FEELINGS OF CHALLENGE AND THREAT AMONG PRE-SERVICE TEACHERS STUDYING IN DIFFERENT LEARNING ENVIRONMENTS-VIRTUAL VS. BLENDED COURSES

By

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ABSTRACT

This study focused on feelings of threat and challenge among pre-service teachers in different learning environments – virtual and blended courses. The two goals of this study were (1) to define the subjects' feelings in virtual and blended learning environments, and the relationship between them, and (2) to examine how their feelings changed between the beginning and end of either type of course. A sense of 'threat and challenge' points to the pre-service teachers' reaction to their learning environment and its characteristics, and reflects their ability to cope with the learning process, satisfaction, and perseverance. This quantitative study included 578 participants, who filled out questionnaires at the beginning and end of each course. Three major factors were found to describe their perception of the situation: negative feelings, sense of threat, and sense of challenge. A positive relationship was found between sense of threat and negative feelings, and a negative relationship was found between sense of challenge and negative feelings. Significant interactions were found for situation perceptions of both learning environments. Participants in the virtual course exhibited less negative feelings at its end. A similar result was found for sense of threat. In contrast, the students' sense of challenge increased by the end of the virtual course. These findings support the view that negative feelings and threat among students in virtual courses can be improved by means of cognitive strategies and meaningful effectiveness.

Keywords: Threat, Challenge, Distance Learning, Online Learning, Virtual Course, Blended Course, Pre-Service Teachers.

INTRODUCTION

This study focused on feelings of threat and challenge among pre-service teachers in different learning environments-virtual environments and blended (virtual and traditional) environments in teaching and learning courses. The basic assumption was that learning in various technological environments raises diverse feelings of threat and challenge among the students, which require curriculum planners of virtual courses to take different approaches.

Virtual distance learning courses expose a large population of students, particularly those that live in the periphery, to high-quality teaching, primarily in cases when the teaching in universities and colleges does not provide a suitable solution for the needs of high-achieving students. The advantages of distance learning are well documented, and include access to learning materials anytime and anywhere, demonstration of various topics through multimedia, use of online databases, data retrieval and updating, and communication through a common learning network (Allen & Seaman, 2011; Compton, Davis & Correia, 2010; McLinden, McCall Hinton & Weston, 2006; Offir, Barth & Zeichner, 2009; Schrum, Davis, Jacobsen, Lund, Ferhan Odabasi, Voogt & Way, 2015).

These features demonstrate the key advantages of a distance-learning environment; however, there is one more essential characteristic of this environment; the physical separation between the lecturer and students, and the feelings that often come with this separation. This characteristic, as will be elaborated, encompasses the difficulty on which the present study aims to shine a light.

The face-to-face learning/teaching process enables direct connection and immediate interaction between lecturer and students. Unlike distance learning, lecturer-student interactions in a regular classroom are not based solely on verbal communication, but also on non-verbal messages such as facial expressions and body language. These hints allow the experienced teacher to gauge the students' involvement in the lesson, and to identify when individual feedback is required as a direct response to signals of confusion or difficulty (Baran, Correia, & Thompson, 2011; Chen & Willits, 1998; McLoughlin, & Lee, 2007; Moore & Kearsley, 2012; Parenti, 2013).

Identifying such situations is not possible in a distance-learning environment. Moreover, the physical separation between the teacher and students could cause 'transactional distance' - a term coined by Moore (2012, 2007), which points to the psychological-communication space that occurs between the instructor and learners during a lesson, and which could cause gaps in understanding or students' misconceptions about themselves and about the learning process.

These phenomena occur in regular classrooms too, but direct contact with the students allows the skilled teacher to identify and rectify them in real time (Dweck, 2006). In contrast, in a distance-learning environment, the transactional distance could expand and produce ongoing failures (Kramarski & Zeichner, 2001). The differences between the learning environments, both the encounter with knowledge and the separation from the teacher, are not merely a technical issue, and could be a key contributor to the relatively high dropout rate that is often the case in distance-learning environments. The literature review will show that these difficulties have been studied and documented extensively (Berge & Huang, 2004; Irani, Telg, Scherler, & Harrington, 2003; Jacka, 2015; Kaya, 2010; Keegan, 2000; Kelsey & D'souza, 2004; Koehn & Rosenau, 2015; Kupczynski, Mundy & Ruiz, 2013; Parenti, 2013; Parker, Lenhart, & Moore, 2011; Platt, Raile, & Yu, 2013; Puckett, 2013).

Such difficulties, which are an integral part of distance learning environments, require the development of strategies based on reexamination of the factors that form the learning process. Moore (2012) has emphasized the need for new strategies to help students cope with new learning environments. He has claimed that, the transactional distance is not fixed, but a variable that can be reduced in a number of ways such as teacher-student dialogue, course structure, and student autonomy. Accordingly, identifying the pedagogic mechanisms that contribute to reducing the transactional distance is thus the key challenge of researchers in the field of distance learning.

Objectives

This study examines the sense of threat and the sense of challenge among pre-service teachers in two different learning environments: Virtual and Blended learning environments. The study had two main goals. The first was to describe the feelings of the subjects in each of the learning environments, and the relationship between them. The second goal was to examine how their feelings changed between the beginning and end of either type of course.

First, the authors review learning with a special emphasis on distance learning, its typical difficulties, and the solutions proposed in the literature. The second part of the review focuses on feelings of threat and challenge in web-based courses. They also discuss the differences between two learning environments - fully virtual and blended, as well as the characteristics of the students' feelings in either type of course that could affect learning.

Theoretical Background

Learning Environments

Learning is a process of acquiring knowledge, which is completed by using the information for the purpose of generalization and conclusions.

Over the years, the features of knowledge sources and of learners have been researched, to understand the process and to achieve correct and effective learning. Maslow (1954) claimed that, learning is characterized by curiosity and the need for achievement, which are motivations that are inherent or instilled since childhood. Learning motivation could activate the learning process, accelerate it or diminish it, which is why learning research has emphasized the ways to preserve and reinforce this

motivation.

Bransford, Brown and Cocking (1999) have suggested a model by which effective learning process is a crossroad, a sort of meeting point of three worlds – the world of knowledge, the learner's world, and the world of evaluation.

1. *The World of Knowledge:* Good learning environments are constructed to achieve desired learning outcomes, according to what we would like to teach the students by the end of the course.
2. *The Learner's World:* The learning environment must fit the learner's unique tendencies and needs - strengths, areas of interest, preconceptions, etc.
3. *The World of Evaluation:* The learner must be given the opportunity to reveal his/her thinking, to receive feedback, and create new meaning and new understanding.

From the division into three worlds, which complement and support each other, two types of feelings can be derived - knowledge-centered and learner-centered. Knowledge-centered feelings relate to the knowledge and focus on the learning materials. Learner-centered feelings relate to the learner and focus on his or her emotional and motivational needs and self-perceptions regarding the learning process. Based on understanding the importance of relating to the learner and not just to the knowledge, this study examines the learners' feelings in two learning environments: a face-to-face blended environment and a virtual online environment.

Chickering and Gamson (1999) have developed a model that facilitates a learning environment focused on learning, evaluation, knowledge, and community - all according to the students' needs. These principles summarize decades of research that provide precise guidelines how to help students succeed in higher education in the best possible way. It would seem, therefore, that, in the learning process, relating to the learners' feelings rather than just the knowledge is of great importance.

Distance Learning

Distance learning is a planned teaching system that links students and teachers who are separated by each other by place or time (Keegan, 2000).

Combining learning resources on the internet and other means of interaction (such as email) enable an interactive, two-way, synchronous and asynchronous environment, which on one hand maintains the elements of a traditional classroom, and on the other hand has the potential for a new kind of learning community (Rocca, 2010). For instance, slow or quick students can interact with ideas and content in their own time and at their own pace, and utilize their best skills. The video conference media allows learners to develop autonomy through slideshows. This kind of participation may strengthen motivation and self-direction.

However, distance learning contains unique difficulties. Although, it seems that, asynchronous learning may suit many students, some have been found to be apprehensive about online courses for a number of reasons: (a) the need to be with people rather than a machine; (b) fear of computer-related technical problems; (c) fear of coping with learning materials on their own; and (d) concerns over lack of self-discipline required by online learning (Allen & Seaman, 2011; Chauhan, Naseem, & Rashwan, 2016; Cicco, 2015).

Moore and Kearsley (2012) stated that planning distance learning requires special techniques, and that the distance should be regarded as a potential space for understanding problems between the teacher's intentions and the students' understanding. Moore (1993) called this space 'transactional distance' – a psychological communication void that occurs between the teacher and students during a lesson, and which could cause gaps in understanding or students' misconceptions about themselves and about the learning process. Moore emphasized the potential understanding problems required careful planning of the tools in distance learning. Three dimensions of distance learning have been identified (Moore, 1993, 2007, 2012):

1. *Autonomy:* The learner's independence.
2. *Dialogue:* The teacher-student interaction.
3. *Structure:* Certain characteristics of the course structure.

Moore (2012) repeatedly underlines the need for empirical studies to identify the variables related to these three dimensions. The theoretic rules that apply to traditional

learning apply to distance learning as well. However, special attention should be paid to transactional distance, because this is the element that requires original solutions. According to Moore, the solutions for transactional distance should relate to dialogue and structure.

Dialogue is the opportunity for teacher and student to respond to each other, and it is affected by the size of the group, the media, and other variables. For example, when only a printed text source is used, no dialogue occurs between the teacher and students, as opposed to guided learning that allows for feedback and written instructions. The more flexible the program is, the more comprehensive the dialogue is; the broader the dialogue is, the transactional distance is reduced and learning effectiveness increases.

Structure relates to the degree to which the program responds to the learner's individual needs, with an emphasis on autonomy. Structure includes learning methods, presentation of information, exercises, demonstrations, etc., and is a key element of distance learning. The more flexible the structure is, and the more it can be adjusted to the learners' unique needs, the smaller the transactional distance is.

Dialogue and structure are linked by three interactions, namely between the student and the learning materials, between the student and teacher, and between the student and other students. The need to reduce the transactional distance therefore requires an ongoing dialogue between the teacher and student, adjusting the study program to fit the student's needs, and support of the student and his/her needs.

Correct planning of this type of course and using effective technologies are not enough; perception of the learner and his/her needs and difficulties must be emphasized. To overcome some of the difficulties, or at least to reduce them, a 'multi-faceted online learning' model was created, as an informed combination of frontal (classroom) and online teaching. Garrison and Kanuke (2004) believe that, this allows focusing on the learner and his/her needs by an individual and specific approach to each student. Current technological developments also provide tools to overcome difficulties. Garrison and Kanuke (2004) discussed an educated combination of traditional and online teaching by means of technology. The research literature calls it 'blended learning'. Groen and Li (2005) focused on aspects of synchronous and asynchronous communication to create multi-faceted online learning, and claimed that, combined synchronous and asynchronous teaching helps to enrich the relationship between teacher and student within the learning community. The present study, following Groen and Li (2005), also addresses the combination of these two teaching methods within the framework of distance learning.

Bransford, Brown and Cocking (2000) provided guidelines that summarize most of what we know about good learning environments, and provided a theoretical framework by which to plan online learning environments as well. Distance learning, especially in university courses, must incorporate these principles with special attention to the students' specific needs, for example emphasis on teaching presence. Garrison, Anderson and Archer (2001) applied these principles to distance learning environments. Their model, which encourages high student involvement in the learning process, was well-studied among students in higher education institutions, and the research confirms that, high involvement in the learning process indeed results in positive learning outcomes. Anderson (2001) also applied these principles, particularly in online learning environments.

Anderson, Rourke, Garrison, and Archer (2001) also addressed the effective planning of teaching and learning environments, and defined 'teaching presence' as planning and guidance of cognitive and social processes to achieve learning outcomes that are personally meaningful and educationally worthy. Teaching presence is comprised of three elements:

1. *Planning and Organization:* Use of effective learning methods and scheduled assignments;
2. *Dialogue Possibilities:* Use of forums and chats to converse with the students;
3. *Direct Teaching:* Individual attention to the students and their needs.

The present study examined how the learners perceived

the learning environment in the context of 'teaching presence' that relates to the relationship formed between the teacher and the student throughout the course.

Holmberg (1989) argued that, establishing a personal relationship between the teacher and the student is a pre-requisite to creating learning motivation, and therefore considered support of the teacher and the students the most important element of distance learning.

Hence, many scholars of online learning environments emphasize the importance of the attitude to the student and his/her involvement. Attention to the principles suggested by Bransford, Brown, and Cocking (2000), Chickering and Gamson (1999), Garrison et al. (2001), and Anderson et al. (2001) could facilitate higher quality of distance learning courses.

Anderson (2001) created an interactive model of the effect of web-based courses on academic performance, based on learner characteristics that predict success or failure (individual differences, core characteristics, viewpoints, and prior knowledge). A derivation of this approach is that the teacher-student interaction is determined not only by the students' level of understanding and progress, but also by their personal characteristics. Feedback that is placed in the student's personal folder on the course website can fulfill the requirement for personal interaction with the student, if it is distinct enough and adapted to each individual student (Puckett, 2013; Swaminathan & Mulvihill, 2013).

Based on the comprehension of the importance of relating to the learner and not just the knowledge, primarily in a distance learning environment, this study examines students' feelings in two types of courses: a face-to-face course and a fully virtual course. The learners' perception of the situation relates to the sense of threat or challenge invoked by each learning environment. Some of the feelings relate to knowledge and focus on the learning content, and some relate to the learner and focus on his/her needs.

Perception of the Situation (Threat or Challenge)

In any encounter between an individual and the environment, one can perceive the situation as 'positive' or 'stressful' (Lazarus, 2000). This cognitive evaluation process is affected by three groups of factors:

1. *Situation Characteristics:* Whether the situation is familiar or vague;
2. *Factors Related to Social Norms:* Job demands, values, and customs;
3. *Factors Related to One's Personality:* Pessimist or optimist, high or low self-esteem, high or low intelligence, driven by the desire to succeed or aversion to failure.

A situation perceived as positive motivates one to act, whereas a situation perceived as stressful might raise an emotional reaction of challenge or threat. When one feels threatened, feelings of uncertainty and low self-efficacy increase, and the individual might retreat from performing life's tasks and focus on self-preservation, execute tasks in an inferior way, etc. However, evaluation of the threat also depends on one's basic perception of the environment, and one's belief that he/she can overcome the danger or control it. A sense of 'togetherness' reduces the threat and diminishes non-adaptive responses. Preparation for threatening situations reinforces self-confidence, and instills a sense of efficacy, at least partially, to cope with the danger In contrast, when one perceives a stressful situation as challenging, one employs (internal and external) resources, develops initiative, seeks non-routine solutions, and perseveres in forging a road to extricate oneself from the problem.

Life experience and research (Lazarus, 2000) have shown that, different people feel stress differently vis-à-vis the same challenge. Furthermore, previous experience with stressful situations may increase or diminish the sense of threat, or strengthen the sense of challenge.

Distance learning has different characteristics than a traditional learning environment, and exposure to it (certainly in an academic course for pre-service teachers) requires the students to adapt to a new situation, which could be perceived as either positive or stressful. A perception of stress could create a feeling of either threat or challenge. It is, therefore, important to examine which feelings affect the students' success in various distance-learning courses, whether the learning environment is perceived as a threat or a challenge, and investigate interactions between the subjects' feelings at the

beginning and end of virtual and/or blended courses.

This study focuses on the subjective feelings of pre-service teachers toward learning in various computerized environments. In an attempt to understand the students' changing feelings in various virtual environments, the effect of the various learning environments on the students' perception of the situation were examined.

Research Questions

The following research questions were examined,

1. What are the differences in the sense of threat and/or challenge in a fully virtual course vs. a blended course?
2. How do the students' feelings change over time, in both types of courses, between two measurements?

Methodology

Participants

This study deals with the subjective feelings of 578 pre-service teachers in two learning environments: Virtual and Blended. The study was based on a questionnaire aimed to follow the subjects' feelings at the beginning of the course and at its end, so that analysis of the questionnaires allowed a comparison between two periods, and between students in the virtual and blended course. Table 1 presents the division between the two learning environments and between the two periods. Most respondents (74.6%) participated in the blended course, and only 25.4% in the virtual course. A relatively low rate responded in both periods (80 respondents; 13.8%), as opposed to 36.5% that responded at the beginning of the course, and 35.8% that responded at the end of the course.

Research Tools

The respondents were asked to answer a questionnaire designed to gauge their perception of threat/challenge in various learning environments. The questionnaire, which was derived from Lazarus and Folkman (1984), included 13 items on a Likertscale from 1 = not threatening at all to 6=extremely threatening, for example "When you think of a virtual course, how threatened do you feel?" The questionnaire also included socio-demographic details such as gender, education, specialization, etc.

	First Period (Beginning of Course)	Second Period (End of Course)	Both Periods	Total
Blended Course	186; 88.2%	121; 58.5%	62; 77.5%	**431; 74.6%**
Virtual Course	25; 11.8%	86; 41.5%	18; 22.5%	**147; 25.4%**
Total	**211; 100%**	**207; 100%**	**80; 100%**	**578; 100%**

Table 1. Respondents by Period and Type of Course

Data Analysis and Results

The independent variables were: blended course, virtual course, before, and after. The dependent variables were: sense of threat, negative feelings, and sense of challenge.

The first research question related to the feelings that affect students' success in various courses in distance learning environments. In order to form measures that express the students' perceptions of the situation, the researchers performed the Exploratory Factor Analysis (EFA) to find the number of measures that express different feelings, and the feelings in each measure. Three main measures emerged: negative feelings, threat, and challenge.

Table 2 presents the results of the factor analysis. The feelings are represented by the loading of each factor. The first factor represents negative feelings (i.e. disappointment, sadness, anger). The average value of the factor is 1.37, SD=0.69. The second factor represents threat (i.e. stressful,

Item#		Factor 1: Negative feelings	Factor 2: Sense of threat	Factor 3: Sense of challenge
9	The situation makes me feel disappointed	.86	.17	-.09
8	The situation makes me feel sad.	.80	.26	-.04
6	The situation makes me feel angry	.78	.30	-.14
11	The situation makes me feel guilty	.70	.13	.13
4	The situation will harm me.	.54	.38	.09
2	The situation seems difficult to me.	.25	.89	.02
1	The situation makes me nervous.	.23	.87	.02
3	The situation threatens me.	.32	.82	.00
7	The situation worriesme.	.51	.66	.04
13	The situation is an opportunity to prove my abilities.	.04	.07	.84
10	The situation makes me feel confident	.01	.05	.84
5	I think I can gain from the situation.	2.1	.20	.67
12	The situation makes me feel free	.09	.32	.62
	Cronbach's alpha	**0.84**	**0.91**	**0.73**

Table 2. Results of Exploratory Factor Analysis

threatening, worrying). The average value of the factor is 1.85, SD=1.04. The third factor denotes a sense of challenge. The average value of the factor is 3.77, SD=1.24. The factor values are averages of the various items on a Likert scale from 1 to 6, so that, the minimal value is 1 and the maximal value is 6.

Pearson's correlations were performed on the factors. A positive correlation was found between sense of threat and negative feelings (r=.53; p<.01), and a negative correlation was found between sense of challenge and negative feelings (r=-.21; p<.01), but not between sense of threat and sense of challenge. Meaning, the higher the negative feelings, the less sense of challenge there is, but there is no relationship between sense of threat and sense of challenge. It should be noted that, identical results were obtained for the distinction between both the two periods and the two types of courses; meaning that, the measures and loading of the items were identical for all sub-groups in the sample. Cronbach's alpha for the factors indicate the connection between the various items within each factor.

To examine the second research question, after having created the perception measures of the situation, the authors examined how these feelings change over time (before and after) among two groups of subjects (fully virtual course and partially virtual course). They employed a Generalized Estimating Equation (GEE), the advantage of which is the significance of time, as opposed to a General Linear Model with Repeated Measure. The 'W' matrix allowed us to use all the data, even if incomplete; meaning, despite the low number of respondents at both times, the partial information at one of either time could be used. Such a model can be presented as variance analysis with repeated measures (before/after), with the additional main effect of type of course (virtual/blended). Table 3 shows the results of the model's coefficients and its average margins.

Two main effects (Model 1) and the interaction between them (Model 2) were measured. Concerning time (before/after the course), sense of threat decreased (b=-0.33, p<.001). Regarding the differences between the two courses, negative feelings and sense of threat were lower for the virtual group (b=-0.18, p<.01; b=-0.27, p<.01, respectively),

	Negative Feelings		Sense of Threat		Sense of Challenge	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Main effects						
Constant	1.27*** (0.05)	1.36*** (0.04)	1.40*** (0.08)	2.03*** (0.06)	3.94*** (0.11)	3.80*** (0.08)
Time – end vs. beginning	0.08 (0.06)	0.12 (0.07)	-0.33*** (0.08)	-0.23*** (0.09)	-0.16 (0.10)	-0.28* (0.11)
Group – virtual vs. blended	-0.18** (0.07)	-0.04 (0.09)	-0.27** (0.10)	0.06 (0.15)	0.35** (0.13)	-0.05 (0.17)
Average margins						
Beginning of course	1.28[a] (0.04)		1.93[a] (0.06)		3.93[a] (0.08)	
End of course	1.36[a] (0.04)		1.61[b] (0.06)		3.77[a] (0.08)	
Blended course	1.42[a] (0.04)		1.91[a] (0.06)		3.67[a] (0.07)	
Virtualcourse	1.27[b] (0.05)		1.63[b] (0.08)		4.02[b] (0.11)	
Interaction						
Time * Group		-0.23* (0.11)		-0.50** (0.16)		0.61** (0.21)
Average margins						
Beginning of course / Blended		1.36[a,b] (0.04)		2.09[a,b] (0.14)		3.80[a,b] (0.15)
Beginning of course/ Virtual		1.32[a,b] (0.08)		2.09[a,b] (0.14)		3.75[a,b] (0.08)
End of course / Blended		1.48[a,b] (0.06)		1.80[a,b] (0.08)		3.52[a,b] (0.10)
End of course / Virtual		1.22[b] (0.06)		1.36[a,b] (0.08)		4.08[a,b] (0.12)
QICC	260.92	261.97	568.70	565.50	809.96	806.80

*p<.05; **p<.01; ***p<.001

Table 3. GEE Results: Comparison Between Groups and Average Margins (in Parentheses)

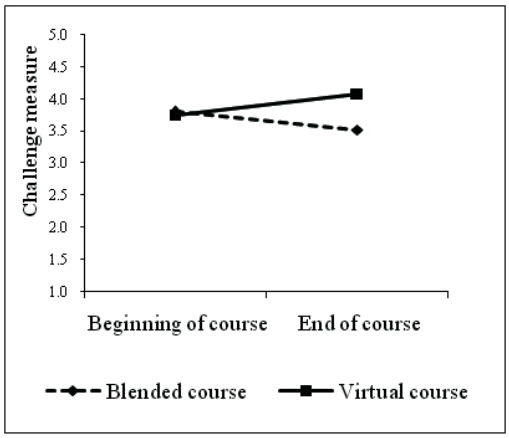
and sense of challenge was higher for the virtual group (b=0.35, p<.001). A double analysis using the Bonferroni test was conducted to compare all possible pairs created by crosschecking time and type of course, and a significant interaction was found for all three feelings. Namely, different effects were found for various combinations of time and type of course. This is indicated by the average margins and their classification (a, b). For instance, the negative feelings of the virtual group at the end of the course were lower than those at the beginning of the course, but not different than the feelings of the blended group at both measuring times. Meaning, the source of the interaction is the decrease in negative feelings of the virtual group at the end of the course. Similarly, sense of threat for the virtual group at the end of the course was less compared to the virtual group at the

beginning of the course. Likewise, sense of challenge increased for the virtual group between the beginning and end of the course. This, once again, indicates that the interaction source was the significant change of feelings among the virtual group. The virtual group responded to the learning process in a more obvious way.

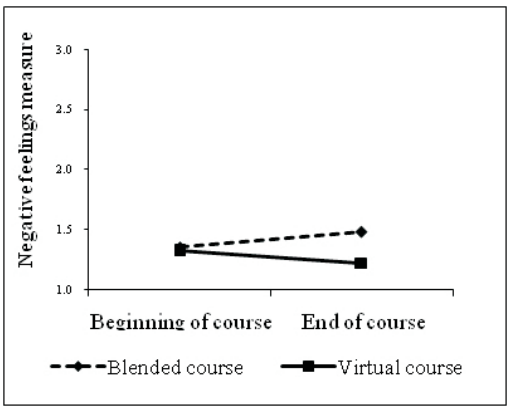
Figure 1 (a, b, and c) illustrates the interaction source for all three feelings measures. It can be seen that the decrease in sense of threat is steeper for the virtual group compared to the blended group, for whom sense of threat is almost the same between the beginning and end of the course. In contrast, a rising trend of negative feelings is evident for the blended group in comparison to the virtual group, for whom negative feeling decreased or remained unchanged. Finally, sense of challenge among the virtual group increased, versus no change or slight decrease for the blended group.

Discussion

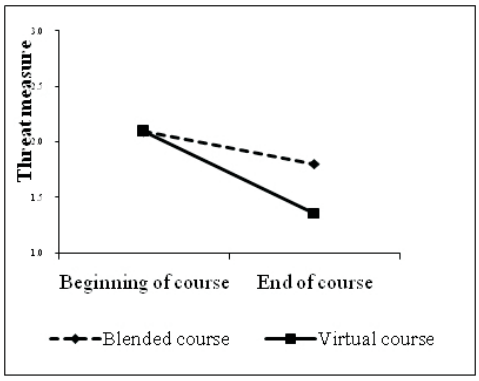
This study had two goals. The first was to define the subjects'



(a)



(b)



(c)

Figure 1. Interactions of Three Measures of Feelings, (a). Negative Feelings, (b). Threat, and (c). Challenge

feelings in computerized learning environments and the relationship between them. The second goal relates to the interactions between the subjects' feelings in two kinds of course over time. The objective of the work was to examine the changing of pre-service teachers' perceptions in two learning environments – fully virtual and partially virtual (blended).

Regarding the subjects' feelings, three significant factors were found that, describe their perceptions of the situation: negative feelings, sense of threat, and sense of challenge. A significant positive relationship was found between sense of threat and negative feelings. That is to say, the more sense of threat was expressed, the more negative feelings were expressed. When the subject felt disappointment with or anger at a computerized course, he or she also felt a sense of threat. Additionally, a negative relationship was found between sense of challenge and negative feelings. Namely, the more sense of challenge was expressed, the less negative feelings were expressed; for example, a student's feeling of disappointment with the computerized course decreases. The opposite is also true – the more negative feelings the student has towards an online course, the more his or her sense of challenge to do so decreases.

These findings are congruent with other studies that addressed the feelings of students in online courses. The research literature and theoretical models that have analyzed students' perceptions (Ames, 1992; Keller & Kopp, 1987; Linnenbrink, 2006; Pintrich, 2000) indicate that, students' perceptions and beliefs affect their attitude towards learning. These studies emphasize the importance

of relating to students' feelings in a regular environment in order to achieve effective learning. In a virtual learning environment, positive feelings must be reinforced, and negative feelings that discourage students must be avoided.

Their findings in the context of changing feelings about the two learning environments during the course indicate that at the end of the course, students in the virtual course have less negative feelings. A similar picture emerges for sense of threat, and opposite one for sense of challenge. The sense of challenge of respondents in the virtual course increases between before and after. These findings support the belief that online course students' negative feelings and sense of threat can be improved by means of cognitive strategies and meaningful effectiveness.

In traditional courses, the teaching process is face-to-face, incorporating direct contact and immediate interaction between the lecturer and students. Distance learning creates a physical divide between the lecturer and students, which might create 'transactional distance'. Students in a traditional class might also develop negative feelings about themselves, but direct contact with the students allows the lecturer to identify them in real time and deal with them. A distance learning environment might widen the 'psychological-communication void' (Moore, 1993) to the point of ongoing failure. Students' negative feelings in fully virtual distance learning courses are rooted in two constraints: a lesser degree of non-verbal hints, i.e. narrowing of the non-verbal communication channel (Mayer & Moreno, 2003), and a decreased sense of the teacher's presence (Garrison & Kanuke, 2004; Garrison et al., 2001).

Research (Zilka, 2014) has shown that, students' negative feelings derive from their unanswered needs (that are rooted in distance learning constraints). Distance learning students have expressed their need for personal attention, precisely because it is not apparent in this method of learning. Students' statements included the following: "*Learning an online course is hard, because you don't see the teacher. It's important to me to receive personal support…*"; "*In a face-to-face course, I ask the lecturer, and receive an immediate answer*"; "*The verbal attention and reinforcements in the online course reduced my negative feelings…".* Personal attention in online courses should be an integral part of the teacher's involvement, alongside formal teaching. Studies have shown that respondents' sense of challenge in virtual courses increases the more they feel that the teacher is 'human' (Squires, 2014)). Students have noted the need for guidance that includes a personal-emotional element.

In order to increase the sense of challenge, research recommends increasing the feedback from the teacher (Zilka, 2014). Students are quoted saying, "*The teacher's feedback strengthened my feeling of challenge to succeed in an online course*"; "*The teacher's feedback provided me with information so that I could continue to learn".* Other research findings support the role of feedback (Butler & Winne, 1995; Kramarski & Zeichner, 2001).

Many scholars (Anderson, 2001; Baig, 2011; Gibson, Kupczynski & Ice, 2010; Herold, & Waring, 2016; Moore, Dickson-Deane & Galyen 2011; Mory, 1996; Parenti, 2013; Suprabha & Subramonian, 2015) have emphasized the need to relate to the variance among students when planning and implementing learning environments. A good learning environment provides students of various tendencies and styles with the opportunity to make the most of the learning process. Distance learning has the potential to provide such an environment; however Squires (2014) found that not all students possess the appropriate qualities for distance learning. Therefore, it is equally important to conduct research that deals with students' behavior, perceptions, learning patterns, and suitability to virtual courses, as well as research, which examines and classifies technological options that build environments that provide solutions to these needs.

Conclusions

In summary, this study focused on the students' subjective feelings toward the learning process in various online environments, with the objective to understand the students' changing feelings in different virtual learning environments.

The added value of this study is the need to develop awareness of the students' feelings and emotional needs throughout the learning process. This study relates to the

student as a 'whole' (McGuire, 2005; Ringler, Schubert, Deem, Flores, Friestad-Tate & Lockwood, 2015; Squires, 2014; Whipp & Lorentz, 2009). The literature that addresses students' perceptions of the situation and learning products indicates a strong relationship between the cognitive and emotional dimensions. The holistic approach, namely the two were inseparable, was emphasized repeatedly (Cicco, 2015; Compton, Davis & Correia, 2010; Van Rooij, & Zirkle, 2016), and it is important to avoid creating a dichotomy between them.

Contribution of this Study

The authors' findings indicate that, dealing with various feelings during the learning process in virtual learning environments allows converting negative feelings and frustration into a sense of challenge to improve achievements, satisfaction, and perseverance.

The study also adds to the issue of distance learning. The authors have shown that, a sense of threat in virtual courses can be lessened, thus reducing the transactional distance that distance learning creates. Even when the teacher and student are not face-to-face, it is possible to create an effective interaction that supports the student and his/her work by means of the appropriate technology. The findings indicate that, although online courses based on video conferences provide new opportunities, they also give rise to pedagogic problems such as lack of personal contact with the teacher, low cooperation during the lesson, and hardware- and/or software-related technical problems.

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