Students' Motivation for Learning in Virtual Learning Environments[1]

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Abstract: The specific characteristics of online education require of the student engagement and autonomy, factors which are related to motivation for learning. This study investigated students' motivation in virtual learning environments (VLEs). For this, it used the Teaching and Learning Strategy and Motivation to Learn Scale in Virtual Learning Environments (TLSM-VLE). The scale presented 32 items and six dimensions, three of which aimed to measure the variables of autonomous motivation, controlled motivation, and demotivation. The participants were 572 students from the Brazilian state of Paraná, enrolled on higher education courses on a continuous education course. The results revealed significant rates for autonomous motivational behavior. It is considered that the results obtained may provide contributions for the educators and psychologists who work with VLEs, leading to further studies of the area providing information referent to the issue investigated in this study.

Keywords: intrinsic motivation, extrinsic motivation, distance learning, internet courses

A Motivação dos Estudantes Para Aprender em Ambientes Virtuais de Aprendizagem

Resumo: As especificidades da educação on-line requerem engajamento e autonomia do estudante, fatores que estão relacionados à motivação para aprender. Esta pesquisa investigou a motivação dos estudantes em ambientes virtuais de aprendizagem (AVAs). Para tanto, utilizou-se a Escala de Estratégia de Ensino, de Aprendizagem e Motivação para Aprender em Ambientes Virtuais de Aprendizagem - EEAM-AVA. A escala apresentava 32 itens e 6 dimensões, sendo que 3 destes se destinavam à mensuração das variáveis motivação autônoma, motivação controlada e desmotivação. Participaram 572 estudantes do estado do Paraná, inscritos em cursos do ensino superior e em um curso de formação continuada. Os resultados revelaram índices significativos para o comportamento motivacional autônomo. Considera-se que os resultados obtidos possam trazer contribuições aos educadores e psicólogos que atuam em AVAs, incitando novas pesquisas na área e fornecendo informações referentes à temática investigada neste estudo.

Palavras-chave: motivação intrínseca, motivação extrínseca, educação à distância, cursos via internet

La Motivación de Estudiantes Para Aprender en Ambientes Virtuales de Aprendizaje

Resumen: Las características específicas de la educación en línea requieren activación y autonomía de los estudiantes, factores que están relacionados con la motivación para aprender. Este estudio investigó la motivación de estudiantes en ambientes virtuales de aprendizaje (AVAs). Se utilizó la Escala de Estrategia de Enseñanza, de Aprendizaje y Motivación para Aprender en AVAs - EEAM-AVA. La escala abarcaba 32 ítems y 6 dimensiones, siendo que 3 de ellos se destinaban a la mensuración de las variables motivación autónoma, motivación controlada y desmotivación. Participaron 572 estudiantes del estado de Paraná, matriculados en cursos de educación superior y en un curso de formación continua. Los resultados revelaron índices significativos para el comportamiento motivacional autónomo. Se considera que los resultados alcanzados pueden aportar contribuciones a los educadores y psicólogos que actúan en AVAs, incitando nuevas investigaciones en el área y el proveyendo informaciones relacionadas con el tema investigado en este estudio.

Palabras clave: motivación intrínseca, motivación extrínseca, educación a distancia, cursos vía internet

In recent years, there has been an intensification of teaching mediated through virtual learning environments (VLEs). This scenario can be observed, notably, in the education offered to adults, whether these are university students or professionals in the process of continuing education (Abbad, Zerbini, & Souza, 2010).

The characteristics of education mediated by VLEs – such as, for example, the geographical distance between teacher and student, skills for using the Internet and/or the resources of the virtual environment itself and flexibility with timetables, among others – require the student to take greater responsibility in these studies, that is, undertaking actions for the monitoring of regulation of her own learning (Filcher & Miller, 2000; Quevedo, 2011; Testa & Luciano, 2010). According to studies undertaken by Eccles and Wigfield (2002) and Souza (2010), the use of strategies for regulated learning is directly related to the student's motivation for learning.

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In online education, authors such as Filcher and Miller (2000) indicate motivation as the most important determinant factor for the student's academic performance. In the light of this context, questions related to attention, interest, effort, commitment and satisfaction – that is, to the student's motivation in learning situations – have concerned professionals who work in the area of education and psychology (Chen & Jang, 2010; Fiuza, Sarriera, & Bedin, 2013; Hartnett, St George, & Dron, 2011). This being the case, this study sought to identify the students' motivation for learning in virtual learning environments.

Motivation for Learning

One of the challenges faced by those who work in education is motivating the students to learn. Educational situations reveal that uninterested or apathetic students, who make the minimum of effort in undertaking academic activities, who present little interest in deepening their level of knowledge or, further, show greater concern with grades and with obtaining certifications than with learning itself are not uncommon, and have been a focus for concern shared by teachers, psychologists and psychopedagogists (Bzuneck & Guimarães, 2010; Guimarães, Bzuneck, & Sanches, 2002).

Bzuneck (2001) conceptualizes motivation as an internal construct which guides, changes or maintains goals, actions and preferences. For the author, the student's motivation is highlighted as one of the principal determinants for obtaining success in learning activities and, therefore, must be prioritized in the planning of teaching strategies adopted by the teachers.

Among the studies which have investigated students' motivation, emphasis is placed on the studies undertaken by Edward Deci and Richard Ryan who, in the 1970s, in studying the elements which constitute, and the dimensions which determined, the promotion of intrinsic and extrinsic motivation, structured Self-Determination Theory. For self-determination theory, the individual is involved in learning situations with the aim of meeting three basic psychological needs: autonomy, competence, and the perception of belonging or relatedness. Breaking with the dichotomous vision of the classical literature, which established motivation in two distinct categories – intrinsic and extrinsic – self-determination theory understands all human behavior as intentional, motivated by different types of regulation which vary as a result of the level of autonomy and self-determination perceived by the individual (Bzuneck & Guimarães, 2010; Deci & Ryan, 2000).

In this perspective, Deci and Ryan (2000) proposed a continuum of internalization of the regulations of behavior which gradually progress through types of extrinsic motivation until they reach the motivational level conceived of as more self-regulated and autonomous, that is, intrinsic motivation (Deci & Vansteenkiste, 2004). It is worth noting that this continuum also predicts demotivation,

conceptualized as absence of motivation (Rufini, Bzuneck, & Oliveira, 2011). Information regarding this continuum is provided below.

External regulation is described as a classical example of extrinsic motivation, characterized in the actions undertaken which the individual undertakes in order to respond to external controllers. Behaviors which are extrinsically motivated by external regulation can be observed in those situations in which the student undertakes a task in order to achieve a certain reward, to meet stipulated time periods, or to avoid some form of punishment. In relation to introjected regulation, the controllers are internal, and respond to issues which have been internalized by the individual, as is the case with actions which aim to respond to issues related to self-esteem or, further, which aim to avoid unpleasant feelings, such as anxiety, shame and guilt (Bzuneck & Guimarães, 2010; Deci & Ryan, 2000; Rufini et al., 2011).

In the regulation identified, the authors foresee a certain level of autonomy, as in this stage, the student accepts the behavior as being on his own initiative, endorsing personal meaning to the action undertaken. One example of a situation which illustrates this type of regulation is when the student decides to dedicate greater attention or more time to studying a subject which he understands as being necessary in order to enter a specific course, or to work in a desired profession (Bzuneck & Guimarães, 2010; Rufini et al., 2011).

In relation to integrated regulation, characterized as the most autonomous type of extrinsic motivation, the reasons which guide the actions undertaken were accepted as the student's own choices, assimilated to the self, without pressure. The high degree of development of autonomy confers on integrated regulation a position on the self-determination continuum which is close to intrinsic motivation. Nevertheless, although the behavior presented in integrated regulation indicates the internalization of values which are aggregated to the task, it is only through intrinsic motivation that one can perceive the satisfaction generated through undertaking the activity itself (Bzuneck & Guimarães, 2010; Deci & Ryan, 2000; Rufini et al., 2011).

Bzuneck and Guimarães (2010) clarified that the first two types of regulation mentioned – external and introjected regulation – make up controlled motivation, which characterizes the actions which the student undertakes in order to respond to a specified event or pressure, whether this is external or internal. The two last types indicated on the self-determination continuum – identified and integrated regulation – integrate autonomous motivation, understood as the actions which are undertaken on the student's own initiative, accepted by the student as a personal choice or, furthermore, to which the student attributed importance.

Students' Motivation in VLEs

Bearing in mind the recognized relevance of motivation in the processes of teaching and learning, Filcher and Miller (2000) emphasize that motivating the student to learn is

configured as an educational objective which must be prioritized, whether in conditions of on-site learning or in educational situations mediated by the use of information and communication technology (ICT). In relation to questions dealing with online education, it is possible to identify that the concern raised by the above-mentioned authors is shared by other researchers who have worked in research seeking to identify, analyze and evaluate the motivation of students in virtual learning environments (VLEs) (Chen & Jang, 2010; Fiuza et al., 2013; Hartnett et al., 2011).

Adell, Bellver and Bellver (2010) conceptualize the virtual learning environment as a computational system, connected to an Internet/intranet network, whose principal function is to structure an educational space which affords access to a variety of content, and which viabilizes communication between the students and between these and their teachers. To this end, this environment integrates different types of resources and tools which enable their users to interact through synchronous communicational processes, undertaken in real time and immediately, and asynchronous, which do not depend on time-related or geographical conditions to be put into effect (Adell et al., 2010).

According to Onrubia, Colomina and Engel (2010) there is an increasing number of educational institutions, above all universities, which make use of virtual environments for providing classes, either totally online, or within the perspective of blended learning (b-learning), which makes use of teaching which is both on-site and virtual. The Learning Management Systems are those environments commonly used by the institutions, due to the various possibilities which these platforms offer in relation to the management of information, communication, and evaluation of the learning (Onrubia et al., 2010).

Among the platforms used most worldwide, the open-source code system, the Modular Object-Oriented Dynamic Learning Environment (Moodle) stands out due to its ease of use, arising from its simple and user-friendly interface, and through the interaction afforded by its different tools, such as the discussion forums, chat rooms, email, wikis, diary, glossary and tasks (Paiva, 2010). This VLE's popularity can be easily observed in the virtual community of collaborators who continuously develop and update its tools, making resources available such that Moodle may be used even via a cell phone (Mamari, Batista, & Behar, 2011).

Regarding these VLEs' educational possibilities, authors such as Onrubia et al. (2010) and Palloff and Pratt (2002) emphasize that the majority of the interactive tools made available in these environments viabilize conditions for undertaking activities of the collaborative type. In collaborative learning, group members contribute to achieving a common learning objective and thus resolve a specified problem or situation proposed. This process occurs through systematized observation, identification of possible actions, and, mainly, through constant dialog, which allows shared understanding regarding the problem analyzed.

It is also emphasized that, although they are many and various, the virtual learning environments' interactive tools, in themselves, do not guarantee quality to the educational process. As emphasized by authors such as Mauri and Onrubia (2010), Palloff and Pratt (2002), Prado and Almeida (2007) and Reis (2009), it is necessary to recognize that pedagogical work mediated through the use of VLEs is not a matter of transposing teaching strategies adopted in on-site conditions to the virtual environment. Educational situations which fail to consider the specific characteristics of online education create a space for undesirable results, such as procrastination, dropping out and demotivation on the part of the student (Chen & Jang, 2010).

For Reis (2009), among the main characteristics of online teaching, emphasis is placed on the feeling of isolation, attributed to the geographical distance between teacher and student, and on the difficulties found for managing the learning itself, due to the flexibility of timetables and to access to many sources of information. The author stresses that learning in this educational context requires of the student a greater level of motivation than does education undertaken on-site.

In recent years, the literature in the areas mentioned has been studying with greater intensity the connection between motivation and learning in online educational contexts. Some studies have analyzed the results obtained in their investigations in the light of self-determination theory. This occurrence may be observed in the studies undertaken by Chen and Jang (2010), Fiuza et al. (2013), Giesbers, Rienties, Tempelaar and Gijselaers (2013), Hartnett et al. (2011), Sørebø, Halvari, Gulli and Kristiansen (2009) and Xie, Durrington and Yen (2011).

In the study undertaken by Chen and Jang (2010), the main objective was to investigate the students' motivation for learning in two online educational programs, supported by the learning management system, WebCT. For this, the authors used as their model the evaluation scale proposed by Williams and Deci (1996) and the Learning Climate Questionnaire (LCQ). The sample of participants had 267 students, of whom 78.1% were female, and whose age was between 19 and 65 years old. The results provided evidence relating to the mediating effect between meeting needs and the dimensions of contextual support and motivation/self-determination; however, the study did not succeed in evaluating the relationship between the results obtained for the dimensions of learning and motivation/self-determination. Emphasis is placed on the authors' recommendations regarding the importance of teaching strategies directed towards online education, prioritizing meeting the students' needs in relation to perceptions of competence, relatedness and autonomy.

Hartnett et al. (2011) dedicated themselves to investigating the nature of motivation for learning in online contexts. The participants in this study were 21 students, of whom 19 were female, and who were aged between 18 and 55 years old. The students participated in courses which

were predominantly online, offered to future professionals in primary and junior high school teaching. The research method used was the case study, and motivation for learning was evaluated based in the Situational Motivation Scale (SIMS), developed by Guay, Vallerand and Blanchard (2000). The analysis of the data presented results which highlighted motivation as a complex and multifaceted construct, sensitive to the situational conditions.

Emphasis is also placed on the study presented by Fiuza et al. (2013), which reports the stages of translation, adaptation and validation of the EMITICE scale, whose structure is based on self-determination theory. The *Echelle de motivation lor de l'intégration des technologies de l'information et des communications dans l'enseignement* - EMITICE (Karsenti, 2008) is used in order to evaluate motivation relating the integration of the information and communication technologies (ICT) into teaching. The study's final phase was constituted by the participation of 466 participants from courses taught online, of whom 171 were male (36.7%) and 295 female (63.3%), aged between 18 and 61 years old. The results evidenced the reliability and validity of the scale (α = .84) and emphasized its psychometric properties for issues relating to motivation for using ICT.

It is considered relevant also to emphasize the studies undertaken by Giesbers et al. (2013), Sørebø et al. (2009) and Xie et al. (2011), which present relevant results for the psychoeducational area. Sørebø et al. (2009) directed their investigation towards the motivation of teachers, and based their studies in self-determination theory and in the theory of information systems continuance (IS – continuance), proposed by Bhattacherjee (2001). In this way, the authors sought to analyze the relationship existing between the perceptions of autonomy, competence and relatedness and the teachers' motivation, both for starting to use and continuing to use systems which support online courses. A total of 124 teachers participated, of whom 79% were male and 21% female, aged between 40 and 54 years old. The analysis of the data revealed that the participants were shown to be extrinsically motivated (perception of usefulness) in relation to the confirmation of the expectations of pre-acceptance and, according to the authors' interpretation, there were relevant signs of post-acceptance for continuance of the efficient use of the e-learning environment.

The theoretical assumptions of self-determination theory have also supported studies undertaken by Giesbers et al. (2013) and Xie et al. (2011). These researchers investigated the relationship between the students' motivation for learning and the specific use of a specified interactive tool which is found in the majority of VLEs. The investigation undertaken by Xie et al. (2011) aimed to ascertain the relationship between motivation and the students' participation in the asynchronous discussions in an online course. The study's sample had a total of 56 students, of whom 34 participants

were female and 22 male, their ages varying between 20 and 48 years old. The results ascertained indicated a significant relationship between motivation and participation in online discussion activities.

Regarding the study undertaken by Giesbers et al. (2013), the investigations undertaken sought to analyze the relationship between the use of web conferencing and the variables of motivation, participation and academic performance in the final examinations of an online course. A total of 110 students of economics participated, with a mean age of 19 years old, of whom 39% were female. The results indicated a significant relationship between autonomous motivation and participation in web conferences; also identified was the relationship between autonomous motivation and the grades obtained by the students in the final examination.

The considerations arising from the studies reported in this article have emphasized the relevance of promoting, developing and fostering the students' motivation for learning in VLEs. As a result, the present study has sought to ascertain students' motivation for learning in courses undertaken in virtual learning environments.

Method

Participants

The main condition for selection of the sample indicated was teaching mediated by VLEs, taking into account that the students – undergraduates and postgraduates – were in the process of training. The participants in this study were 572 students enrolled on courses mediated through virtual learning environments. These courses took place in the state of Paraná, in 2013, and were offered as part of a course which was partly offered onsite. Women represented 95.8% (*n* = 548) and men 4.2% (*n* = 24).

The students' mean age was 40 years and eight months (*SD* = 7.96), with the minimum age being 23 years old, and the maximum, 67 years old. The students were from the last year of the undergraduate course in Pedagogy – Group 1 (*n* = 544; 95.1%), from a university extension course in History – Group 2 (*n* = 7; 1.2%), and from continuous training for teachers from a municipal teaching network – Group 3 (*n* = 21; 3.7%). The samples were selected by convenience.

It should be made clear that the courses offered, whether in the university or municipal institution, were supported by the Moodle platform. The disciplines were obligatory in order to complete the courses.

Instruments

Teaching and Learning Strategy and Motivation to Learn Scale in Virtual Learning Environments (TLSM-VLE). Elaborated by Beluce and Oliveira (as cited by Beluce, 2012), is made up of 32 items, with a structure of six dimensions, namely: teaching strategies (9 items), autonomous motivation

(5 items), controlled motivation (6 items), demotivation (4 items), cognitive and metacognitive learning strategies (6 items) and monitoring of learning (2 items). For this study, only items from the scale corresponding to motivation for learning were analyzed. Table 1 presents the questions of the TLSM-VLE which were used in this study.

The dimension representing autonomous motivation in the scale is made up of statements which express the levels of extrinsic motivation by identified and integrated regulation and, further, intrinsic motivation, as the dimension of controlled motivation raises questions which deal with extrinsic motivation by external and introjected regulation. The scale is composed of statements such as, for example, "I seek to interact with classmates and teachers and make use of the content provided in the course environment because, for me, studying is satisfying", "I honestly don't know why I still access the page for this course" or "I comment during chats and discussion forums because it is what is expected of me".

The alternatives use a three-point Likert scale established as *always*, *sometimes*, and *never*. The value of 2 was attributed to the option of *always*, *sometimes* had the value of 1, and the option *never* had the index of 0. It is appropriate to point out that the levels obtained in the study undertaken by Beluce and Oliveira (as cited by Beluce, 2012) using the TLSM-VLE scale, indicated the following factorial loads for the dimensions which represented the construct of motivation: autonomous motivation ($\alpha = .64$), controlled motivation ($\alpha = .68$) and demotivation ($\alpha = .62$).

Procedure

Data collection. Data collection was in three stages undertaken in 2013. The first stage occurred with students participating in a continuing education course for teachers of primary and junior high school education in a municipal teaching network. The students were invited during an onsite meeting, during one of the meetings of the above-mentioned training course, held in an ICT laboratory. Following the invitation, the participants accessed the web address at which the instrument in this study was to be found.

The subsequent stages were undertaken with the participation of university students from a public higher education institution. In the second stage, students from the Pedagogy course participated, while the third stage involves the participation of students from a university extension course offered by the History Department.

In the last two stages, the invitation to the students to participate in the study was sent by email. The participants received a message sent using the email system provided by the platform itself for the courses studied. This email described guidance for accessing the instrument's electronic address. It is emphasized that, regardless of how the invitation was made, the student's compliance was informed.

It is clarified that the web address in which the research instrument was presented also provided the terms of free and informed consent. In this way, the participants were able to access the instrument by clicking on a link provided on the first page of the course's learning environment and via email. It is highlighted that the student accessed the other pages of

Table 1
Questions of the TLSM-VLE Scale Referent to the Dimensions of Autonomous Motivation, Controlled Motivation, and Demotivation

Item	Question	Motivational type	
36	I seek to interact with classmates and teachers and make use of the content provided in the course environment because, for me, studying is satisfying.	Intrinsic	Autonomous Motivation
39	I participate in this online course because studying is important to me.	Integrated	
40	I am enrolled on this course because I believe that this study will bring contributions to my professional competence.	Identified	
43	I am doing this course because I consider study to be a privilege.	Intrinsic	
44	I participate in this course because I know that I need to update my knowledge in order to carry out my professional practice.	Integrated	
21	I participate in the debates and discussions in the forum because I am being evaluated.	External	Controlled Motivation
22	I participate in online courses because it will get me a rise in salary.	External	
23	I comment during chats and discussion forums because it is what is expected of me.	Introjected	
27	I undertake the reading activities indicated because I have to.	External	
32	I comment in the meetings held in the chat rooms because I want people not to think that I am an absent or unproductive student.	Introjected	
35	I participate in the activities, debates and online meetings because I want to receive a certificate.	External	
28	I feel that I really don't know why I am doing this course.		Demotivation
29	I enroll on online courses because I believe that I won't have many tasks to do.		
37	I believe that participating in this course is a waste of time.		
41	I honestly don't know why I still access the page for this course.		

the scale only after the confirmation made regarding the authorization to participate in the study.

Data analysis. The data analysis aimed to meet the main objective proposed for this study, that is, to identify the students' motivation for learning in VLEs. The data collected were organized in spreadsheets and were subjected to inferential and descriptive statistical analysis. Rates were obtained relating to the frequency, mean and standard deviation of the variables investigated.

It is emphasized that additional analyses were undertaken, aiming to assess also the relationships existing between the dimensions studied, that is, autonomous motivation, controlled motivation, and demotivation. Pearson's correlation was used in order to analyze these data. It should also be made clear that the assumptions of self-determination theory led the analysis and the understanding of the results obtained in this research.

Ethical Considerations

This study respected Resolution 196/96 and the provisions of the Brazilian National Health Counsel. The teaching institutions selected to participate in this study were contacted and the project proceeded to the Research Ethics Committee of the Universidade Estadual de Londrina, which approved and implemented the necessary authorizations, in accordance with protocol no. 30520/2011.

Results

Following analysis of the data, results were obtained relating to the motivational dimensions researched in this study. For the dimension of autonomous motivation, established with 5 items on the scale and with a total of points which could vary between 0 and 15, the rates indicated a maximum score of 10 ($n = 346$, 60.5%), a minimum score of 2 points ($n = 1$, 0.2%) and a mean score of 9.22 ($SD = 1.24$).

The results also revealed that 75.9% ($n = 434$) of the students selected the option *always* for the questions which dealt with the students' intrinsic motivation for participating in online courses/disciplines. It was ascertained that 2.9% ($n = 17$) of the students chose the option *never*, referent to these same questions. Emphasis was also placed on the rates relating to extrinsic motivation through integrated regulation, represented on the scale by questions 39 and 44, which obtained the recognition of 91.8% ($n = 525$) of the participants.

The dimension of controlled motivation, made up of six items, obtained a score varying from 0 to 18 points, and a mean of 5.0 ($SD = 2.62$). The statistical analysis evidenced, for this dimension, the maximum score of 12 ($n = 4$; 0.7%) and the minimum score of 0 ($n = 21$; 3.7%).

The results also indicated that 35.8% ($n = 204$) of the students selected the option *never* for the questions which presented examples of behaviors regulated by controlled motivation, undertaken by students in online educational

contexts. In contrast with this, 20.3% ($n = 116$) of the students selected the option *always* for the questions which characterized behaviors regulated by extrinsic motivation of the external or introjected type.

Significant numbers were also found in the results arising from the analysis of the data referent to the dimension of demotivation. This dimension was made up of 4 items, with scores varying between 0 and 12, and results achieved which indicated a maximum score of 8 ($n = 2$, 0.3%), a minimum score of 0 ($n = 449$, 78.5%) and a significant mean of 0.40 ($SD = 0.95$).

The results also indicated that 1.6% ($n = 9$) of the students selected the option *always* for the dimension of demotivation, while 91.5% ($n = 532$) selected the option *never* for the statements which described demotivated behaviors for learning in educational situations mediated by VLEs. Furthermore, this study proposed to assess the relationship existing between the dimensions researched, that is, autonomous motivation, controlled motivation and demotivation. In order to analyze the correlational data obtained, the researchers adopted the parameters indicated by Cohen (1998), who categorizes the values of correlation below .10 as low magnitude, those between .10 and .30 as moderate magnitude, and correlations equal or superior to .50 as high magnitude.

This being the case, results were obtained which indicated the existence of correlation between the factors of autonomous motivation and demotivation, although with a negative and almost nul rate ($r = -.160$; $p = .000$). Between the dimensions of autonomous motivation and controlled motivation, the results indicated absence of correlation ($r = -.020$; $p = .632$). On the other hand, the results measured between the dimensions of controlled motivation and demotivation demonstrated a moderate positive correlation ($r = .342$; $p = .000$).

Discussion

Motivation to learn is recognized as one of the main determinants for the success and the quality of the academic learning (Bzuneck, 2001). Hartnett et al. (2011) emphasize the relevance of motivation in learning situations, indicating that this construct is a key factor for the student's development, whether in on-site educational contexts or in virtual environments.

In this perspective, this study was committed to ascertaining both the motivation (autonomous or controlled) and the demotivation of students for learning on online courses mediated through VLEs. As clarified previously, for comprehension and discussion of the results obtained, this study was based on the proposals of self-determination theory, elaborated by Deci and Ryan (2000).

Based on the analysis of the data undertaken, it was possible to ascertain that a considerable number of participants perceive themselves to be intrinsically motivated for involvement in situations of learning

proposed in courses/disciplines mediated by VLEs. In the light of these results and the information arising from the management of the courses researched, the hypothesis is considered that this fact may be related to these students' low levels of dropout.

Nevertheless, it is also worth discussing the possibility that the participants may have provided the answers which they felt were expected of them, or answers reflecting what they themselves would like to be: autonomously motivated students. This question may not be answered, as it has to do with the limitation of self-report studies. This consideration, however, must not be ignored.

Also evidenced were high rates of students' identification with questions representing extrinsic motivation through integrated regulation, which, as Bzuneck and Guimarães (2010) explain, is characterized as the level of the motivational continuum found closest to that foreseen for intrinsic motivation. In the light of these results, and taking into account the points presented by Reis (2009) in relation to the challenges characteristic of online education, the score which the students presented, through selecting options from the scale which expressed autonomous motivational behaviors for the putting into effect of learning mediated by the use of VLEs, is judged to be significant. It is emphasized that similar conclusions were found by Giesbers et al. (2013) and Xie et al. (2011), which also investigated students' motivation for learning in online educational conditions.

Regarding the dimension that investigated the demotivation of the students who participated, the results also presented relevant levels. It is worth commenting that, among the values achieved through the data analysis undertaken in this study, the higher numbers are found in the dimension of demotivation. Significant levels indicated that the students did not score questions about actions characteristic of demotivated behavior, making it possible to presuppose that the majority of students in this study were shown to be motivated, to some extent, to learn on courses mediated through VLEs. These levels were shown to be relevant specifically in the ambit of online education, given that the characteristics of these virtual environments require greater involvement and autonomy of the student in order to regulate his or her own learning (Filcher & Miller, 2000).

In relation to the analysis of data which dealt with controlled motivation, the results revealed that the majority of the students presented scores below the mean (9 points) established for this dimension. Such results allow one to conceive that these students did not recognize the behaviors, described in the questions posed by the TLSM-VLE scale, guided by controlled motivation, as theirs.

The results obtained in this study, which sought to investigate the dimensions of autonomous and controlled motivation, and the dimension of the demotivation of the student for learning in VLEs, made it possible to outline an autonomous motivational profile for the majority of the students who participated. Nevertheless, due to the complex

character of motivation, subject to socio-environmental conditions, the relevance of adopting teaching strategies which seek to maintain this autonomous motivational behavior is evidenced (Bzuneck, 2010; Guimarães et al., 2002).

The maintenance of the autonomous motivational behavior is associated with actions of effort, active participation, persistence and attention (Bzuneck, 2010; Patrick, Skinner, & Connell, 1993; Quevedo, 2011; Xie et al., 2011). In this regard, authors such as Quevedo (2011) and Xie et al. (2011) indicate that the role of the teacher can perform a critical factor in the student's persistence in activities undertaken in virtual environments. As a result, it is necessary to consider the need for studies which investigate in greater depth the continuity of this motivation to learn, and also the relationships which may be established between the student's engagement and the teaching strategies adopted by the teacher or tutor in VLEs.

It is, moreover, appropriate to emphasize those results arising from the analysis which ascertain the correlations existing between the above-mentioned dimensions investigated in this study. Attention is drawn to the rates which evidenced the absence of correlation between the dimension of autonomous motivation and the dimensions of demotivation and controlled motivation; and also, the observation of a moderate positive correlation between controlled motivation and demotivation. It is noteworthy that such results were predicted by self-determination theory in the studies undertaken by Deci and Ryan (2000) and Ryan and Deci (2000).

It is clarified that the data presented here refer only to the sample studied. It must be stressed that for a better understanding of what is behind the conditioning factors of the motivational profiles presented, it would be necessary to undertake a study with a more qualitative focus.

In the light of the above, it is considered that the results obtained allow one to identify motivational quality in the behavior of students who participate in courses mediated by VLEs. However, some questions concerning the limitations of this study must be observed.

Initially, one should consider that the previous academic experience of some of the participants, notably the postgraduate students, may have brought implications, causing these students' occupational levels to differ from those of the other participants analyzed in this study. In this perspective, it is considered that future studies should seek to assess the students' motivation more qualitatively, given that this construct is multifaceted and, therefore, is related to a variety of environmental and situational variables.

The limitations of self-report studies must also be appreciated. In this situation, it is necessary to be alert to the possibility that the participants may have selected questions considering behaviors which they judge to be more socially valued or, furthermore, that they would like to perform. It is argued that this situation occurred due to the structural characteristics of self-report studies. As in the

previous question, it is estimated that further investigations, with a qualitative character, could refine the analysis and understanding of the data obtained.

It is also worth emphasizing the importance of previous studies which extend the contributions of this study, investigating in greater depth the relationship established between students' motivation for learning, and different educational dimensions experienced in VLEs. Among these dimensions, the following stand out: teaching and learning strategies, the training of the teacher, the curriculum, and the design of the environment, among others.

Also regarding the limitations presented, it is considered that the results achieved were significant, as they made it possible to survey the motivational profile of the sample studied. Among the information obtained, emphasis is placed on the data that made it possible to identify that the majority of the students studied presented autonomous motivational behavior, indicated as essential for implementing learning mediated through the use of VLEs.

It was also possible to ascertain the correlations established between the dimensions of autonomous motivation, controlled motivation and demotivation, taking into account the results obtained from the participants in online courses. Such results were in accordance with the assumptions of self-determination theory and made it possible to evaluate the dimensions investigated in this study. Generally speaking, it is considered that the object proposed for this study was responded to and it is hoped that the resulting information may bring contributions for educators and psychologists who research and work in virtual learning environments.

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