are only vehicle to transfer information and influence learning (Clark 1994; Kozma 1994), recent education pioneers have suggested that using different instructional strategies with computers is more effective for learning (Papert 1993; Jonassen et al. 1999; Jonassen 2000). Different instructional materials have been suggested based on the structure of the learning environment or the characteristics of the learner (Reiser and Gagne 1983). The content of the subject, whether it is a factual or cognitive domain, is also influenced from the selection of the instructional material (Dale 1969). With the recent development in online learning and a focus towards student-centered learning approach compelled educators to select several instructional materials to access large population of learners. Putting all together, most educators ended up suggesting computers as a only instructional material for course since it covers almost all the features of other material types (Baytak 2010).

Because of those features that the new computer technology holds, there is a consensus among most educators that computers are powerful instructional materials for an effective learning. Besides that, the current trend in social life is use of computers and therefore the use of new technologies in education has been found contemporary for the classroom of the 21st century (Cuban et al. 2001).

Consequently, technology has been integrated in education in various ways. From the projections to animated slides, there are so many instructional strategies and techniques to use new technological tools in instruction. Since technology covers variety of equipments such as computers, projectors, cameras and so on, the term technology integration has been also used in a broader way. Specifically, computer-

based instructions or computer-supported instructions are the terms that have been used to refer computers as instructional materials. In computer-based instruction, learner may use software to learn content individually, or teacher may use computer programs in courses to teach a subject to entire class.

Even though there is a growing interest in these educational computer programs, there are also critics from educators about their pedagogical effects. Some researchers asserted that these programs are not able to support teachers' needs properly since most of these products are either educational but boring or non-educational but fun (Kafai 2006). Commercial programs, on the other hand, are found expensive for school budgets or too general for specific class needs (Hirca 2009).

Teachers who are stakeholders to present computers as instructional materials in their classrooms are sometimes found reluctant to a change from traditional materials to these new materials. There could be various causes behind this reluctance. Some of them are the availability of the proper programs that mentioned above. Teacher may insist to change their teaching behaviors (Cuban et al. 2001).

Some researchers think that due to most of the current computer programs for education are lack of pedagogical views, they could not be effective for students' learning (Akdeniz and Yiðit 2001; Gujjar and Malik 2007; Hirca 2009). These researchers, thus, suggest that teachers must develop their own instructional materials or involve in the development process since they must know better how their subjects teach easily to their specific students. To overcome this problem, courses are designed based on learning-by-design and learning-by-doing theoretical frameworks. In these frameworks, the main idea is to provide a learning environment for students to actually do a task or design a material. During the process of doing and designing materials, students are expected to engage in the context and learn about the subject area (Land and Hannafin 1997; Hmelo et al. 2000; Kolodner et al. 2003; Kafai 2006). In these courses, students usually are assigned to a certain topic and they are required to design and develop an instructional material for targeted students. By doing these, student-teachers are also expected to experience of being teacher. Learning-by-design and learning-by-doing are the most common approaches implemented in teacher-education programs. In some courses, student-teachers cover different instructional materials and are generally required to develop sample instructional materials for their fields.

Overall, when the previous literature on material development and teacher or student-teacher use of technology has been examined, there is lack of study that deeply investigate student-teachers' experience for computer aided instructional material development. There is no such study found that answers the following questions; what are the essential components of computer aided instructional material development for student-teachers; what are the feelings and beliefs of student-teachers when developing computer aided instructional materials have been rarely studied in a such in depth-qualitative approach; how computer aided material development is experienced by student-teachers; and how the student-teachers' prior knowledge and experiences effects their experiences of computer aided material development.

In order to find answers of these questions, this current study has explored student-teachers lived experiences in a phenomenological research perspective. There are several studies that exploring living experiences of school community members in educational context. For example, McClelland (1995) has studied parents' living experiences, Nitta et al. (2010) has explored the living experiences of teachers and students when there was school reform in their education settings. Most importantly, another phenomenological study by Zuniga has reviled that teachers have lack of training and instruction time for effective technology integration (2010). Using different technology device, PDAs (Personal Digital Assistant), Pederson and Marek (2007) qualitatively examined and described the experiences of educators and interns.

The current interest towards online learning has appeared in the study by DeGagne and Walters (2010). The researchers explored the lived experiences of online educators. Similarly, Campbell (2003) has also run a phenomenological study for an online learning environment and this study found how blogs can provide ownership to students to increase their motivations. To better understand the students' experiences in online learning environments, Liu (2008) studied students' interaction within the scope phenomenological approach.

Differently, Baytak et al. (2010) studied children perceptions about technology integration in a phenomenological lens. Kassaimih (2006) looked at the teachers' perception in international manner. Cilesiz (2011) also provided a wide range of studies done with phenomenological approach focusing on technology integration into classrooms. The literature review for this current study shows that phenomenological research approach has been intensively used in nursing education. Since it is out the scope of this paper to list those research studies, a related sample study is provided. For example, Little (2000) studied technology competence of nurses for learning about critical care nursing.

Consequently, when the study by Rodriguez-van Olphen examined teachers' lived experiences with technology integration, there were important factors appeared. Based on the findings of this study, teachers' beliefs, previous experiences and their content and pedagogical knowledge were the factors effecting their decisions to integrate technology in their lessons (2002).

MATERIAL AND METHODS

As it was mentioned above, the current study employed phenomenological methodology since the research questions listed above were concerned with the lived experience of student-teachers. According to Creswell (1998), phenomenology research provides the meaning of the lived experiences for several individuals about a concept or the phenomenon which is computer-based instructional materials. Phenomenology, pioneered by Edmund Husserl and Martin Heidegger in the last century, has been considered both as a philosophical approach and methodology (van Manen 1990).

The aim in phenomenological research is to explore the consciousness and essence of the lived experiences and therefore this research perspective try to unveil the qualitative rather than the quantitative factors in human experiences (Moustakas 1994). According to Dowling (2007) researchers in phenomenological perspective should conduct the study without any prejudice in order to understand the phenomenon correctly and presented accurately.

The Participants

The participants who experience the phenomenon are seen as co-constructors of the descriptions and interpretations of the research (van Manen 1990). Thus, the main criterion for participation is that the participant has some experiences of or relation to the phenomenon (Rossiter 1999). The purpose of selection in a phenomenological study is to find participants who had experience with that phenomenon and willing to share their experiences and feelings. According to Rossiter (1999), the selected participants have to be representative enough of a specific population to enhance the possibility the phenomena can be captured.

Following the guidelines of a phenomenological approach, the researchers of this current study, one of them was the instructor of the course, observed the classroom to select representative participants. As common class profile, some students pay more attention to projects where some spend less. Without looking at the students' prior experience in the phenomenon, the selection was based on students' performance and their willingness to attend the study. There were nine participants (4 male and 5 female) who were in their third year of university. Throughout this paper, the names are labeled as student 1 to 9 to protect participants' privacy.

The Context of the Phenomenon

The phenomenon, material development, was part of the student-teachers' course requirements. The course, The Instruction of Science and Technology, is requirement course for classroom teachers. The course is delivered in two semester of the third year. This research was conducted during the second semester of the course. During the first semester, the course covers most common instructional theories and strategies, alternative measurement and assessment methods in science lessons. According the course instructor who is also the second author of this paper, the students insisted several times that they have already known the topics covered in the first semester of the course. However, it was observed that they were not able to implement their theoretical knowledge into practice. Thus, for the second semester of the course, the instructor redesigned the course and required the student-teacher to develop a course material for elementary level. Each student-teacher was given a specific objective of an elementary level Science and Technology Course. In the first four weeks of the course, the instructor pre-

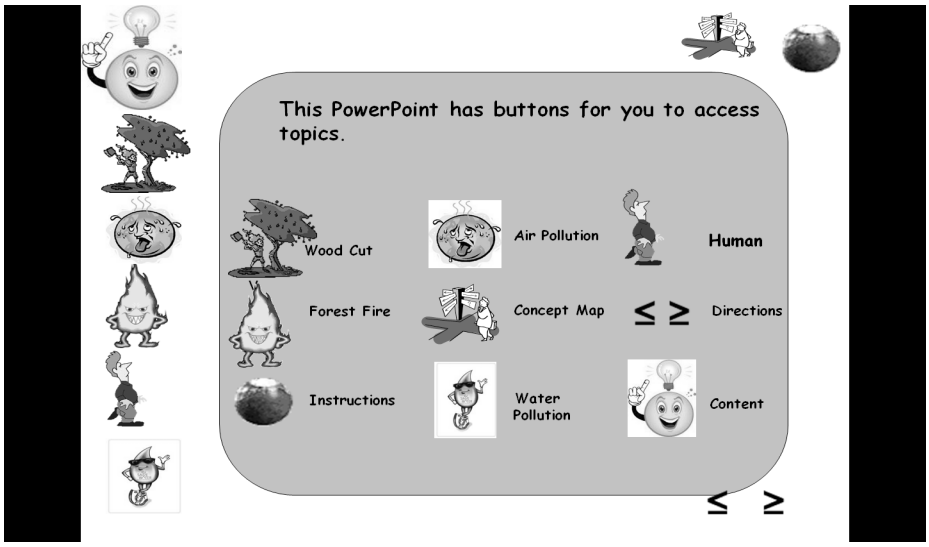

Fig. 1. A screenshot from a student's material' main menu on topic of environmental issues (Published with the permission of the student)

sented a sample course material and how it was designed with PowerPoint software. Even though the students were not bordered with specific technologies, they were told that they could develop their own materials with PowerPoint software to include animations and videos. Figure 1 shows a screenshot of a student' developed material.

Data Collection

In phenomenology, the purpose of collecting data is to use that data to construct a meaning (van Manen 1990). The data presented in this study is based on the interviews with the participants, class observation during the students' experience of material development, and the students' developed material for the course.

Interviews

As it is heavily suggested in phenomenological studies, interviews with the participants were the main data resource for this paper. Each of the participants was interviewed privately. They were conducted in a quiet room, with refreshments, a small distance away from their classrooms. Even though most of the participants were comfortable during the interviews, few were nervous at the beginning of the interviews. The second author of this paper who was also the participants' course instructor restated how their responses would not influence their grades since they already received their grades for the course.

Semi-structured and face-to-face interviews were done. The interviews were conversational in tone with a student-teacher and the researchers disclosing what it is like to develop computer-based instructional materials. Based on suggestions in the previous phenomenological research (Bogdan and Biklen 2003), the interview questions in this phenomenological study were developed without a specific answer in mind. The most interviews were started with about their topics and why they chose to design the materials they developed and then the rest of questions were asked based on the participants' responses. The conversations were done in Turkish but the transcripts are translated to English.

Observations

In addition to interviews, researchers also (Marshall and Rossman 1999) suggest the importance of observation in phenomenological studies to understand the lived experiences accurately. In this study, course instructors took notes during students' interaction with the phenomenon and interaction with each other. Social

setting of the lived experience where sharing, collaboration, conceptualizing, and challenges are taken place were observed for individual participants and entire classrooms.

Developed Materials

As part of the class requirement, the students were given assignment to develop a computer-based material. The developed instructional materials were aimed to be used in a classroom or by individual students. The target audience of the materials were limited to primary school students but not to a certain grade level. Each participant was given time to develop the material and present in the classroom with their peers. Participants were allowed to help each other but not to do someone's task.

Data Analysis

After the data collection, researchers in phenomenology do data analysis to find meanings within the experience and determine essential themes (van Manen 1990). During the analysis process, researchers of this study try to remain faithful to the key criteria of phenomenological research. Based on the collected data, the analysis process includes interview conversations, class observations, and instructional materials developed by the participants.

The analysis of data started with the developed materials for each participant. What they developed, which instructional strategies, techniques, alternative measurement and assessment methods reflected, what characteristics the materials hold, what technology is been used, and how the content is displayed are the main questions that were keep in mind while analyzing the materials. After that, the interview analysis started.

For the interview analysis, researchers used word processing and created a table for each participant. Within this table, there were columns devoted to the minutes, the exact conversation, extra notes from the interview that during the conversation, and expressions to lead themes. From minute to minute, all conversations from all participants were transcribed in this table. Each transcript was read with an open mind so that data could be approached without preconceptions about computer-based material development and participants' experiences.

Since there were long pages of transcripts, the study follows qualitative study guidelines suggested by Miles and Huberman (1994) and the transcripts were coded. By coding the data, a large amount of textual data was reduced to meaningful concepts. To reduce the text and determine themes, van Manen suggests three approaches; the holistic or sententious, the selective or highlighting, and the detailed or line-by-line (1990). For the analysis of this study, the second approach has been deployed. After selecting all expressions or words related the phenomenon from the textual, the researchers try to find the themes that captured the essence of computer-based instructional material development.

FINDINGS

Based on a careful qualitative data analysis, there are four core themes identified from the reduced meanings of participant verbatim transcripts; lack of proper technical skills, lack of instructional design experiences and skills, peer influences, and feeling novelty**.** Quotes from the participants are used throughout this section to emphasize core themes.

Lack of Proper Technical Skills

Prior the instructional material development project, students have already taken basic computer and technology courses that teach about office programs and especially Office PowerPoint (PPT). Thus, instructor gave option to the students to use PPT as platform to develop their instructional materials. However, they were told that materials should include animations, animated images and shapes and movies that designed by themselves or from internet and less text in various teaching methods and techniques, so the materials should be different than a simple presentation.

It came out from the interview transcripts that the participants of this study thought they already have enough technology skill until they started to develop the materials. When they were asked whether they have any technical problems during the project, most of the students mentioned that they did not know how to make proper animations for their designs. Student 5 for example, has indicated that he already knew PPT at some level but he had trouble with find-

ing sources working on his design. Student 3 added that he never had any fear at the beginning of the project because he thought he knew PPT well. But then when he could not find the sources he wanted, his level of fear, as he mentioned, had increased. Similarly Student 1 mentioned that he understood later in project that he did not design PPT slides effectively as much as he should. Student 6 also said that he learned more about PPT during the project while developing his material.

Another student, Student 7, mentioned that she only knew making single slides with PPT but during the project she did trial-and-error and learned more about PPT. Student 1, bring up another important concern. He said;

"[I]f I had enough PPT skills, I could use my project time properly and wisely, I could think more. But, after the project was done, I was surprise how I design the project. I learned more by doing it. And, at the beginning, I did not know that you can develop that interactive material with PPT."

Most of the students indicated that they could not find related animations for their specific topics at the beginning. The students who found animations mentioned he was not able to modify the material for his content area. Student 4, for example, said **"***at the beginning I have hard time to find good pictures and source for my topic, later I found some but I could not modify those. Thus, at the beginning I always had fear about the project."*

Different than, Student 4, Student 9 mentioned that she had self-confidence about the project at the beginning until she had trouble with PPT.

"At the beginning, I had self-confidence that I would design a good material. But, then, I spent at least two hours to delete a textbox that appears on slides. When dealing with textbox I had fear that I could not finish the project. Later, a friend told me that you just write in the box. And, after that I started to try out different things. I learned a lot of things. When I started animate images and shapes, I had a feeling that I could design a better material and my fear disappeared."

Some students said that they would like to choose a different topic since they, at the beginning of the project, thought they cannot develop a material with their technology skills. For example, student 6 mentioned that he wished he was assigned to a different topic by course instructor. Similarly, Student 7 told the researchers during the interview that she learned animation during the project and after she learned a new thing she changed her design.

Since students did not have proper technology skills prior the project, they developed materials that were under their expectations. Some participants, therefore, mentioned that they would design materials differently if they knew PPT or flash before. However, the data analysis show that every new skill they learned have reflected on their designs. Student 8, for example pointed that out as follows;

"The new technology skills I learned during the project have affected my design, and therefore my feelings. At the beginning, I was planning to develop my material with simple images and shapes but later I have seen effects and animations. I started thinking to use that features. Then, I thought my students can learn my topic better if I use those animations. I started use animations and I become happier about the project."

Nevertheless, in each interview, the participants were asked whether or not doing this project improve their technology knowledge. All students accepted that their technology knowledge has been improved so much. For example, Student 9 mentioned that she learned some simple computer activities besides PPT features. She also mentioned that she feel safer now when she use computer comparing with prior to the project. Prior to the project, she mentioned, she did not prefer to do the tasks on computers or she would ask friends for help. But, now after developing the material on computer, she said she likes to work more on computers without any fear. More importantly, another student, Student 2, claimed that she learned most of features of PPT by doing it and this learning is more sustainable.

Lack of Instructional Design Experience and Skills

The analysis of the data from the observation and interviews shows that there was a consensus among the student-teachers that technology-based instruction is more effective than traditional instruction for primary lessons. They indicated that with the new technologies, their

future students will learn better. It was found that the prior courses they have taken about learning and instruction was backing their claims. The participants of this study were mainly aware of the learning theories and methods. The following participant, for example, mentioned how cognitively technology can affect students' learning;

"The programs developed on computers are able to touch different senses of the students. For instance it can be both audible and visual. In addition, it can be updated easily. For example, if you do not like it or you find something missing, you can make changes quickly." Student 4

The interview transcripts show that the students lack of prior experience in developing instructional material and instructional design strategies have affected their experience during the project. From their feelings to their time management, most of the students mentioned that they had hard time at the beginning of the project. The following conversation was part of these transcripts.

Researcher: *what did you feel when you first time started the project*

Student 4: *It was terrifying. I had fear that I could not finish the material. I spent most of time thinking what to do. Then, I called my father and tried to get his ideas.*

Researcher: *Why did you have fear?*

Student 4: *I did not know anything*

Researcher: *what did you not know?*

Student 4: *I did not know what the materials should look like and how it should be designed.*

Responding the similar questions asked by researchers, another participant, Student 3, mentioned that he could do easily design a slide show but it was hard to think about making rain, mudslide (soil erosion was assigned to this student as the material topic).

The finding that the students did not have proper instructional design skills with new technologies has strengthened with the participants' interview transcripts. Even though some students did not clearly mention whether they had lack of instructional design skills, their comments during the interviews proved the claim of this study. For example, Student 2 stressed that she did not have any issue with the design at the beginning of the project, but she later state that;

Student 2: *when I saw the topic assigned to me, I thought the easiest topic was assigned to me. Then I started to think how to design. Even though I had less computer knowledge, I thought I can do it.*

Researcher: *what gave you the confidence that you can easily design your material?*

Student 2: *Because, the professor showed a material that was done with a topic similar to my topic. Then, this material gave me idea what to do.*

A similar conversation with Student 8 also shows that some participants did not have any instructional design idea in their mind but influenced from their peers even though their assigned topics were different.

Researcher: *did you have any design idea when you started developing the material?*

Student 8: *no, I did not have any design idea in my mind but when I saw a material developed by my friend, the material is shaped in my mind. And I started to develop.*

Student 4: *after seeing friends' materials I started having ideas about what to do. Then the project became fun.*

As the conversations show, the participants' lack of proper instructional design skills lead them to copy their peers' designs and this could cause replicated designs at different theme. Student 3, for instances, specified that his design was changed after seeing the first presenter's material. He tried to do a similar instructional design.

It was seem that most of the students was in need of PowerPoint help, however, according to Student 6 who has known as the most knowledgeable student among his peers, mentioned that other students was requested help more than just about technology but also about design.

Nevertheless, by developing the materials, the students started to implement some instructional strategies. Based on the interviews, it was found that the student-teachers' lack of technology skills have affected their designs as well. For example Student 9 mentioned in detail how her materials get changed after learning new features of PowerPoint. After learning technical skills, and presenting her material, Student 9 mentioned that she started to think about implementing some instructional strategies in the material. She for example, helped her friend to start PPT with an interactive question for students.

Later in the project, students pointed out that they have added some instructional strategies and tactics in their materials. Student 5, for example, stated that he checked the prior knowledge of his material users by adding a question at the beginning of the material according to first stage of 5E model of constructivist approach. Based on the users' responses, different videos were shown on his material. Student1 also added some strategies that check users' multiple intelligence. Student 2 mentioned that she wanted her materials to have both audible and visual features and she added those features later. Student 3 commented that his slide shows, from now, would not be simple slides because that bothers him now. He would develop materials with PPT that present information with different instructional strategies.

More specifically, it also appeared that the teacher candidates were aware of their target audience prior to the material development project. It came out on most conversations that they wanted to know how the children would like the material. Student 4 mentioned that she worked hard to find the best possible design that the children would like. Another female student mentioned that she developed based on what she liked when she was a child.

The student-teachers were asked what they would do if they were given another semester time for the design. Most of the answers were that they would add more animations. Student 8 mentioned that he, then, would have more time to think about the project and everyday new things may inspire him to redesign his material. This also shows that there was not a planning strategy among students.

Peer Influence

As part of the project, the students were told by course instructor to present their instructional materials to the rest of the class. The students were assigned to different weeks. In addition, the course instructor allowed the student-teachers to interact with each other for their individual material development. Based on participants' comments, they interacted with each other in classroom and out of classroom. The interviews transcripts showed that the presentations of the materials and social interaction of participants have created a platform that peer influence appeared. The findings show that peer influence was mainly about technical and design aspect of the material.

First of all, the presentation sessions of the materials has impacted on the students designs. For instances, Student 2 commented that "*some of my friends had too much text on their materials and this was not good for eyes. After that, I looked at my material and take out some text. But, on my material I had concept map and I saw later that most of my friends used that strategy on their materials.*" (When other participants were asked they accept that Student 2's concept inspired them to use it). Student 2 added that; "*if I had more time I would add a question at the beginning of the material. I saw that from a friend material after my presentation*."

The students also reported that the presentations were reflection for them to modify their materials. Student 5, for example, stated that he was taking notes about pros and cons of materials when his friends were presenting their materials. Student 5 also mentioned that he take his lessons when the course instructor gave feedback to his classmates' materials. Consequently, Student 3 stated that; "*after my presentation, some of my friends spent only few hours for using some features of PPT, on the other hand I spent three weeks to understand the software features and to use for my material development.*"

The interview transcripts and observation notes show that students freely made comments on each other's materials. According to participants, most of these comments were negative but found productive to modify the materials. Student 3, for example, commented that;

"*My friend told me that I have too many slides for a instructional material and delete some. Some also said that I had too many images I took put those. I also transformed pictures into buttons and a friend told me that it does not look good. After that I made the buttons simple.*" Student 3

"*Because of topic* [the student had environmental issue as assigned topic], *I had green as background color of my material. Then, a friend of mine saw it and said that this could be too dark and users cannot see the buttons. After this comment, I modified my material accordingly.*" Student 8

Nevertheless, the comments were found limited to shapes and colors. Student 2, for example, stated that she, after getting some comments from her peers, modified only the content and

shapes of her materials but she did not make any change on the instructional strategy she used. In some cases, such as Student 7, students made changes on their materials without judging the peers' comments. She mentioned that she needed help on the project and she added that *"I made all the changes when my friends to told me to so"*.

It was found that peers' designs and levels become benchmark for student-teachers. They have look at each other's design first and some design based on that. Student 8 for example pointed that *"at the beginning of the Project I was so much fear. But, after trying I had bring my materials to certain level and I saw that my materials were similar to my friends' materials. At that moment my fears to happiness and I started having confidence that I can also design instructional material."* Similarly, Student 4 also commented that she had fear that she cannot finish the project until she saw her friend design some visible materials. This shows that getting certain level or benchmark has directly affected their feelings and beliefs.

Feeling the Novelty

The interview transcripts of this study show that the participants believed that technology is effective for education and the material development process was novel experience that helped those live teaching experiences. Most of the students accepted that technology is or will be everywhere in the social life including educational systems. Student 7, for example, commented that;

"I realized that we were in need of this kind of projects. It does not matter how much I insists, one day technology will defeat us to be used in my lesson. In order to survive, I know I have to be able to deal with technology. When I become a teacher there won't be any school without computers. The teaching models I have seen so far at the school are traditional but I think that changed now."

The participants also agreed that they, as students, always wanted to have simple assignments and projects to pass classes but the design project helped them to learn about instructional materials and computer-based materials. The interview transcripts show that most of the students indicated they have happiness at the end of the project. The following are comments from two participants;

"We, as students always wanted to have simple tasks or do nothing at university. But, I think this kind of material development activities have to be more. When I go to training schools, I see teachers are using rational styles and students are getting bored. I think this kind of materials will be beneficial especially for students. I wish we had this project at early years of my university time and I wish we design new materials for the internet as well." Student 4

"When I was assigned to the project, I found it odd. I thought that it spends my time to work on a single project and presentation of this material. After I finished my material, I liked my materials and the project idea. I felt happy" Student 5

"This project helped me face with realities. I felt teacherhood. I understood what to do and what not to do." Student 7

*"I think this project increase my inspiration skill. At the beginning no one knew what to do but then everyone finished their materials."*Student1

In addition to their positive attitudes towards the project, the participants, the findings of this current study show, start feeling ownership of the material they designed after the development experience. During the last interviews, some participants mentioned that they were happy because their future students will learn more from the materials and some participants were happy because they were able to finish such a functional material.

"At the beginning of the project I had fear. After I had finished my material and thought that I can show something new to my future students I started to get excited and happy. And thinking that I can show these new and different things to students at all time increased my excitement and happiness." Student 4

"I realized that the material I developed was getting even my own attention." Student 9

"I have designed this material for fourth grade student. I planned to make it simple. I imagined myself as a child I like the material so much." Student 2

"When the material was done, I started to think that I made the material and I can use in my future school. With this project, at the first time, I started imagining myself as a teacher in next few years. That made me so happy" Student 5

DISCUSSION

The aim of this current study was to explore the essence of the lived experiences of student-teachers along with their developing computer-based instructional materials process. After a careful data analysis, the findings unveiled four main themes. This section of this article will open a discussion on how to interpret the findings and how to implicate the findings in educational settings.

The findings show that the participants of the study had certain level of technology and computer skills. The interview transcripts also show that students had high self-confidence until they have encounter the actual task for material development. The participants accepted that computer-based materials are essential for contemporary teaching. However, observations and interview transcripts show that students straggled to finish their materials. The situation proves that the participants who are going to be teacher in a year did not have proper technology or computer skills to develop a computer based material. As Whetstone and Carr-Chellman (2001) urged, student-teachers of today must have expertise and skill of technologies that they are going to use in their future classrooms.

Similar to conclusions of Asan (2002) the results of this study also opened an area to discuss the Computer Basics courses delivered in all Turkish Universities. In faculty of educations, all teacher candidates are required to take this course for two semesters. The content of this course is usually limited to basic computing and office programs. Even though the students have to take Instructional Technology and Material development courses after a year, the students are expected to have certain level of prior skills to be able to develop a computer-based instructional material. Besides basic computing and office applications, teachers should have, at least, some understanding in design software to develop of modify instructional materials for computer use. Even though there are already computer-based instructional materials for teachers, the concerns listed by Kafai (2006) still exist and therefore there is a need for teachers to have certain computer skills. Teacher candidates may participate in such material development projects or computer model projects (Valanides and Angeli 2006) to practice their skills in both technology and design.

Similar to lack of proper computer skills, the study findings show that teacher candidates are lack of instructional design skills. When the experiences of the participants observed, most of them spent days to have a design ideas. It was found that most of the participants started with a duplication of peers design and modified based on their content area and their newly learned technology skills. As one candidate mentioned during the interview, they needed inspirations for developing their materials and they had that towards the end of the project. Even though the participants have already taken some theoretical courses about learning and teaching, these findings show that they were lack of instructional design skills. Thus, it can be suggested that student-teachers must be prepared to develop instructional materials with pedagogical aspects. As it has been discussed by Akpinar and Simsek (2007), teachers must at least be aware of design process of learning materials. At the era of technology, the focus should be on designing and developing computer-based instructional materials. In addition, there were planning problem along with design issue. Thus a structure planning session was found necessary.

As it was pointed by Baytak (2010) before, technology is implemented within the frame of traditional instructions. In other words, the current technology opportunities such as computer and web technologies provide a different platform for learning and instructions. According to Hirca (2009), teachers constantly try to explain difficult terms by writing texts, drawing graphics and answering the questions on the blackboard. In fact, all teachers create their own live textbook in each class every day. With that perspective, teachers can create their own computer-based instructional materials to implement for many years. Thus, using these new high-technologies with old style educational methods may not improve the quality of education. Indeed, it may distract students' attentions and decrease students' achievement in certain cases and subjects. In order to use technology effectively in the future classroom, today's student-teachers and tomorrow's teachers must be able to understand the design and development requirement of an instructional material.

Similar to other design projects, the material development project also naturally prompted social interaction between students. Besides formal presentations, students' need in help and

their curiosity for others materials have pushed them to review peers' materials and to leave feedback. In addition, the findings show that the instructor's comments for an individual material have influenced others designs.

It was found that the interaction and comments have caused student-teachers to make big changes in their designs. This can be because of the students' lack of design experience. In other words, the student-teachers who did not have design experience easily changed their materials when they hear comments from a peer. This influence, it was found, has also set benchmark among the participants. The interview conversations and observations show that the participants' decision on whether or not their material was complete was based on their peers' materials. Once participants see his or her material at the level of previously presented materials, he or she feels that the material is done. On the other hand, design projects are expected to unveil students' inspirations. In order to overcome these issues, instructors may arrange presentations after everyone's deadline. Moreover, the implementation of this project can be done on web 2.0 technologies for distance learning environments.

The finding of this study support effects of digital divide on educational settings. Prensky (2001) claimed that the new generations living with technology and therefore they are digital natives where the previous generations are classified as digital immigrant. This study shows that the participants of this study are thinking with technology even though they have weakness in certain technology skills. The participants collectively agreed that technology is part of their life and, therefore, it has to be used in education as well.

Similar to most phenomenological studies (Garthwait and Weller 2005), the material development research also perceived some limitations. From sampling to the content area the phenomenological methodology in nature may cause some biases. Even though the participants were purposely selected with certain skills and ideas, a future research with different participants may strength the findings of this study.

CONCLUSION

This phenomenological study explored the consciousness and essence of the lived experiences of student-teachers along with their developing instructional materials process. The justifications listed in the next paragraph required such research for the field of education.

From the beginning of the history, instructional materials are accepted as the essential part of formal and informal education. Besides teachers, instructional materials are the source of information to learn from or to teach with. In the current era of technology where constructivist and individualized learning approaches become popular, instructional materials have increased their importance. Rather than simple materials with only text, the trend in education is material with animations and visual features. With computer and internet technologies, the new type of materials can be reproduced and delivered to uncountable number of learner synchronously or asynchronously.

RECOMMENDATIONS

Following methodological directions of phenomenology, this research aimed to unveil the qualitative rather than the quantitative factors in student-teachers' experiences about materials development for their future classrooms. The findings show that the participants of this study had lack of proper technology skills to involve in computer-based material development. This may also be the cause of some teachers' negative attitudes towards technology integration in classrooms.

The instructional design skills to develop a material were not strong enough for the participants of this study and therefore some challenges have been observed during the project. In order to overcome this issue, teacher preparation institutions may provide more instructional design related course for students.

It has to be accepted that most of the teachers perceive PowerPoint tool as a raw presentation tool and there is a overuse of these non-pedagogical style. On the other hand, there are complaints from the teachers that available animations do not contain adequate educational content and they are not able to develop their own animations. The teachers, therefore, can use simple tools such as PowerPoint to develop their own animations which could have both learning and pedagogical values.

In addition, this study shows how the participants could socially interact and influence

each others' ideas when developing course materials. More importantly, almost all participants of this study accepted that technology will be part of tomorrow's classrooms and today's teachers have to be able to know how to use this technology wisely for effective teaching and learning.

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