Motivation for online learning

ONLINE LEARNING MOTIVATION

Motivación del aprendizaje en línea

Motivação para a aprendizagem em linha

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ABSTRACT

The objective of this document is to carry out a bibliographic review on the motivation of online learning in some Latin American countries, and the internal and external variables that are presented to the student in order to successfully complete a virtual training program. As a result, reference is made to fifteen investigations developed and published in scientific journals, such as Dialnet, Redalyc, Psichotema, among others. The successes of culmination in any virtual training program persuasively contribute to the academic agents, generating motivational strategies for people who wish to enter this learning modality; on the other hand, it evidences indicators to the businessmen that allow to give a critical and objective look in the inclusion of human talent in diverse areas of knowledge and skills of technological competence. This review includes the concepts of intrinsic/extrinsic motivation, learning, and virtual environments. As a finding, in the search for literature it was found that in 2012 in Colombia around 10,000 teachers were trained in ICT-supported strategies,

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RESUMEN

El presente documento tiene como objetivo realizar una revisión bibliográfica sobre la motivación del aprendizaje en línea en algunos países de América Latina, y las variables tanto internas como externas que se presentan en el estudiante para poder culminar con éxito un programa de formación virtual. Como resultado de ello se hace referencia a quince investigaciones desarrolladas y publicadas en revistas científicas, tales como Dialnet, Redalyc, Psichotema, entre otras. Los éxitos de culminación en cualquier programa de formación virtual aportan persuasivamente a los agentes académicos, generando estrategias motivacionales para las personas que desean incursionar en dicha modalidad de aprendizaje; de otro lado, evidencia indicadores a los empresarios, que permiten dar una mirada crítica y objetiva en la inclusión de talento humano en diversas áreas de conocimiento y habilidades de competencia tecnológica. En esta revisión se incluyen los conceptos de motivación intrinseca/extrinseca, aprendizaje, y entornos virtuales. Como hallazgo, en la búsqueda de la literatura se encontró que en el año 2012 en Colombia

por

RESUMO

O objetivo deste documento é realizar uma revisão bibliográfica sobre a motivação da aprendizagem on-line em alguns países da América Latina, e as variáveis internas e externas que são apresentadas ao aluno para que ele possa completar com sucesso um programa de treinamento virtual. Como resultado, faz-se referência a quinze investigações desenvolvidas e publicadas em revistas científicas, tais como Dialnet, Redalyc, Psichotema, entre outras. Os sucessos de culminação em qualquer programa de formação virtual contribuem persuasivamente para os agentes acadêmicos, gerando estratégias motivacionais para as pessoas que desejam se aventurar neste modo de aprendizagem, por outro lado, indicadores de evidência para os empresários, que permitem um olhar crítico e objetivo para a inclusão do talento humano em várias áreas do conhecimento e habilidades de competência tecnológica. Esta revisão inclui os conceitos de motivação intrínseca/extrínseca, aprendizagem e ambientes virtuais. Como resultado, na busca de literatura, verificou-se que, em 2012, na Colômbia, foram treinados em

13 Higher Education institutions with 37 programs at all educational levels.

se capacitaron en estrategias apoyadas en las TIC alrededor de 10.000 docentes, 13 instituciones de Educación Superior con 37 programas en todos los niveles educativos.

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Keywords: Motivación, aprendizaje virtual y entorno virtual, TIC.

Palabras clave: Motivation, virtual learning and virtual environment, ICT.

Palavras chave: Motivação, aprendizagem virtual e ambiente virtual, TIC.

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INTRODUCTION

Nowadays, the integration of Information and Communications Technology (ICT) has revolutionized the way we learn and relate to the world; ICT leads the way in knowledge construction and gives added value to education. On the other hand, the demand for constant knowledge transformation unlocks an array of possibilities for the academia in terms of training modalities, especially virtual education. These scenarios allow learners to strengthen learning options by becoming familiar with the use of new technologies, and knowledgeable in applications and tools such as concept maps, charts, blogs, wikis, audio conferences, voice notes, and others, to ease online learning. The profile of these learners differs from that of the students that engage in face-to-face learning; virtual learners have an internal motivation connected with the desire of knowledge, to surpass themselves, and to be constantly up to date, by which fulfilling academic goals and sub-goals becomes a challenge.

CONCEPTUAL FRAMEWORK OF ICT IN COLOMBIA

Radiodifusora Nacional (the national broadcasting system) was created in 1941, with the purpose of providing information from a distance: "working to support national culture in every form, collaborating with universities and schools in teaching tasks, contributing with shaping the artistic taste with carefully prepared programs, and offering a serene and dispassionate kind of learning" (Stamato, 2005, p.14).

This background became a milestone in Colombian education history, for the first time ever, teaching and learning in traditional educational centers were decentralized, and the access to content was enabled for people who could not attend classrooms for multiple reasons. Following this initiative, the educational television project was set in motion in 1957, with the aim of supporting teachers' pedagogical work (Cardenas and Tovar, 2012).

Afterwards, Decree 1820 of 1983, regulated open and distance education. This Decree emphasized on pedagogical measures to support and encourage students' autonomous learning (MEN, 1983), which became the foundation for Universidad del Sur, currently known as Universidad Nacional Abierta y a Distancia (Facundo, 2002).

Today, distance education is defined as "having an educational methodology that uses teaching-learning strategies to exceed space and time limitations among the process' parties" (MEN, 2010, p. 10). Likewise, Decree 1295 of 2010 legitimizes virtual distance education in Colombia.

The information provided by the Higher Education National Information System states that 13,931 students enrolled in the distance modality (traditional and online) in 2000, while that number increased to 70,020 in 2012, evincing a considerable increased demand of 50.3% in these programs.

Table 2 shows the annual trend in terms of the average of people enrolled in higher education distance programs. The data suggests that, although the demand for virtual modality programs has increased in this period, the gap in terms of the number of students enrolled in these modalities became wider between 2006 and 2009, a time in

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which traditional distance programs were favored. In that regard, Table 1 shows the annual trend on the average students registered in the distance modalities.

Despite the differences in terms of number of enrolled students in these modalities, virtual distance education has benefited academic coverage by expanding it into sectors of the Colombian geography which used to report low share in the higher education system. Some of the regions that have profited are Eastern Plains, Antioquia and the Atlantic Coast, among others (Alvarado and Calderon, 2013).

Virtual education emerges out of the need to present a transnational educational model that users may access unrestrictedly (Toffler, 2006). The introduction of ICT in educational contexts offers gains to students, teachers and the overall educational system (Silva Quiroz, 2004). According to the National Education Ministry (MEN, for its Spanish acronym), by 2002 the offer of virtual programs in the country consisted of 6 academic programs in 4 higher education institutions, 4 of which were at undergraduate and 2 at postgraduate level. A strategy that started in 2003 to decentralize the offer and guarantee more access to higher education, led to the conclusion that virtual education enabled an expanded coverage at a lower cost, since it did not require large physical infrastructure in remote areas of the country. Thus, the program of ICT incorporation to higher education was launched in 2003, intended to generate installed capacity in terms of infrastructure in the institutions, create content, train teachers and set policies to move forward in the development of virtual programs.

By the end of 2006, 13 educational institutions offered 18 programs (12 at undergraduate level, 4 specializations and 2 master's degrees), but still with little student coverage. The slow progress in coverage resulted in a process that summoned higher education institutions to accompany the transformation of 18 programs in 2008. As a result, 36 higher education institutions offer programs with over 80% of virtual component and more than 150 programs exist at the technical professional, technological, university professional, specialization and master's degree levels in different areas of knowledge, with 3,540 and 4,409 students enrolled in the first and second semesters of 2009 respectively.

To encourage enrollment, MEN designed a promotion campaign for virtual education in the second semester of 2010.

According to the data by Colombia Aprende (CA) -MEN's knowledge network- the promotion and consolidation of virtual networks and communities is also part of the strategic line to strengthen ICT's use capacity and appropriation, with the main goal of transforming ICT in fundamental tools to mobilize the educational community.

CA has 62 training courses at virtual level offered to the educational community, aimed at teachers and directors, primary and high school teachers of public and private educational institutions, which seek to develop the basic competences needed for the use of ICT. These include Guide 34, Digital Alphabetization, Teacher Training in ICT, Inclusive Education, A Thousand Ways to Read, Yes-English, Class Study Methodology and Educational Services.

In 2009, this website received 17,488,583 visits, and between January and April of this year it has received more than 7,588,526 visits. Currently, a total of 17,007 participants are involved in a virtual program.

Table 1. Distribution of active higher education academic programs in 2011.

Modality	*2011*	*%*
Face-to-face programs	10,002	92.32
Traditional distance programs	563	5.2
Virtual distance programs	266	2.46
Sum	10,831	100

Source: Alvarado and Calderon (2013).

Table 2. Average enrolled students in the virtual and traditional distance modality between 2000 and 2012.

	Year 2000	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*
Average enrolled students in the virtual distance modality	719	952	1,186	1,014	1,034	491	372	2,282	3,578	4,807	6,120	9,084	8,557
Average enrolled students in the traditional distance modality	13,212	15,256	14,444	14,825	21,909	25,723	25,537	38,918	48,901	62,513	63,264	77,739	61,464
Sum	13.931	16.208	15.630	15.839	22.943	26.214	25.909	41.200	52.479	67.320	69.384	86.823	70.021

Source: Higher Education National Information System 2012.

As the Tables show, there has been an increase in students enrolled in the virtual modality, this indicator allows stating that the introduction of ICT has led to a decreased geographical barrier, both in knowledge and culture. Hypothetically, an increased number of students in the virtual modality enables an high degree of motivation for being enrolled in a program and for finishing it.

The following analysis of the online learning outlook includes a description of how this dynamic takes place in some countries in Latin America.

EXPERIENCES ON VIRTUAL EDUCATION IN LATIN AMERICA

VIRTUAL EDUCATION IN GUATEMALA

Two large sectors influence Guatemala's National Educational System: the Ministry of Education and its institutional components (consisting of three subsystems: pre-elementary, elementary and high school; which have two cycles: basic and diversified); and the university subsystem which is divided in Public and Private University Education and is responsible for top level training. Neither of these two subsystems has a regulatory standard, they operate independently with different governing bodies, forming a cluster of universities (Cajas, 2008); this constitutes a disadvantage for education in Guatemala, and it drives a gap between high school and higher education. On the

other hand, it is necessary to analyze the coverage of the system's different programs, which has the lowest share in the Latin American average. According to the World Bank, as reported by Alarcon et al. (2008), this indicator is of 19.4%, but in Guatemala it is of 10.1%, the lowest in Central America.

In the state's university system, only one program applies the distance education modality is the postgraduate studies subsystem, in it, tutorials are taught by way of virtual classrooms. Out of 1,684 students enrolled in the 2008 academic term, 125 followed a distance education system, accounting for a mere 7.42% of the total (Lupion Torres and Rama, 2010).

DISTANCE EDUCATION IN BOLIVIA

The country's higher education regulatory framework describes the virtual modality as a semi face-to-face modality that uses a computing platform and a "set of techniques", academic research and study processes enabled by the interaction between students and teachers, classmates, and multimedia resources available through the Internet, adding that certain activities must take place face-to-face.

Two university systems coexist in Bolivia: the Bolivian University System (SUB, for its Spanish acronym), to which ten public and autonomous universities are affiliated, as well as Universidad Catolica Boliviana and Escuela Militar de Ingenieria. On the other hand, private universities are affiliated in the National Association of Private Universities (ANUP, for its Spanish acronym), which gathers 37 higher education institutions that are funded and managed by the private sector.

Universities have incorporated ICT in their academic and administrative chores as a result of the development of New Information Technologies and Communication (NTIC, for its Spanish acronym), although it has failed to impact the transformation of traditional academic models, reducing its didactic and training aspect to an overall and specialized software, access to virtual information or dissemination of activities.

It is found that out of the country's 64 public and private universities, 32 have an official website. 7 Bolivian higher education institutions are included in global universities ranking, this ranking considers several indicators, mostly regarding academic production, which may also be associated with institutional capacities in developing distance programs, in particular in the semi face-to-face modality, based on ICT usage. Only 5 universities evince the use of a virtual platform, which points to an indication of its infrastructure and managerial development, vital for a modern offer of distance training programs.

Currently, some concrete offers of distance training programs or courses in virtual campuses are in place in 8 of the 32 studied universities (25%), almost all of which correspond to postgraduate studies' offers. Only 6 of the 32 universities use some academic model on which their academic and curricular offers are based on.

The progress in the distance education modality by Universidad Publica Mayor de San Simon is worth mentioning, it has focused on strengthening its academic and administrative management resources, e.g., the teachers of some departments conduct the teaching-learning process' activities on

an ICT-based support (Padilla, 2010), (Lupion Torres and Rama, 2010).

DISTANCE EDUCATION IN CHILE

The Chilean university system is characterized by its heterogeneity, meaning that state and private universities coexist in it, and that the state and the market forces' contribution join forces. In that regard, 2 operational models take place in the country's universities: traditional universities (the country's 8 oldest universities, which are part of Consejo de Rectores de Universidades Chilenas, a coordination body on the nation's university tasks); and private universities (under the state's supervision in terms of operation).

Chilean universities offer professional and technical careers, the first last 4 years and lead to a professional degree, the latter last 2 years and grant a technical degree. Only universities may grant academic degrees at high school, undergraduate, master's or doctorate level. According to the Ministry of Education of Chile, higher education has shown moderate growth in the last years.

Virtual education in Chile was launched in 2000, it began as support to teaching in the university sector, there is an association between virtual and distance education (Lupion Torres and Rama, 2010).

DISTANCE EDUCATION IN BRAZIL

The framework that regulates distance education in Brazilian higher education was implemented in 1996 with the Guidelines and Basis for National Education Law (LDB, for its Portuguese acronym) becoming the valid and equivalent modality for all learning levels. The model, developed by Universidad Federal de Mato Grosso (UFMT), was considered a matrix to create distance undergraduate courses in federal and state universities in Brazil. Thus, in 1996, the first master's degrees at Universidad Federal de Santa Catarina were offered using video conferencing, aimed at integrating the university and the companies with total digital technology and full interactive audio and video capabilities.

This experience significantly influenced distance education (EAD) in Brazil, since it trained EAD agents in diverse institutions. Consequently, this experience encouraged other institutions to invest in digital technology to create virtual learning environments; they established a proprietary methodology to design and publish content to support multimedia activities, and to develop the logistics needed to offer distance courses at national level. They also created administrative management strategies and pedagogical approaches to service online students in monitoring and tutorials in remote offices, prepared equipment and digital technology development to launch the country's first online courses.

The offer of online postgraduate level courses began in 1998, and this milestone drove the expansion of this modality in the country. The technology research process, content development and mediation strategies intensified and institutions became interested in an official distance education certification. In 2002, four institutions were officially registered with the support of interactive media in the Education State Councils, more programs were being certified, for a total 60 active courses with 84,397 participating students.

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By 2008, the Higher Education Census (conducted by Instituto Nacional de Investigaciones Educacionales Anìsio Teixiera (INEP), annexed to the Ministry of Education) reported 761,000 students enrolled in distance courses. A study by professor Silvo Ristoff systematized a performance comparison between distance students and face-to-face students at ENADE in 2005 and 2006, it showed that performance by students enrolled in the first semesters of distance education was outstanding in 9 of 13 assessed areas, comparatively with face-to-face students in equivalent courses (Lupion Torres y Rama, 2010).

A LOOK AT VIRTUAL CONCEPTS

The importance of the concept of "virtual" training is acknowledged by some authors in education, development and progress of a society due to the fact that it entails the globalization of knowledge. Some definitions include:

In the words of Pierre Levy (1999), virtual

> "Comes from the medieval Latin word virtualis, which in turn comes from the word virtus: strength, potency. In scholastic philosophy, what is virtual exists potentially but not actually. What is virtual tends to become updated but does not become concretized in an effective or formal way (page 10)".

"In this turn of the 21st century, we are witnessing a progressive concretization of technological change, perhaps, the most important one in the history of mankind". (Silvio 2004).

Garcia, Ruiz and Dominguez (2007), state in their text "De la educacion a distancia a la educacion virtual" that:

> "Distance expresses remoteness, separation, detachment in both coordinates that are key to human interaction: space and time. A distance between two subjects that are geographically apart, with more or less physical remoteness and in the time in which this relationship takes place. The actors in this interaction will always be in different places (and until recently) in different moments; which is why spatial separation is a relevant factor in distance education, and communication channels and resources on which distance education has leveraged upon from its inception used to maintain this separation of time and space, thus, interaction between participant actors was extremely limited (p.303)".

Likewise, Piscitelli (2002, p.185) regards technologies as "tools, not just artifacts, but as every new implement we devise as part of a new practice."

Comparably, Perez (2012, p. 55) states:

> "In contemporary society, videogame screens and virtual social media have become the most influential socialization context, the relatable stage that surrounds individuals' development and growth, conditioning their opinions, beliefs, interests and tendencies with strength and perseverance throughout the adolescent stage".

On the other hand, Chomsky and Ramonet, 1995, add: "each individual, through one of the multiple screens he/she uses daily while surfing the web, may get in touch with the most remote places, most exotic and distant cultures, most different and innovative intellectual ideas and creations , alongside the most trivial opinions and archaic prejudice, and the most attractive fashion, mechanisms and ways of interaction. These constitute the skeleton of the new society. Everything that is slightly relevant has to be fit into a screen, which often causes passive contemplation

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by the majority of citizens in digital platforms or in social media, which allows for and instills interaction, personal expression and even collective mobilization".

These concepts have had diverse acceptance levels through time. According to the thoughts presented, it can be proposed that "virtual teaching outlines a great challenge for web users that buy-in a technological infrastructure, being indispensable to interact within a different and innovative pedagogic scenario", turning into a socio-cultural representation of the teaching-learning elements, since it strengthens and transforms communication between the student and the tutor. Learning environments are scenarios in which students and teachers interact to socialize and exchange ideas and content by way of using techniques and tools that lead to acquiring new knowledge or to strengthen it, as well as to invigorate skills or different types of competences.

Gonzalez and Florez (2000, p. 101-103), point out that:

> "A learning environment is a place in which people look for resources to provide sense to ideas and build significant solutions to problems. Thinking about teaching as an environment highlights the place or space in which learning occurs. The elements of an environment are: the student, a place or place in which he/she acts, uses tools and artifacts to gather and interpret information and interact with others".

Overall, there are four elements in a learning environment:

A. Interaction processes between individuals.
B. A set of tools or interaction means.
C. A series of actions regulated on certain content.
D. A setting or space in which said activities are conducted.

It is necessary to mention that a learning environment comprises not only the physical context and material resources but the psychological aspects that are critical in the success or failure of educational projects.

On the other hand, the transformation of a paradigm regarding pedagogy and curriculum influences learning and motivation for the teacher and the virtual student. As Zamorro (2011) explains, the following are aspects that must be taken into account:

- Developing key skills to distribute knowledge in situations in which knowledge is socially built through "learning alliances", implying top-level skills and competences that act as key organizers to determine which knowledge is relevant and is worth sharing.
- Leveling the field by teaching learning strategies, analysis and thought capabilities to all of the students in order to drive academic accomplishment. It implies mastering an area of knowledge and applying their knowledge wisely and for the common good.
- Motivating students to learn and offering opportunities to work in different learning environments. It is not just about developing students' self-regulation capacities on the learning objectives, but about teaching them the value of what they are learning from a broader perspective.
- Building collaborative knowledge as an answer to the increased need to share and build new

perspectives, taping into expert knowledge and enlarging reciprocal learning.

- Using technology. The combination of collaborative learning and network technology helps students build communities and develop challenging and interesting projects that focus on real problems.
- New functions of teachers, which imply reconsidering their communication and collaborative skills, developing sensible pedagogical thinking to mentor learning and mediate in social values and skills, and to systematically evaluate students' activities and their own (p.174-175).

According to Peter or Wegner (2008):

> "Stressing and extending the concept of activities as the axis of relevant teaching. Speaking of tacit teaching or immersion in social practices, highlights the importance of an active implication by the learner and a discrete and veiled presence of the teacher in the daily practices, practices are learned or activated when they are reproduced frequently, mechanically ritualistically and unconsciously, or when they are perfected or transformed reflexively. Likewise, the rules of play are learned by playing and participating, by changing or inventing them (p. 198)".

From that point of view, it is necessary to refer to cognitive theories. Constructivism explains that the different components of personality are built throughout each individual's history as a consequence of their interactions and experiences with their social setting context. Constructivist theory (Vigotsky, 1974) adds that the learner requires the action of an intermediary agent to access the zone of oncoming development; the individual is responsible for building a foundation to provide safety and allow knowledge appropriation to transfer it their environment.

(Glaserfeld 2003, 2007) states that human beings build individual and group knowledge, scientific knowledge and reality through their interactions.

Taber (2006), reaffirms the ideas that are key to constructivism:

1. Knowledge is actively built by the learner, it is not passively received from the outside. Knowledge is not a copy of reality, but a way to organize the world based on our experience. The function of human cognition is adaptative, intentional and interested.
2. Learners approach a learning situation with prior ideas that can be fragile or stable, simple or elaborate, regarding phenomena connected with the situation. Such ideas are particular to each individual and are also common components of shared ideas, even dominant in their cultural media. These ideas are often incompatible with accepted scientific ideas and are persistent and resistant to change. Teaching must take these prior ideas seriously to aid them being questioned, changed or enriched.
3. Knowledge is represented in the brain as conceptual structures, idea systems, models or mantras that help us read reality, design our intervention and foresee the consequences of our actions (p. 125-127).

Afterwards, it is stated that individuals build their own ideas through the interaction with the physical world, taking social scenarios into account and participating in linguistic and cultural contexts.

This theory considers learning as a fundamental mechanism for the individual's development, using social interaction a setting of sociocultural

backgrounds in which mediators help the student achieve cognitive development; the student builds knowledge and meaning by him or herself, starting from the individual and expanding on to the collective in a process of knowledge appropriation. A student will always be curious and critical of what he/she is learning, thus going deeper in the learning level, reviewing, modifying and enriching new schemes; his/her own motivation will lead to the construction of his/her learning process. As Moscovisi's theory of social representation says, "it is a particular modality of knowledge, with the purpose of elaborating knowledge and communication among individuals" (1979, p.17).

It is inevitable to incorporate this information to Piaget's (1955) learning theory, which describes the mind of organisms as the result of two "stable functions", organization and adaptation, an adjustment process by which the individual and the incoming information adapt to one another. Moreover, 2 processes operate in the adaptation dynamic: assimilation and accommodation. The first one allows the organism to face external stimuli with an organized mental structure in order to be assimilated by the individual; the latter involves a modification of said mental structure, obtaining an answer to the demands and incorporating new stimuli that compromise the scheme's internal coherence, identified as "every action that is repeated or generalized due to the application of new conceived objects".

Meaning, for this author schemes change and become more structured in time, representing an evolution of the exchange between the individual and the media. Thus, the student who has completed his/her intellectual structures (cognitive) will have an accumulation of information to share with the media.

Along this line, studies conducted in the academic world validate the importance of the cognitive element. Perez and col. (2007) undertook an exploratory study with 19 teachers aimed at analyzing the beliefs and conceptions of high school teachers regarding geometry and its teaching. The results showed information on curriculum content and the geometry content prioritized by teaching. In addition to these results, the importance of training and student learning (along with their prior knowledge, difficulties and mistakes in academic learning) was highlighted.

The aforementioned study analyses the importance of beliefs based on 2 actors: teachers and students, emphasizing the influence of beliefs over the individuals' way of acting and complementing the equation with an additional actor: mastery of platforms.

Students organize their thoughts, interact with their experiences and this cognitive process leads to the construction of knowledge with changes relative to their learning. The influences of media and the individuals' behavior allow seeing the importance of understanding elements such as assimilation and accommodation, since they are rooted in the learning process and are developed based on individual experience. On the other hand, in order to build the learning process (in the virtual student) internal and external motivations are required, given the factors that impose a challenge for the student, and that are important to achieve an established goal. Motivation is a complex phenomenon in virtual learning. Variables such as teacher pedagogy, platform functionality,

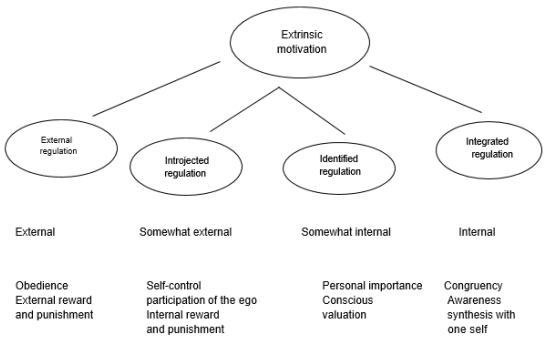
multimedia material, topic at hand and school retention allow to characterize the students that choose virtual learning. Seeing as they are students with superior reading and writing skills, they have discipline and are time planners, have an independent learning style, thus driving their own motivation and sharing their knowledge with the virtual group. Time and process management leads them to methodology and autonomy, all of these elements shed a new light on this group in an ever-changing society.

A study conducted by MINTIC and Ipsos Napoleon Franco in February 2012, reveals that the digitization level of Colombians is having an impact on their lives: it found that 8 of each 10 Colombians under 55 access the Internet. A second study conducted by MINTIC and Cifras y Conceptos in the first semester of 2017 adds that the Internet is the main interaction media among Colombians, their online activity includes: communication with 97%, entertainment with 78%, information with 66% and training with 44%. The study also mentions that 75% of the survey takers consider ICT make their lives easier, and 34% believe the Internet has improved their lives in terms of knowledge of topics of personal interest.

Regarding motivation, Arellano (2002) proposes the following definition: "the quest for satisfying a need, focusing on doing specific activities" (p.137). This conceptual framework implies that motivation makes individuals enrolled in virtual courses analyze their actions to satisfy their needs, knowledge-wise, during and after a topic that has been virtually selected.

Another definition of intrinsic motivation: "is the inherent tendency to get involved with one's interests and exercise one's capacities, and in doing so, seek and master optimum challenges, an extrinsic motivation coming from the environments incentives and consequences, meaning, it arises from consequences that are independent from the activity itself" (Deci and Ryan, 2000, p. 56). Yet, if cognitive perspective is taken into account, motivation arises from an event and a mental thought that acts as a driving force towards a goal; complementing the socio-cognitive perspective in which the role of the virtual teacher is important for the student, acting as a positive influencer or role model, a guide for the student to use the platform tools creatively and with pedagogy, and who publishes motivation adverts frequently; all of these factors indirectly influence the student to achieve the goal within a learning process; from a cultural perspective, the virtual community and the technological trends are elements that have become indispensable to achieve academic goals and the virtual learning process.

Figure No. 1. Origins of Intrinsic Motivation.

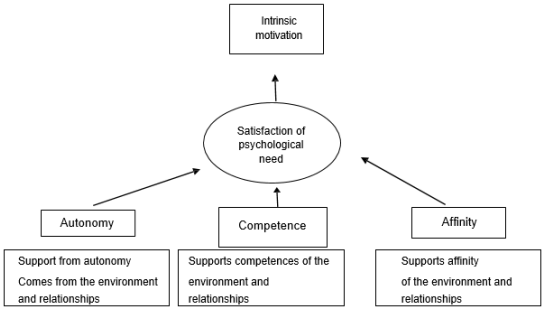


Source: Reeve (2003, p. 83)

Analyzing Figure 1 within the framework of motivation for virtual learning, the students that are enrolled in this modality act based on their own interest, choose the program that they believe can

satisfy their knowledge needs, and visualize this process as a goal. This choice is spontaneous; therefore, the student must work hard to sustain it, this choice is the input for his/her professional future, there is more psychological wellbeing in the quest for extrinsic goals (e.g., social recognition, reciprocity in establishing relationships with people to share the same knowledge), along with persistence, creativity and high-quality learning in order to achieve the goal that will lead to the satisfaction of a psychological need. The culmination of the academic process will provide added value to knowledge, competition and affinity in relation to his/her peers. This can be associated with the principle of intrinsic motivation of creativity: "People will become more creative when they feel motivated by the interest, enjoyment, satisfaction and challenge of work, more than by external pressure" (Amabile, 1983, p. 360). Virtual students face not only intrinsic motivation, but extrinsic motivation as well, allowing the student to handle his/her environment.

Figure No. 2. Self-determination continuum that shows the types of motivation



Source: Reeve (2003, p. 98)

Yet, the virtual student's extrinsic motivation is driven by consequences aside from the activity in itself: a dynamic and creative platform that encourages students' feelings towards their studies in order to get a consequence (e.g., revealing the top students at the end of a cycle). For the virtual student, these incentives are highly esteemed and may be thought of as a behavior contract: "you will be rewarded if you complete the activities".

Carrying out the proposed goal, the conclusion of a virtual career or course, will have the consequence of longing for social recognition. From a behavioral standpoint, it is understood that this feeling revolves around operant conditioning. The term operant conditioning refers to the process by which each person learns how to operate efficiently in the environment. The main idea is that the reward for certain behavior will grow or expand its realization or repetition. If a virtual student gets good grades and successfully achieves the goal, the likelihood for him/her continuing virtual studies will increase.

ACCOMPLISHMENTS IN VIRTUAL ACADEMIA

Does virtual education provide job opportunities?
According to the Ministry of Education's Observatorio de Empleabilidad, the likelihood of finding a job for people with virtual education is of 88-90%, this figure shows that virtual students have the same possibility of getting a job than face-to-face education graduates, as expressed by Andres Nuñez, General Manager of Ilumno.
The virtual model is growing stronger in the world and in Colombia, given the technological conditions, and especially since transportation and housing fees increase when enrolled in universities with face-to-face education. Consequently, universities such as Harvard, Cambridge and Berkeley are offering free online education. Likewise, online platforms such as Khan Academy, Coursera and Alison are offering free certified online education, redefining the boundaries of education.

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According to figures by the Ministry of Education, 12,000 students were enrolled in the modality of virtual education in 2010, by 2015 the number was 65,000. The Ministry also reports that the offer of virtual programs has quadrupled in the same period, from 122 to 487 in all of the training levels. This number is revealing because between 2007 and 2010, this study modality only grew 59%, therefore, in the last 10 years the number of new students who accessed higher education through digital platforms peaked.

This surge was caused by the promotion conducted by the Ministries of Education and ICT to the implementation of technologies in academic processes, as explained in the study La educacion superior a distancia y virtual en Colombia: nuevas realidades (2013), which highlights several initiatives undertaken by the Ministries to strengthen e-learning.

For instance, one refers to the accompaniment process by the Ministry of Education, starting in 2012, to 32 higher education institutions in the process of turning their face-to-face programs into virtual programs, for which it created a methodological proposal that contemplated the transformation of teaching-learning processes in virtual environments, as well as the selection and adaptation of technological infrastructure.

These initiatives intended to respond to the international context, where online training took over the top universities of the world, such as MIT and Harvard, which jointly created the EdX platform to develop open virtual courses, also known as Mooc (Massive Online Open Courses).

Stanford followed suit with the Coursera platform, which offers virtual specializations in the world's best academic centers.

AN ALLY IN COVERAGE

In a recent forum on education, Nicolas Zuleta, President of Universidad Libre, assured that a balance between quality and coverage is necessary in order for the educational system to be sustainable and efficient.

In fact, according to the OECD (Organisation for Economic Co-operation and Development) of which Colombia is now a member, developed countries must have a higher education coverage above 75%. In the national territory, this number does not exceed 45%, and the situation is worse in remote regions.

It is worth mentioning that the Government's efforts to extend coverage have not been futile, the trend is mounting in the last years: 20% in 2001 to 37% in 2010, and nowadays, almost half of the enrolled student population is enrolled in digital education.

Since 2009, the Ministry of Education evinced the need to reach the regions that, due to geographical conditions or others, were lacking in access to face-to-face higher education programs.

Thus, and with the aim of extending the coverage and guarantee pertinence and quality, a support plan was set in motion for the institutions, aimed at encouraging the use of ICT y increasing the offer of virtual higher education programs.

As mentioned in the book La educacion superior a distancia y virtual en Colombia: nuevas realidades:

> "The result evinced that ICT became a great ally to expand access to higher education, making an incursion in territories that were unthinkable to reach, such as Meta, Guaviare, Caqueta, Magdalena, Cordoba, Sucre, Bolivar, Risaralda and Huila, among others (Alvarado and Calderon, 2013, p. 40)".

Consequently, the application of virtual education is increasing, nowadays, the country's 32 departments have some type of virtual education. Likewise, around 40% of Colombians enrolled in this modality do so using the methodology of Ilumino, a network of educational institutions in Latin America that unites 14 universities and over 300,000 students in the region.

Starting this year, the Ministry of Education and the higher education institutions are drafting guidelines to regulate this modality. Currently, the conditions to obtain a qualified registry are set forth in Law 1188 of 2008, and Decree 1295 of 2010; however, these guidelines are the same for face-to-face education.

In the words of Fernando Davila, President of the Council of Politecnico Grancolombiano: "One of the main difficulties is the lack of clear regulation for online education. Today, the Ministry of Education assesses virtual programs following the same parameters of face-to-face education, even though they both have very different characteristics".

Although the accreditation guidelines are general, David Forero, Quality Director of the Vice-Ministry of Education clarifies that "since the guidelines are open and flexible, they apply to virtual learning", and adds that "the accreditation of these programs requires e-learning specialists".

Andres Nuñez, General Manager of Ilumno (higher education network of the Americas), declares that the "challenge of these areas begins inside the academia because it requires a change in mentality by directors and teachers. And externally because it needs to change the social paradigm related to the educational quality that comes with face-to-face education".

CONCLUSIONS

Without a doubt, ICT opens new possibilities in terms of information and learning for society, and academic entities have the challenge to build comprehensive and globalized studies. In Colombia, virtual studies are relatively new, nevertheless, this modality has become a solid alternative of educational training for many people who have difficulties accessing the traditional educational system due to geographical, working or economic conditions. On the other hand, the possibility of exchanging learning processes with other cultures allows tearing down cultural barriers. According to statistics by the Ministry of ICT, the number of virtual students is rapidly rising in Colombia. The objective is to extend the connectivity coverage to every location in the country, allowing more municipalities to contribute virtual students to either begin or conclude their academic activities.

As per the research reviewed, it is important to consider learning theories and to specially acknowledge constructivism as an educational training strategy mediated by technological tools. Likewise, the findings of student motivation and their considerations to successfully conclude a virtual program, led to the conclusion that intrinsic motivation was the most important (based on its

cognitive structure) due to the fact that it provides higher self-realization, self-esteem and improvement of interpersonal relationships with study groups and teachers/tutors. However, extrinsic motivation also plays a role because for many students, incentives in academic activities imply an accomplished goal, which in turn leads to greater socio-cultural recognition.

The impact of the ICT revolution must be acknowledged by Latin American business people. Statistics by controlling entities show that the number of professionals studying in the virtual modality is growing every day, breaking paradigms and leading to successful virtual graduates being considered as human resource.

The virtual environment model mediated by technologies requires construction and reconstruction of the student's basic cognitive capacities, responding to the specific expertise provided by a tool, and of learning strategies, affective and motivational factors, learning needs, goals and expectations to manage the student's training process to achieve learning, incorporating knowledge networks in daily life and allowing an exercise of freedom and appropriation of sciences, consequently, strengthening his/her learning statu quo.

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