Managing Creativity in Collaborative Virtual Learning Environments: A DL Corporate Project

Gestión de la creatividad en entornos virtuales de aprendizaje colaborativos: Un proyecto corporativo de EAD

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ABSTRACT

There is a currently ongoing discussion regarding the most effective methodologies for establishing collaborative virtual learning environments (VLEs) and the true contribution to student creativity and innovation in such environments, particularly in the corporate sphere. Educational social networks based on collaborative learning have grown exponentially in recent years, with countless networks now established in nearly all fields. However, stimulation of creativity among VLE users in general, and specifically in the corporate sphere, has become an important issue in educational research. Utilizing experiences of corporate distance learning (DE) in Brazil, the present paper proposes a means of evaluating the presence of creativity indicators among students in collaborative virtual teaching and learning environments. Case studies are used to compare a corporate VLE project that uses information and communication technologies (ICTs) under a creative and educommunicative approach with a project that uses ICTs under a traditional approach. The study was conducted in partnership with the consulting and e-learning company Perfectu. The results obtained suggest that the pedagogic model adopted and the manner in which ICTs are employed determine whether ICTs lead to innovative results, not the use of ICTs alone. The average level of creativity in the group that used the creative and educommunicative model was higher than that of the group that used the traditional paradigm.

RESUMEN

Se mantiene abierta en nuestros días la discusión con respecto a las metodologías más efectivas en los entornos virtuales de aprendizaje (EVA) colaborativos y su verdadera contribución al desarrollo de la creatividad y la actitud innovadora en los estudiantes, particularmente en los ámbitos corporativos. Las redes sociales educativas basadas en el aprendizaje colaborativo crecen exponencialmente, y se hacen ya incontables en cualquier área del conocimiento. Sin embargo, la estimulación de la creatividad de los usuarios de los EVA en general y en el ámbito corporativo en específico, se ha convertido en un problema científico de gran importancia para las investigaciones en las Ciencias de la Educación. El presente trabajo se propone valorar la presencia de indicadores de creatividad en los estudiantes al interactuar con los entornos virtuales de enseñanza de aprendizaje colaborativo, basados en la experiencia de educación a distancia (EAD) corporativa acumulada en Brasil. El método de investigación utilizado es el estudio de caso, que permitió comparar la realización de un proyecto EAD corporativo a partir de la utilización de las TIC con un enfoque creativo y educomunicativo, con otro que también utilizó las TIC pero con una visión tradicional. Fue realizado en la empresa de consultoría y e-learning Perfectu. Los resultados obtenidos sugieren que el modelo pedagógico adoptado y la forma de utilizar las TIC son las que llevan a resultados innovadores y no las TIC por sí mismas, dado que se observó que el promedio de creatividad del grupo que trabajó bajo el patrón educomunicativo-creativo fue más elevado que para el grupo que trabajó con el paradigma tradicional.

KEYWORDS | PALABRAS CLAVE

Creativity, innovation, collaborative learning, virtual environments, creative educational management, project management, DL.
Creatividad, innovación, entornos virtuales, aprendizaje colaborativo, gestión educacional creativa, proyectos, EAD.

1. Introduction

Societal complexity stemming from the confluence of new and diverse social actors and forces, together with the growing pervasiveness of information and communication technologies (ICTs) in all aspects of social life (Morin, 1996), has given rise to new questions about creativity and its development among DE students.

Distance learning (DL) is defined as «planned learning that normally occurs in a location different from the teaching location and demands special techniques of course design and instruction, communication via various technologies, and a special organizational and administrative disposition» (Moore & Kearsley, 2007: 87). Although DL inherently demands a creative approach to pedagogical resources, new technologies are often used within an outdated pedagogical paradigm.

The last several years have seen a proliferation of post-secondary corporate education programs, including complete courses and assignments in virtual learning environments (VLEs) in all fields in institutions of higher learning (Aguaded, Tirado & Hernando, 2011). Additionally, many interesting VLA experiences outside the traditional university and academic world are not described or adequately recognized by the research community (Martin-Barbero, 2002; Soares, 2011; Arnab & al., 2013).

While the first VLEs, based on Web 1.0, represented a giant step toward the integration of ICTs into the teaching and learning processes of higher education, their limitations in certain fundamental respects quickly became apparent (Hennessey & Dionigi, 2013). One such limitation concerns user interactivity, and another is the impossibility of communication with teaching staff who author VLE courses and with fellow students in order to work on assignments, share opinions and ideas, and undertake group assignments.

Web 2.0 (and Web 3.0) opened up many possibilities for collaborative work among staff, students, and other actors in the VLE teaching and learning process (Hennessey & Dionigi, 2013). Despite the great advance represented by the appearance of the educational Web 2.0, viewed by some authors as «a web revolution» (Jenkins, 2009; Aparici, 2010; Okada, 2011), teaching staff (coordinators, teachers, and content creators) began to worry about the extent to which the new VLEs were capable of stimulating creativity among students. A common mistake was to believe that the mere existence of Web 2.0 and 3.0 guaranteed creative teaching.

This is an ongoing concern that has led to new research into the stimulation of creativity among DE students through interactivity with VLEs and their potential use for collaboration among students and professors to solve problems through individual and group assignments (Palloff & Pratt, 2002; Okada, 2011). Current empirical research indicates the need for adequate training of DL professors and teachers (Donnelly & Boniface, 2013; Calma, 2013).

A new generation of internet users and DL students has arisen, one with a new profile and requiring a distinct kind of motivation (Palloff & Pratt, 2004; Levi, 2004; Baccega, 2009). Members of this generation do not wish to be mere passive consumers of content but rather active collaborators and creators of new knowledge (Bender, 2003) that is reciprocally discovered or constructed through the student-instructor/facilitator and student-student relationship, using all the resources now available in the digital realm (Triantafyllakos, Palaigeorgiou & Tsoukalas, 2010; Kenski, 2011).

This development suggests the need to furnish professionals responsible for producing and managing DL educational materials and technological interfaces (coordinators, writers, web designers, teachers, and facilitators) with a deep understanding of creativity: its epistemological roots, its manifestation in the educational environment, and ways to develop it among students in VLEs (Borroto, 2005; Calma, 2013).

It must also be emphasized that this process should not be viewed as an application to a virtual environment of traditional creativity techniques but rather as an effort to maintain a creative management model that also includes the application of creativity techniques to virtual environments (Chibás, 2012a). Another challenge that remains is the need for creative management of the entire VLE educational process with clear goals for innovative results that permit students to cultivate and develop their creative competencies and abilities.

It is thus appropriate to understand creativity as an energy (Torre, 2008) by which individual intelligence is augmented and multiplied through the use of new technologies in collaborative networks characterized by profound symbiosis and leading to the formation (individually or collectively) of new synergies, products, ideas, and relationships, among others.

A DL model or strategy that includes aspects of the formulation of the programme for UK English, course, or discipline, along with new content that takes advantage of the seemingly infinite possibilities that ICTs and the internet offer (Saad, 2003), must therefore be developed. The formation of such strategies involves decisions such as whether to use synchronous or

asynchronous technologies and online or offline modes, among others. It is also necessary, in developing clear pedagogic goals, to work with a concept of multimedia and integrated communication (Kunsch, 2003) that allows for the integration of all forms of communication (both face-to-face and virtual) used during the process.

Distance learning could be understood as the application of a collection of educational strategies that combine methods and techniques as well as pedagogical, psychological, logistical, and technological resources. These strategies are placed at the students' disposal, in order that they may use interactive, monitored self-learning to develop the necessary critical and creative competencies and abilities (Alterator & Deed, 2013).

The idea is to build new communicative ecosystems or spaces for student-staff coexistence (Martin-Barbero, 2002) that promote a new pedagogical relationship among student, staff, course content, and the technological devices used (computers, software, e-learning platform).

In this sense, in the corporate DL projects that we have implemented, it has been useful to implement the notion of a «pedagogic project». In this case, the Project Management Institute (PMI) approach was used to emphasize the importance of viewing each undertaking as a unique entity with a beginning, middle, and end (PMI, 2004).

Another concept that has helped us in the implementation of corporate DL courses is «creative educational management» (Chibás, 2012b). Creative educational management within networks is a means of administrating organizations with pedagogical functions and of implementing educational projects that emphasize a creative and communicative vision of the organization guided by a transdisciplinary approach. Its main goal is to promote the creativity of all participants in the educational process (students, staff, managers, parents, community, etc.) and to facilitate, through clear operational indicators, the presence and implementation of more up-to-date and flexible education

management processes. Creative educational management means implementing, in an innovative way, flexible strategies that are adapted to the situation and context of the organization or educational project and applying the management of projects and the other administrative instruments noted above to the evaluation of courses and student performance indicators.

The educommunicative approach is an obvious possible avenue for implementation of creative educa-

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tional management, starting with students' critical appropriation of a course's communication methods and the collective construction of the path to knowledge. A critical and dialogue-based vision based on both professor-student and student-student interactions allows for the control of the direction of a course to be truly shared between students and the professor. Figure 1 presents some of these relationships graphically.

Among the question the authors seek to answer are the following: How can VLA courses contribute to the development of creativity among students? What are plausible indicators of creativity that should be stimulated in students through collaborative VLEs? The authors also share their evaluations and experiences of research on creativity, research that has enabled them to identify a group of indicators that can be used to

evaluate the extent to which a VLE stimulates student creativity.

The main objective of this research is to describe the effects on creativity of collaborative educational experiences in a virtual learning environment, where such experiences involved face-to-face methodologies implemented under principles of creative educational management and educommunication. This experience is compared with an experience in a similar environment in which these principles were not employed. The educational principles that contribute to the development of creativity in such an environment or collaborative communicative ecosystem are also reflected upon. It is emphasized that the results obtained do not depend upon the use of new technologies per se but on the manner in which the new technologies are used: the educational models, objectives pursued, and formative values that support the pedagogical-technological resources used.

Perfectu, the company with which the research was carried out, is a consulting firm that specializes in DL and digital marketing. It is part of the multinational French-Spanish group, Global Strategies, which operates in 15 countries spanning four continents. The outreach, training, and courses offered by Perfectu on the internet and in a blended format are geared toward a corporate audience. The same courses that are offered on the internet for anyone to purchase from the Perfectu virtual store are also offered «in company», as courses for businesses. Courses are offered by Perfectu together with Brazilian and Spanish universities, and participants who complete the courses or disciplines obtain a double certification from Perfectu and from the associated university.

Creativity was evaluated using questionnaires and quantitative and qualitative indicators developed by Chibás (2006). The importance of a pedagogic-technological model that serves as the basis for a VLE and is reflected in the characteristics of course materials, learning objects, and an assignment system that includes creative tasks must be stressed. Some definitions of the fundamental concepts addressed in this paper are suggested.

2. Material and methods

The present paper is the first attempt to explore the issue in question. The general method employed is
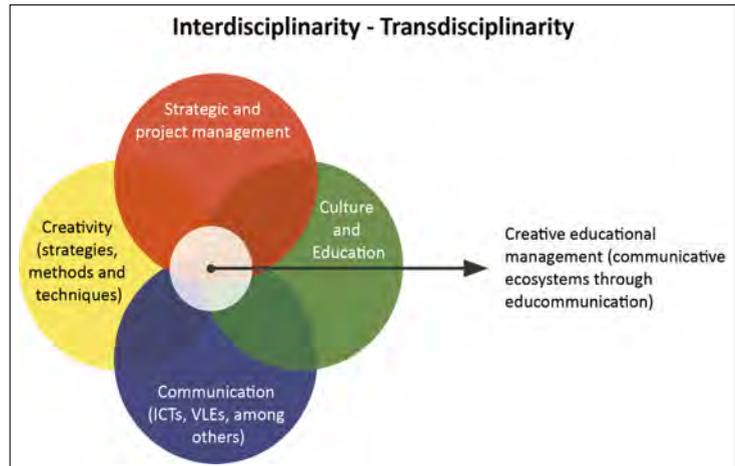

Figure 1. Axes of creative educational management (Chibás, 2012b).

theoretical-empirical, wherein, dialectically, theory leads to practice, which subsequently leads back to theory. A quali-quantitative method is also employed, and quantitative and qualitative analysis is used to triangulate the results obtained through different research techniques (Lakatos, 2006). These methods were combined with a case study (Yin, 1989) in which the management style of a DL project with a pedagogical educommunicative vision was compared to the educational management of a DL project that also used new technologies but followed a traditional approach.

The research techniques used were a bibliographic and document review (physical and internet); Chibás' system of qualitative and quantitative creativity questionnaires (sent by email, using Google and spaces in Perfectu's web portal and its Moodle platform, as this was the e-learning company where we conducted our research); and participatory observation and in-depth interviews (Lakatos, 2006). The latter technique was applied to cases where an individual's responses to the qualitative questionnaires were very detailed or when there was some confusion. MSN and Skype with a webcam were used to conduct interviews in some cases. After transcribing the interviews, a content analysis was conducted, in which information was classified into content categories. To gain a better understanding of their general work strategy, interviews were also conducted with Perfectu's director, the coordinators of the course studied, and the principal managers.

In both the quantitative and qualitative questionnaire, the four basic parameters or indicators of creativity evaluated were originality, acceptance of challenges, creative problem solving, and flexibility.

For the quantitative creativity questionnaire, statistical analysis was conducted using ANOVA and Tukey's test to determine whether significant differences existed between answers of the two groups, those who participated in the educommunicative (creative educational management) course and those who participated in the course that followed a traditional view of the use of new technologies in distance learning. The following table shows how answers were classified for the creativity parameters evaluated.

The research methodology used was validated by the Perfectu research committee composed of consultants, teachers, content creators, and professors from institutions of higher education such as the Complutense University of Madrid, the University of Barcelona, the University of Havana, the University of Sao Paulo, the Pontifical Catholic University of Sao Paulo, and the University Center of the Sao Paulo SENAC. A pilot application was conducted before the general application to correct for possible errors and make any necessary changes.

The sample consisted of 42 students who purchased the course on the internet. 21 of the students participated in the traditional course, whereas 21 participated in the course that followed the educommunicative and creative educational methodology.

The two groups received the same marketing materials and were informed that they were participating in a research project. The students from both groups were college graduates who sought to further their professional careers.

Both virtual classrooms had the same gender distribution of 12 women (57.14%) and 9 men (42.85%). There were students from different states in Brazil, but the majority, 25 (59.52%) of 42, were from the southeast. Of the five foreign students (non-Brazilians), two were in the group that adopted the educommunicative-creative methodology, and three were in the traditional group. The predominant age range was between 29 and 37 years, which would classify them as younger adults.

2.1. Procedures

The results obtained for participants in two groups of virtual/in-person classes for a 120-hour blended course (mixing in-person and virtual classes) that used both e-learning and other non-internet activities were compared. The pedagogic activities offered were designed to balance online and offline time as well as synchronous and non-synchronous activities. The course was expanded to 120 hours at the request of the students of a previously successful 44-hour course.

Students invested roughly 4-6 hours per week in the course, which lasted six months. The course was offered on the Moodle platform of the Perfectu website, with one classroom using the traditional approach and the other using creative educational management implemented under the educommunicative approach. In the course selected for this research project, titled «Socially Responsible Marketing Management», participants were taught to manage socially responsible projects, using administrative and communication tools.

Both classrooms had access to the same technological resources on the course website (e-book texts, videos, presentation rooms, a virtual library, a virtual blackboard or whiteboard, chat rooms, debate forums, individual mini-blogs, individual student email, direct contact with the teacher or facilitating instructor, MSN, Skype, Second Life software to work with avatars, etc.).

Course planning included three face-to-face meetings conducted between the teachers and those students who could attend. Students who could not attend participated via Skype, using a webcam. One meeting occurred at the beginning of the course, one in the middle, and one at the end.

Additionally, telephone communication took place when the instructor-facilitator or the Perfectu support team deemed it necessary because participating students had not entered the platform, and an email was sent to remind students about the activity calendar. Instructors specified days and times that they would be available online to clarify individual or collective questions through chat. Both classrooms or groups of students had a teaching team consisting of five people: a coordinator, two instructors, a content creator, and a support team member.

The classroom that offered the course outside the traditional and reactive DE pattern implemented creative educational management through the application of educommunication. Creative ecosystems were established based on the application of the following principles derived from the indicators previously described by Chibás (2012a):

Table 1. Creativity scores and levels (Chibás, 2006)				
Points	**Classification**	**Level**	**Evaluation**	**Initial**
240-180	Highest score	1	High creativity	AltaC
179-120	Medium score	2	Considerable or elevated creativity	ConCr
119-60	Low score	3	Low creativity	BaiCr
59-01	Very low score	4	Very low creativity	MbaixCr

• The main issues, bibliography, and form of course evaluation were negotiated in the first face-to-face work meeting between the teacher and students.

• From the beginning, the objective of forming a true learning community and creating affective links was established.

• In addition to the communication formats offered exclusively to students by the Moodle platform, the students decided to create two communication formats open to the public outside of the course (a blog and Facebook page). Here, students posted their work and gave each other feedback. This outlet offered students a way to «test» their ideas in the «world». These formats were fully administered by the students but monitored by the instructor-facilitator.

• At different times, the class reflected on how blog maintenance works and how to develop blog content.

• The teacher's role was dialogic and not as the

Annex 1. Website of Perfectu's virtual campus in the Moodle platform.

bearer of knowledge. The teacher was a mediator and facilitator of the process.

• The instructor-facilitator's attitude was that of cautious explicit interest in learning about students' daily worries and the ways in which course content was applied.

• Cooperation and a healthy interdependence were stimulated through collective assignments, which involved joint research and collaborative activities.

• Assignments with closed or multiple choice questions were avoided. Most assignments included open-ended questions.

• Creative techniques were used in various virtual meetings and in the second face-to-face group meetings. These techniques included brainstorming and the Six Thinking Hats method, among others. The

course sought explicit ways of stimulating creativity, differing analyses and readings of reality, and novel structuring of the form and content of the formats created by the group.

• Assignments integrated collective and individual evaluation as well as auto-evaluation.

• The course promoted analysis of exemplary situations taken from real life that were relevant to the course themes. These analyses were promoted online via chat and offline via the debate forum.

• Participants were encouraged to analyze course content and the work method used.

• The instructor showed explicit interest in and commitment to student achievements.

• The instructor emphasized research and collective knowledge construction, making students responsible for their learning.

The other group followed the common DL course pattern and received technological resources and training under the same schedule but did not apply the principles described above. The students did not create communication formats open to the general public, instead only using those that already existed on the Moodle platform. The teacher maintained a more reactive and distant attitude and focused on course content. Assignments included 50% multiple choice and 50% open-ended or opinion questions. Most work was done individually, stimulating competition for individual grades, although the final project was undertaken by groups.

In addition to the factors involved in creativity, as evaluated with respect to students from both groups, the following variables were controlled for: student satisfaction index; course retention rate; index of the achievement of course objectives, according to professors, students, and course managers; and the concrete creativity results based on the quantity and quality of student assignments.

The limitations of this methodology could be derived from its complexity and the need for training the teachers or facilitating instructors.

The main question of the study is: What are the effects on student creativity of a course designed under an educommunicative-creative approach compared with the effects on a control group that had access to the same content and technology but from a traditional approach?

3. Results

Some of the principle quantitative and qualitative results are presented below:

• The DL course employing the traditional format was comple-

Table 2. Mean creativity scores obtained by each group of students							
Factors of Creativity	Flexibility	Originality	Problem-Solving	Acceptance of Challenges	Creativity Total	Level	General Evaluation
Educommunicative-creative group	36.42	28.42	30.14	27.78	123.07	2	Considerable Creativity
Control group	27.68	15.68	14.68	17.26	74.78	3	Low Creativity

ted by 12 (57.14%) of the participants, whereas the course based on an educommunicative-creative approach had an 81.33% retention rate, with 17 students finishing the course.

• The index of course satisfaction among professors and students was analyzed, using an evaluation questionnaire given at the end of the course. The course that followed the educommunicative-creative methodology had a student satisfaction rating of 85.71% (18 students) and 100% staff satisfaction; the traditional DL course had a student satisfaction of merely 52.38% (11 students) and 60% staff satisfaction (three of five staff from the teaching team corresponding to each classroom).

• The course objective achievement index, according to staff, managers, and students, was also higher in the group that followed educommunicative-creative principles. For this group, 100% of professors (all five members of the instruction team) and 81.33% of the students (17) agreed that course objectives were achieved. In the more traditional classroom, 43.90% of students (11) and 40% of the management-teaching team (2) agreed that course objectives were met.

• Additionally, the concrete creativity results, that is, the quantity and quality of student assignments, was greater in the classroom that adopted the educommunicative-creative perspective, with 16 final assignments found to be highly creative by the course's teacher-manager team (76.19%), based on the four indicators of creativity evaluation described above. The classroom that did not follow this approach produced eight final assignments (38.09%) that the teaching team considered creative.

These results were later corroborated in an interview conducted with course managers and coordinators. Below, we present the average creativity values obtained by both groups:

As can be seen in the table, for each factor of creativity evaluated among students at the end of the course, as well as for total creativity, the average was higher for the group that worked under the educommunicative-creative approach than for the group that used the traditional paradigm. Statistical analysis using ANOVA (2006) and Tukey's Test (2006) showed

that the values for creativity obtained for the two groups of students differed significantly (at the 0.01 significance level).

4. Discussion

The case presented allowed for a comparison between results obtained through creative educational management using the educommunication approach in a VLE and results obtained in a VLE in which the same course using the same technologies was administered but under different strategies and approaches. Significant differences favoring the VLE that applied an educommunicative-creative approach were found with respect to student and staff satisfaction indexes, the student course retention index, concrete creative results, and the achievement of course objectives (according to staff, managers, and students). It was also found that average values in the factors used to assess creativity were superior in the group that employed the educommunicative-creative networks approach.

This result corresponds to those obtained in a study conducted by Peppler and Solomou (2011), in which 5 participants in a collaborative 3D virtual learning environment (a social network) showed growth and extension of creativity, as measured by social and cultural characteristics, in online communities, due to the manner in which content was organized.

Our results also coincide with those of Hwang, Wu, and Chen (2012) in a more restricted sense, given that the sample with which they worked consisted of children that specifically used games as a collaborative-creative tool.

Based on the results obtained, it is suggested that successful VLE courses should be designed with a balance between multimedia activities and those that give preference to one kind of media; online and offline assignments; face-to-face and internet activities; and synchronous and asynchronous assignments.

It should be emphasized that the results obtained depend more on how these technologies are used, that is, on the educational models applied to each VLE, than on the mere use of these technologies.

A methodology with clear indicators was proposed and tested and can be used in other VLEs with different content. It can be concluded that current VLE

management should be based on strategic planning complemented by project management.

It would be useful for future research to map both the diverse management models or paradigms that are currently being empirically applied in formal and informal DL educational environments and the creative strategies of managers, professors, and students.

A second phase would be the elaboration of more functional research-action instruments that perform these diagnostics quickly and thus contribute to the formation of professionals who are truly manager-educators, able to create educational projects in VLEs that have at their core the development of the individual through sensitivity, emotion, and creativity.

This would allow for the development of theoretical-practical knowledge of management models that can produce better results in educational networks and formal and informal VLEs. Additionally, the most effective management models, strategies, and tactics can be identified for each sector of corporate education, thus removing the principle barriers to communication and creative educational management.

Annex 2. Perfectu's company website.

References

AGUADED, I., TIRADO, R. & HERNANDO, A. (2011). Campus virtuales en universidades andaluzas: tipologías de uso educativo, competencias docentes y apoyo institucional. *Teoría de la Educación*, 23, 159-179. (http://goo.gl/gvFqOK) (05-07-2013).

ALTERATOR, S. & DEED, C. (2013). Teacher Adaptation to Open Learning Spaces. *Issues in Educational Research*, 23 (3), 315-329 (http://goo.gl/mfkmIR).

APARICI, R. (Coord.) (2010). *Educomunicación, más allá del 2.0*. Madrid: Gedisa.

ARNAB, S., BROWNB, K., CLARKE, S., DUNWELL, I., LIM, T., SUTTIE, N., LOUCHART, S., HENDRIX, M. & FREITAS, S. (2013). The Development Approach of a Pedagogically-driven Serious Game to Support Relationship and Sex Education (RSE) within a Classroom *Setting. Computers & Education*, 69, 15-30. (http://goo.gl/UYv-8gT). (DOI: 10.1016/j.compedu.2013.06.013).

BACCEGA, M. (2009). Campo Comunicação/Educação: mediador do processo de recepção. In M. Baccega & Costa, M. Estética da comunicação. In M. Baccega & M. Costa (Orgs.), *Educomunicação, gestão da comunicação, epistemologia e pesquisa teórica*- (pp. 101-124). São Paulo: Paulinas.

BENDER, W. (2003). *Prefácio. SAAD, Beth. Estratégias 2.0 para a Mídia Digital*. (pp. 9-13). São Paulo: Senac.

BORROTO, G. (2004). Un modelo para la autoeducación y la creatividad en la universidad cubana. *Revista de Enseñanza Universitaria*, 24, 59-69. (http://goo.gl/1dmHru) (05-07-2013).

CALMA, A. (2013). Preparing Tutors to Hit the Ground Running: Lessons from New Tutors' Experiences. *Issues in Educational Research*, 23 (3), 331-345 (http://goo.gl/fqNsT3).

CHIBÁS, F. (2006). Evaluar la creatividad organizacional: uso combinado de cuestionarios cuantitativos y cualitativos. In V. Violant & S. De-la-Torre (Eds.), *Comprender y evaluar la creatividad: cómo investigar y evaluar la creatividad*. (pp. 725-736). Málaga: Aljibe.

CHIBÁS, F. (2012a). *Creatividad + Dinámica de Grupo = Eureka*. La Habana: Pueblo y Educación.

CHIBÁS, F. (2012b). Educomunicação na gestão educacional criativa em projetos corporativos EAD: um estudo de caso. *Hermes*, 6, 77-97. (http://goo.gl/s4oLnF).

DONNELLY, D. & BONIFACE, S. (2013). Consuming and Creating: Early-adopting Science Teachers' Perceptions and Use of a Wiki to Support Professional Development. *Computers & Education*, 68, 9-20. (DOI: 10.1016/j.compedu.2013.04.023).

HENNESSEY, A. & DIONIGI, R.A. (2013) Implementing cooperative learning in Australian primary schools: Generalist teachers' perspectives. *Issues in Educational Research*, 23 (I), 52-68. (http://goo.gl/-VhMg7y).

HWANG, G., WU, P. & CHEN, C. (2012). An Online Game Approach for Improving Students' Learning Performance in Web-based Problem-solving Activities. *Computers & Education*, 59, 1246-1256. (http://dx.doi.org/10.1016/j.compedu.2012.05.009) (05-06-2014).

KUNSCH, M. (2003). *Planejamento de relações públicas na comunicação integrada*. São Paulo: Summus.

KENSKI, V. (2011). *Tecnologias digitais e a universalização da educação*. (http://goo.gl/UUzI4E) (24-09-2011).

LAKATOS, E. (2006). *Fundamentos de metodologia científica*. São Paulo: Atlas.

LÉVY, P. (2004). *Cibercultura*. São Paulo: Editora 34.

MORIN, E. (1996). *O problema epistemológico da complexidade*. Lisboa: Publicações Europa-América.

MARTÍN-BARBERO, J. (2002). *La educación desde la comunicación*. Buenos Aires: Norma.

MOORE, M. & KEARSLEY, G. (2007). *Educação a distância: Uma visão integrada*. São Paulo: Cenage Learning.

OKADA, A. (2011). Colearn 2.0: Refletindo sobre o conceito de co-aprendizagem via REAs na Web 2.0. In Barros, D. & al. (2011), *Educação e tecnologias: reflexão, inovação e prática*. (pp. 119-139). Lisboa: Universidade Aberta. (http://goo.gl/UGdx9R) (05-07-2013).

PALLOFF, M. & PRATT, K. (2002). *Construindo comunidades de aprendizagem no ciberespaço. Estratégias eficientes para salas de aula on-line*. Porto Alegre: Artmed Editora.

PALLOFF, M. & PRATT, K. (2004). *O aluno virtual: um guia para*

trabalhar com estudantes on-line. Porto Alegre: Artmed.
PEPPLER, K.A. & SOLOMOU, M. (2011). Building Creativity: Colla-borative Learning and Creativity in Social Media Environments. *On the Horizon, 19 (I)*, 13-23. (DOI 10.1108/10748121111107672).
PMI (PROJECT MANAGEMENT INSTITUTE) (2004). PMBOK: Project Management Body of Knowledge. São Paulo: Newton Square.
SAAD, B. (2003). *Estratégias para a mídia digital*. São Paulo: Senac.
Soares, I. (2011). *Educomunicação, o conceito, o profissional, a aplicação*. São Paulo: Paulinas.

DE LA TORRE, S. (2008). Creatividad cuántica. Una mirada trans-disciplinar. *Encuentros Multidisciplinares, 28*, 5-21. (http://goo.gl/-NBpclY) (05-07-2013).
TRIANTAFYLLAKOS, G., PALAIGEORGIOU, G. & TSOUKALAS, I. (2010). Designing Educational Software with Students through Collaborative Design Games: The We!Design&Play Framework. *Computers & Edu-cation. 56 (I)*, 1-16. (http://dx.doi.org/10.1016/j.compedu.2010.08.002).
YIN, R. (1989). *Case Estudy Research: Design and Methods*. Cali-fornia: Sage Publications.