EMOTIONAL EXPERIENCES IN SIMULATED CLASSROOM TRAINING ENVIRONMENTS

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Abstract

This aim of the current research is to investigate the emotional experiences of pre-service teachers after the implementation of a simulated classroom environment during the semester. SimSchool classroom simulation was used for the training of pre-service teachers in classroom management issues. The research took place at the Democritus University of Thrace and the School of Pedagogical and Technological Education (ASPETE) in Greece. This paper presents the empirical data relative to the emotions pre-service teachers experienced during the simulated activities. Results indicated that participants experienced more negative than positive emotions including anxiety, nervousness, disappointment, insecurity, inability to deal with simSchool activities, defeat, dissatisfaction, fatigue, fear and stress. However, participants also experienced positive emotions including excitement, motivation and satisfaction.

Key words: simulation, teacher preparation, emotions

Introduction

Over the last decades, the implementation of Information and Communication Technologies-ICT in education changed dramatically the traditional teaching and learning context, providing new capabilities and tools for innovating teaching practices. However, despite the technological evolution and the modernization of the educational context, learning cannot be achieved without teachers. Teachers remain the most basic and dynamic factors of the educational process influencing student achievement and development (Mavrou & Meletiou-Mavrotheris, 2013). Undoubtedly, due to the rapid and continuous changes in today's classroom, teachers must redefine their roles and develop new and effective teaching strategies in order to create engaging and challenging learning experiences that meet the needs of their students (AITSL, 2011).

Although the technological advances promoted the transition from traditional to digital classrooms, teachers are not skilled and prepared to meet todays' challenges (Mavrou & Meletiou-Mavrotheris, 2013; Zhang, 2009). The traditional teacher training curriculum overemphasize to the theoretical pedagogical knowledge of pre-service teachers offering limited practical experience in real classrooms (Andreasen & Haciomeroglu, 2009; Darling-Hammond et al., 2005; Ellington et al., 2013; Oonk, 2009; Picollo & Oskorus,

2009; Zhang, 2009). Teacher training programs prepare future teachers on what and how to teach in ideal classroom conditions and as a result when the classroom door closes beginning teachers are unable to confront the difficulties that they face relative to classroom and behavior management issues (Andreasen & Haciomeroglu, 2009). Pre-service teachers are in need of practical knowledge in order to gain experience in practical problems that will allow them to understand the complexities and the realities of being a teacher.

According to Oonk (2009: 347) teaching practice is 'an integral component of teacher training' and can 'contribute to the making or breaking of a student teacher'. Despite the importance of teaching practice most teacher training programs offer few hours of practice in schools that in most cases has the form of observation and not of actual practice (Katsarou & Dedouli, 2008). The cost of teaching practice and school availability problems prevents student teachers from practicum experiences on authentic classroom situations (Kirby et al., 2006; Mahon et al., 2010; Zhang, 2009). In an effort to solve the lack of practice in teacher training and improve pre-service teachers' practical skills, simulation methods seem to be a promising tool providing a rich learning environment where candidate teachers can develop their teaching skills and practice (Ellington et al., 2003).

Defining the terms
Game based learning is not a new idea but has a long history. Gaming has served as tool for educational purposes since the 1600s, when war games were used for military training (Ellington et al., 2003; Jong et al., 2013). Research has indicated that gaming applications address both cognitive and affective dimensions of learning offering multiple benefits for the learners (De Freitas & Liarokapis, 2011; O' Neil et al., 2005). Moreover, game-based learning supports the constructivist learning theory that highlights the active participation of learners in knowledge acquisition. The last few year computer games like simulations are an integral part of the training programs in fields such as medicine, military, police, business, management, engineering and physics (Baek, 2009).

Simulations offer 'the unique possibility of designing an authentic learning experience when it is impossible or impractical to foster such an experience in the physical world' (Baek, 2009: 27). Within the simulated environment the user is 'in a realistic setting', confronting problematic situations that require 'active participation…decisions and actions' (pp. 29). Using simulations games in teacher training programs will allow pre-service teachers to experience real-life situations and achieve meaningful learning and deep understanding on the complexities of the classroom (Foley & McAllister, 2005; Ferry et al., 2004). Within this safe, interactive and dynamic learning environment pre-service teachers can practice their classroom management skills, learn to control their teaching time and experiment on disruptive classroom behaviors (Coffman, 2006; Ferry et al., 2004). Another significant aspect of classroom simulations is that they allow the users to reset the virtual classroom and try again making alternative decisions unlike a real classroom environment (Ferry et al., 2004; Sarpe, 2015). Within the simulated environment student teachers can experiment, make mistakes, reflect on their

teaching, make changes and experiment again but in a way that does not affect negatively a real student (Baek, 2009; Foley & McAllister, 2005; Ferry et al., 2004; Zibit & Gibson, 2005).

It is recognized that classroom simulations can be used as a training tool to complement the traditional teacher preparation, promoting student teachers' awareness and decision making through authentic, engaging and dynamic learning experiences (Coffman, 2006). However, their success depends in the ability to transfer in real world situations the skills practiced and the knowledge gained during the game (Ellington et al., 2003; Kebritchi & Hirumi, 2008). One tool that seems promising for the training of student teachers is simSchool classroom simulation.

The simSchool classroom simulation
SimSchool is a dynamic web-based classroom simulation that offers pre-service teachers the opportunity to experience real life classroom situations in a virtual environment. It is a first person game where the player has the role of the teacher and is responsible for the success of the classroom. Within simSchool inexperienced teachers will have the ability to enter their virtual classroom and 'through repeated cycles of decision-making, experimentation, and refinement' develop 'new strategies and thinking like a teacher' (Zibit & Gibson, 2005:1). The technology behind SimSchool offers learners a variety of students with different attitudes and learning characteristics. During the simulation the user-teachers have an active role play and it is they who control the successful management of the classroom (Cima (2011). The user-teachers have to specify what the students need in order to assign the appropriate tasks, guide and support their students during the tasks and assess their progress by checking their academic, power and happiness levels (Cima (2011). Teachers must use a variety of teaching methods and strategies in order to engage their students and motivate them towards meaningful learning (Cima (2011).

Research in the use of simSchool in pre-service education reported a positive impact of the simulation in participants confidence and self-efficacy (IITTL, 2013; Christensen et al. 2011). Moreover, Mavrou and Meletiou-Mavrotheris (2013) and Christensen et al.'s (2011) reported that student-teachers found simSchool a safe environment to practice their teaching skills before entering a real classroom for the first time without the fear of making mistakes that can harm real students. However, despite the positive results after the use of simSchool simulation, research also identified several problems. According to Mavrou and Meletiou-Mavrotheris (2013) the use of simSchool as part of the course requirements did not allow the participants to be emotionally engaged during the game. Additionally, student-teachers characterized simSchool as a not user friendly simulation environment and they found its graphical design poor and unrealistic (Mavrou and Meletiou-Mavrotheris, 2013).

This research aims to investigate the use of classroom simulations in teachers training. For the purpose of the current research simSchool classroom simulation was used in order to train pre-service teachers in classroom and behavior management issues. The aim of the research was to investigate the emotional experiences of pre-service teachers during the simulated activities.

Emotions and learning

Emotions play an important role in any learning experience either it is a traditional classroom setting or a computer-based classroom simulation. Emotional experiences are important for the engagement of the users maximizing the quality of their learning experience (Hudlicka, 2009; Sansone & Thoman, 2005). Additionally, emotional experiences in simulation games can affect positive or negative players' attention and active participation during the simulation game (Anolli et al., 2010). According to Huldicka (2009), Hudlicka and Broekens (2009) and Conati and Zhou (2002), in order for games to be effective and realistic, game characters should possess emotional reactions such as embarrassment and body language including facial expressions, head and hand movement. The emotional variables need to affect the characters' decision making and behavior during the game leading to changes in facial expressions or body movements (Huldicka, 2009). Such emotional variables can generate emotions in real-time provoking a wide range of emotions to the players (Huldicka, 2009). The virtual students in simSchool possess 'dynamic…emotional, psychological, physical, cognitive, and social' characteristics (Gibson, 2012: 1). SimSchool virtual students are designed based on the COVE framework that is 'a computational model of learning that integrates models from Cognitive science, the OCEAN model of psychology, OCC model of emotions, Visual-Auditory-Kinesthetic perception' (Gibson, 2012: 1).

Although research on emotions has received much attention the last few years, literature relative to the emotional experiences of users in classroom simulated environments like simSchool remains extremely limited. The current research aims to investigate whether the emotional variables of simSchool virtual students generated pre-service teachers' emotional experiences during the implementation of the activities.

Method

This paper presents the empirical data of a research that sought to examine the emotional experiences of pre-service teachers during the implementation of simSchool classroom simulation. The data were collected during two different lessons in the spring semester from March to June 2014 in two different Universities, at the School of Pedagogical and Technological Education (ASPETE) and at the Democritus University of Thrace, in Greece. Pre-service teachers were trained in classroom and behavior management issues through the various simSchool activities.

Participants

A total number of 110 undergraduate students took part in the research. The sample consisted of undergraduate students. One sample consisted of N=47 (42,7%) undergraduate students from the Democritus University of Thrace-DUTH and N=63(57.3%) undergraduate students from the School of Technological and Pedagogical Education-ASPETE. Mainly, there were 63 (57.3%) men and 47 (42.7%) women, aged mostly between 18 and 30 years old (97.3%). The majority (96.4%) came from the 2nd and 3rd year of their respective undergraduate program with mostly little experience with teaching in real life settings. Furthermore, 96.3% of the participants reported having a

little teaching experience up to four years and 3.7% reported having teaching experience more than 5 years.

Research Tools and Procedure

A combination of quantitative and qualitative approaches was used for the current research. Questionnaires were used as a data collection instrument consisting of open-ended and closed-ended questions. Initially, participants had to complete the first questionnaire that had to do with demographic data. Then, simSchool was introduced and explained in details, participants were registered to the online simulation and run quick simulations in order to be familiarized. At the end of the activities participants were asked to complete the second questionnaire. The final part of the questionnaire consisted of a scale with a number of words that described different feelings and emotions based on PANAS-X emotional scale. Participants had to answer to what extend they felt those feelings and emotions during the use of simSchool. Below are presented the frequency tables of the data gathered. In the current research paper only the results related to the emotional variables of the participants are presented.

Results

The distribution of gender, age and year of studies between the two universities in the research in presented in table 1 below.

Table 1

Distribution of the sample according to gender, age and year of study

		DUTH		ASPETE	
		Count	Column N %	Count	Column N %
Gender	Male	10	21,3%	53	84,1%
	Female	37	78,7%	10	15,9%
Age	18 - 30	46	97,9%	61	96,8%
	31 - 50	1	2,1%	2	3,2%
Year of Studies	2nd year	46	97,9%	3	4,8%
	3rd year	1	2,1%	56	88,9%
	4th year			1	1,6%
	5th year and above			3	4,8%

Rating their personal knowledge on Information and Communication Technology (ICT) the majority of the participants reported a fair level of understanding on the subject, while there was no differentiation in the response on account of participants' gender ($x2 = 2.652$, $df = 1$, Asymp. p – value = 0.103).

Table 2

Descriptive statistics relative participants' ICT knowledge

		ICT knowledge					
		Not at all	Beginner	Fair	Good	Very good	Excellent
Gender	Male	3	16	22	18	3	1
		4,8%	25,4%	34,9%	28,6%	4,8%	1,6%
	Female	2	4	21	14	5	1
		4,3%	8,5%	44,7%	29,8%	10,6%	2,1%
Total		5	20	43	32	8	2
		4,5%	18,2%	39,1%	29,1%	7,3%	1,8%

The participants were asked to evaluate their teaching skills before the use of simSchool. As shown in table 3 below, most of the participants rated themselves as 'good' teachers, with no significant differentiations between participants' gender.

Table 3

Descriptive statistics relative to Self-reported teaching skills

		Self-reported teaching skills									
		Poor		Fair		Good		Very good		Excellent	
Gender	Male	6	(9,5%)	19	(30,2%)	30	(47,6%)	6	(9,5%)	2	(3,2%)
	Female			11	(23,4%)	28	(59,6%)	7	(14,9%)	1	(2,1%)

Six of the participants did not complete the second questionnaire since they were absent from the lesson the specific day and as a result the total number of participants for the analysis of the emotional variables are N= 104.

The final part of the second questionnaire consisted of a 16 words that described different emotions rated on a 5-point Likert scale from not at all to extremely. Participants had to answer to what extend they felt those emotions during simSchool activities. The results were analyzed with the use of SPSS 17 software. Reliability analysis was conducted on the variables of emotions. According to the results (see table 4 below) the overall alpha is 0.817>0.7 indicating a high reliability of the variables.

Table 4

Reliability statistics- Cronbach' Alpha on the variables of emotions

Cronbach's Alpha	
Cronbach's Alpha	N of Items
,817	16

Table 5 below presents the descriptive statistics relative to the emotional variables of all the participants. Tables 6 and 7 present the emotional scales for the Democritus University of Thrace-DUTH and the School of Technological and Pedagogical Education-ASPETE respectively. The results indicate that during the use of simSchool the majority of the participants (68.3%) experienced anxiety ranging from a little to extremely, whereas, 31.7% did not felt anxious at all. Moreover, 77.6% of the participants felt nervous during the simulation and their responses range from a little to extremely. However, 22.3% did not experience nervousness during playing.

The results also reveal that 73% of pre-service teachers felt disappointed during the activities and experienced high levels of insecurity (61.5%). The majority of the participants (83.7%) felt unable to deal with the various classroom and behavior management issues and experienced high levels of defeat (68.3%).

Moreover, many pre-service teachers experienced emotions of embarrassment (63.5%) and felt dissatisfied (64.4%) by themselves during the simulated activities. Another significant result is that the vast majority of the participants (94.2%) felt tired during the simSchool activities. Furthermore, many of the participants experienced emotions of fear (48.1%) and stress (69.2%) during the use of the simulation, while many of them where confused (70.2%) during the activities.

Despite the negative emotions, participants also experienced positive emotions. The vast majority of the participants felt excited (90.4%) and satisfied (90.4%) during the simSchool activities. Additionally, the results indicate that simSchool motivated the majority of pre-service teachers (92.3%) and kept their interest (95.2%).

Table 5

Descriptive statistics relative to the emotional experiences of all the users

Emotional variables										
	Not at all		A little		Moderately		Quite a bit		Extremely	
Anxiety	33	31,7%	25	24,0%	24	23,1%	21	20,2%	1	1,0%
Nervousness	23	22,3%	27	26,2%	27	26,2%	17	16,5%	9	8,7%
Disappointment	28	26,9%	30	28,8%	19	18,3%	20	19,2%	7	6,7%
Insecurity	40	38,5%	20	19,2%	25	24,0%	14	13,5%	5	4,8%
Inability to deal with the situation	17	16,3%	36	34,6%	28	26,9%	11	10,6%	12	11,5%
Feeling of	3	31,7	2	24,0	2	26,9	1	9,6%	8	7,7%

defeat	3	%	5	%	8	%	0			
Excitement	10	9,6%	15	14,4%	27	26,0%	37	35,6%	15	14,4%
Embarrassment	38	36,5%	30	28,8%	26	25,0%	9	8,7%	1	1,0%
Dissatisfied by self	37	35,6%	32	30,8%	23	22,1%	10	9,6%	2	1,9%
Fatigue	6	5,8%	25	24,0%	37	35,6%	25	24,0%	11	10,6%
Fear	54	51,9%	32	30,8%	13	12,5%	3	2,9%	2	1,9%
Motivation	8	7,7%	10	9,6%	24	23,1%	45	43,3%	17	16,3%
Satisfaction	10	9,6%	16	15,4%	36	34,6%	29	27,9%	13	12,5%
Confusion	31	29,8%	22	21,2%	24	23,1%	17	16,3%	10	9,6%
Interest	5	4,8%	10	9,6%	25	24,0%	35	33,7%	29	27,9%
Stress	32	30,8%	25	24,0%	27	26,0%	12	11,5%	8	7,7%

Table 6

The emotional variables at the Democritus University of Thrace

	Not at all		A little		Moderately		Quite a bit		Extremely	
Anxiety	13	27,7%	12	25,5%	9	19,1%	12	25,5%	1	2,1%
Nervousness	7	14,9%	8	17,0%	13	27,7%	12	25,5%	7	14,9%
Disappointment	9	19,1%	11	23,4%	11	23,4%	12	25,5%	4	8,5%
Insecurity	16	34,0%	9	19,1%	12	25,5%	8	17,0%	2	4,3%
Inability to deal with the situation	5	10,6%	12	25,5%	15	31,9%	9	19,1%	6	12,8%
Feeling of defeat	12	25,5%	10	21,3%	13	27,7%	8	17,0%	4	8,5%
Excitement	7	14,9%	9	19,1%	10	21,3%	13	27,7%	8	17,0%
Embarrassment	10	21,3%	16	34,0%	16	34,0%	5	10,6%	0	,0%
Dissatisfied by self	16	34,0%	16	34,0%	11	23,4%	4	8,5%	0	,0%
Fatigue	2	4,3%	7	14,9%	20	42,6%	10	21,3%	8	17,0%
Fear	23	48,9%	15	31,9%	8	17,0%	0	,0%	1	2,1%
Motivation	4	8,5%	4	8,5%	13	27,7%	20	42,6%	6	12,8%
Satisfaction	8	17,0%	9	19,1%	13	27,7%	12	25,5%	5	10,6%
Confusion	7	14,9%	8	17,0%	13	27,7%	12	25,5%	7	14,9%
Interest	3	6,4%	8	17,0%	11	23,4%	11	23,4%	14	29,8%
Stress	11	23,4%	9	19,1%	16	34,0%	7	14,9%	4	8,5%
a. University = DUTH										

Table 7

The emotional variables at the School of Technological and Pedagogical Education

	Not at all		A little		Moderately		Quite a bit		Extremely	
Anxiety	20	35,1%	13	22,8%	15	26,3%	9	15,8%	0	,0%
Nervousness	16	28,6%	19	33,9%	14	25,0%	5	8,9%	2	3,6%
Disappointment	19	33,3%	19	33,3%	8	14,0%	8	14,0%	3	5,3%
Insecurity	24	42,1%	11	19,3%	13	22,8%	6	10,5%	3	5,3%
Inability to deal with the situation	12	21,1%	24	42,1%	13	22,8%	2	3,5%	6	10,5%
Feeling of defeat	21	36,8%	15	26,3%	15	26,3%	2	3,5%	4	7,0%
Excitement	3	5,3%	6	10,5%	17	29,8%	24	42,1%	7	12,3%
Embarrassment	28	49,1%	14	24,6%	10	17,5%	4	7,0%	1	1,8%
Dissatisfied by self	21	36,8%	16	28,1%	12	21,1%	6	10,5%	2	3,5%
Fatigue	4	7,0%	18	31,6%	17	29,8%	15	26,3%	3	5,3%
Fear	31	54,4%	17	29,8%	5	8,8%	3	5,3%	1	1,8%
Motivation	4	7,0%	6	10,5%	11	19,3%	25	43,9%	11	19,3%
Satisfaction	2	3,5%	7	12,3%	23	40,4%	17	29,8%	8	14,0%
Confusion	24	42,1%	14	24,6%	11	19,3%	5	8,8%	3	5,3%
Interest	2	3,5%	2	3,5%	14	24,6%	24	42,1%	15	26,3%
Stress	21	36,8%	16	28,1%	11	19,3%	5	8,8%	4	7,0%
a. University = ASPETE										

Conclusions and future work

This paper identified the need to use new and innovative tools such as classroom simulations in teacher training in order to bridge the lack of practice in the traditional teacher preparation programs and familiarize future teachers with new technologies. For the purpose of this research simSchool classroom simulation was used for the training of Greek pre-service teachers in classroom and behavior management issues. The research investigated the emotions experienced by the participants during the implementation of simSchool activities.

In the empirical work reported in this paper there was evidence that simSchool generated real-time emotions to pre-service teachers. It is possible that virtual students that were embodied with emotional variables engaged and motivated the players during the game (Anolli et al., 2010; Hudlicka, 2009; Sansone & Thoman, 2005).

The results revealed that participants experienced negative emotions including anxiety, nervousness, disappointment, insecurity, inability to deal with the various situations, embarrassment, dissatisfaction by themselves, fatigue, fear,

stress and confusion. During the simulation activities pre-service teachers experienced negative emotions including embarrassment, insecurity and stress that are also emotions that beginning teachers experience in the real classroom setting (Katsarou & Dedouli, 2008). It seems that simSchool created participants a sense of presence, a sense of being there, that might have generated emotions similar to those they would feel in a real classroom setting. Moreover it is possible participants' ICT level affected them negatively. Most of the participants reported to have a fair knowledge of ICT and it is possible that their unfamiliarity with computers and online networking affected them negatively. Moreover, simSchool was not in the mother tongue of the participants and maybe they found it difficult to use the menu buttons and navigate within simSchool environment despite the material with instructions and translations in Greek that they were given.

Nevertheless, participants also experienced positive emotions including excitement, satisfaction, motivation and interest. The challenge is to relate participants' emotional experiences with their cognitive development revealing the importance of emotions in the learning process. The correlation analysis between the emotional and cognitive variables is still under development but seems promising.

Several are the directions for future work. There is a need to further investigate participants' emotional experiences in simulated environments like simSchool. Moreover, future research could be conducted to identify whether the emotional experiences of pre-service teachers were generated by the modeling of emotions in the virtual students. As the traditional teacher training programs do not promote socio-emotional learning, it is essential for future classroom simulations to enhance future teachers' socio-emotional competencies that can affect students' development (Schonert-Reichl & Zakrzewski, 2014). Finally, it is also important to explore participants' sense of presence in classroom simulations such as simSchool that plays an important role in participant' learning and emotional experiences.

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