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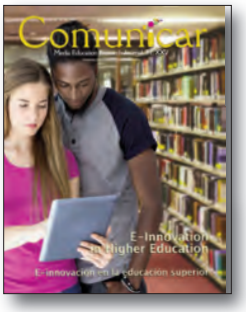

Ecosystems of Media Training and Competence: International Assessment of its Implementation in Higher Education

Ecosistemas de formación y competencia mediática: Valoración internacional sobre su implementación en la educación superior

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ABSTRACT

n a globalized and media society with unprecedented technological development, higher learning institutions are adapting their training models to face these new challenges. This study aims to determine students' self-perception of their media competence and the differential influence of an ecosystemic model of training that is being implemented experimentally. The research methodology was mixed, as both quantitative (descriptive and inferential analysis) and a qualitative analysis (content analysis) were conducted. A total of 808 university students enrolled in the 2015-16 academic year from different university centers and countries (Faculty of Teacher Training and Education, and Faculty of Economics-Business at the University of Oviedo (Spain) and the Technological Institute of Mexico), completed a questionnaire on media competence and wrote open reports about their experience with ecosystemic models. The results showed that university students had a favorable self-perception of their level of media competence, and they considered its development by means of transversal training and ecosystemic training models to be important. Significant differences between the students of the different degrees also emerged, depending on whether or not an ecosystemic approach was used to develop the courses. In conclusion, the study showed that these models favored teaching-learning processes at the university when the technology was adapted to the users' needs, interests and capacities, thereby improving their media competence.

RESUMEN

En una sociedad mediática y globalizada, con un desarrollo sin precedentes de la tecnología, las instituciones de educación superior están adaptando sus modelos de formación para hacer frente a este nuevo desafío. Este estudio tuvo por objetivo conocer la autopercepción del alumnado sobre su competencia mediática y determinar la influencia diferencial de un modelo ecosistémico de formación que se está implementando de manera experimental. La metodología de investigación combina el análisis cuantitativo (descriptivo e inferencial) con el cualitativo (análisis de contenido). Un total de 808 estudiantes universitarios matriculados en el curso 2015-16 en diferentes instituciones y países (Facultad de Formación del Profesorado y Educación, y Facultad de Economía y Empresa de la Universidad de Oviedo, y el Instituto Tecnológico Nacional de México) cumplimentaron un cuestionario sobre competencia mediática y realizaron informes abiertos sobre su experiencia con modelos ecosistémicos. Los resultados mostraron que el alumnado universitario tiene una autopercepción favorable sobre su nivel de competencia mediática y considera importante su desarrollo a través de un aprendizaje transversal con modelos de formación ecosistémicos. También emergen diferencias significativas entre las titulaciones y países. En conclusión, el estudio avala que estos modelos favorecen los procesos de enseñanza-aprendizaje en la universidad cuando la tecnología se adapta a las necesidades, intereses y capacidades de las personas mejorando, por tanto, su competencia mediática.

KEYWORDS | PALABRAS CLAVE

Edu-communication, communicative ecosystem, social inclusion, didactic methodology, collaborative learning, meaningful learning, teaching, blended-learning.

Educomunicación, ecosistema comunicativo, inclusión social, metodología didáctica, aprendizaje colaborativo, aprendizaje significativo, práctica docente, enseñanza combinada.

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1. Introduction

Society, education and the university are destined to reinterpret their relationships at each historical moment based on the priorities that are deemed appropriate by the entities, governments, businesses or advocacy-groups that have the ability to make decisions according to the available resources in order to answer to the needs or demands of the population, in general, and of the organizations and professional workers, specifically.

If we accept this argument, then we accept the premise that society is in constant transformation (Toffler, 1980) due to its informational (Castells, 1999) and fluid (Area, 2012) characters, and that communication has an effect on the basic tasks of people in their social, work, political, economic, cultural and personal environments. This makes it necessary for the educational institutions to provide learning models that are coherent so that the citizens become competent in a media-ruled environment where the television, films, the radio, the press, computers, social networks, tablets, videogames or mobile phones form part of everyday life (Fedorov, 2014; Gozálvez, 2013). In this globalized media context, the users of this technology must have continuous literacy that will help them become "competent prosumers" (Caldeiro-Pedreira & Aguaded, 2015; Sánchez & Contreras, 2012), as these technological tools emerge and evolve in a constant spiral that demands from the people a critical and ethical analysis of a scenario where they are receptors and producers of messages.

In the process of constructing the European Higher Education Area (EHEA), the universities have been taken of this situation into account, and have therefore designed work environments by deploying different strategies that are interconnected in their objectives, their possibilities and their user's profiles. The problems come from their intentions not being linearly translated into practice, as multiple problems arise during the implementation processes (Ferrés & Masanet, 2015), as a result of the frictions that are generated with the organizational and functional cultures of the University faculties, schools and departments, as they are full of social, cultural and political meanings that filter the external prescriptions to adapt them to interests that have different meanings.

Nevertheless, it cannot be denied that there have been many advances contributed by research studies, highlighting, among others, the importance that is attributed to the learner (León & Latas, 2005); the classroom context (Entwistle & Tait, 1990); the institutional environment (Ramsden, Martin, & Bouden, 1989); the pedagogic competence (Sánchez-Gómez & García-Valcárcel, 2002); the curriculum (Gimeno-Sacristán, 2001; 2008); technology and social networks (García-Galera, 2013); collaboration (Kolloffel, Eysink, & Jong, 2011); active methodologies (Cano, 2009); study plans (Zabalza, 2002); teaching-learning processes (Carracosa, 2005); formative (internal) evaluation (Monereo, 2009), organizational models (Buckland, 2009) and media education.

Their conclusions make it necessary to reflect, in a reasoned and calm manner, on how to improve the quality of teaching at the university, starting from the experiences available and attending to the need of bolstering transversal and longitudinal media education "that overcomes the excessively-technological and instrumental vision, that due to the trends and technological advances, have frequently confounded politicians, administrators and society in general, and has distorted and ignored the inherent characteristics and qualities of the media when taking education into account" (Aguaded, 2012: 260). The main content of this article is framed within this context, and presents an overview of blended-learning teaching ecosystems that have been utilized in the last few years (Álvarez-Arregui & Rodríguez-Martín, 2013), as they have been considered a viable alternative for shifting from an information society towards a society of media knowledge and inclusiveness (DeJaeghere, 2009; Rodríguez-Martín & Álvarez-Arregui, 2014).

1.1. Training ecosystems in university teaching

Training ecosystems in higher education are relatively recent, although there are currently many innovative experiments that are promoting dynamic and collaborative relationships between community members. Among the promising proposals, we find the Modular ecosystem (Dimitrov, 2001); the Knowledge ecosystem (Shrivastava, 1998); the e-learning ecosystem for management and support of learning (Ismail, 2001); the e-learning ecosystem for governance (Chang & Lorna, 2008) or the learning ecosystem (LES) of Gült and Chang (2009).

These models incorporate learning design, human resources, training for the development of basic competencies, a communication system, and different applications (Shimaa, Nasr, & Helmy, 2011). Although we coincide with the basic tenets, we believe, as do other authors, that the dangers derived from an excessive shift towards e-learning should be analyzed (Uden, Wangsa, & Damiani, 2007), as the communication potentials that in-person learning technologies bring, could be wasted. This is the reason why we prefer to align ourselves with blended-learning models.

1.2. A learning ecosystem to learn to undertake (ECOFAE)

Taking into account the research cited above, we have been developing a model at the University of Oviedo that we have applied to training projects in education, social and work areas as well as in innovation and research projects (Figure 1) that aims to develop professional communities of learning that are interconnected, cohesive and self-regulating within national and international institutions. The construction of this ecosystem is the result of posing questions and planning a reference structure that is flexible and dynamic that can be continuously perfected thanks to diagnosis, evaluations and research. The basic design of the model is composed of five phases:

Figure 1. Training eco-environment.

– Phase I. Planning and diagnosis. Instruments that provide us with information at the start and the end of the process are prepared in order to determine the needs and the impact of the education intervention. The students complete diverse questionnaires (study habits, communication and digital competency, learning styles, etc.).

– Phase II. Design of the training context. This is constructed around two spaces, the virtual and the in-person. The virtual surroundings adopt a modular, scalable and adaptable structure (Figure 2).

• Information module. Here we incorporate the degree's documentation, the official program of the course, the general bibliography and the news forum.

• Communication module. In this module, all the available communication tools are included (forum, Skype, blog, Facebook, Twitter, etc.).

• Diagnostic module. The elements allow the student body to understand their learning styles, study habits, media competency and previous knowledge. In Dropbox, Google calendar and in general forums, we collect what is expected and the perceptions on the subjects, which will be compared at the end of the academic year.

• Theory module. A general guideline of the contents, schemes, links, bibliographic references, presentations (PowerPoint, Prezi…) are included here, so that all the participants (student body and professionals) can access them.

• Practices module. Individual, group, in-person and virtual activities are planned.

• Self-management and learning support module. A bank of resources and good-practices are found here.

• Research and impact assessment module. Here we find the official external assessments that are conducted by the Technical Quality Unit from the University of Oviedo and internal evaluations, where we find the information provided in the forums, the blogs, the social networks, in the classroom debates and the research studies.

– Phase III. Deployment of the learning model. This is done through four systems:

- Registration and information system.
- Tutoring and counseling system.
- Relations and communications system.

• Self-assessment of learning system.

– Phase IV. Evaluation of improvement. This module is structured into three sections:

• First. This shows the results of the evaluations that are conducted by the Technical Quality Unit from the University of Oviedo.

• Second. This collects the public opinions (blogs, forums, Facebook, Twitter…) given by the students on the methodologies that are being implemented.

• Third: It compares the initial diagnostic of the participant's profiles with their state at the end of the semester; their degree of satisfaction with the training ecosystem and the competencies acquired are determined.

– Phase V. Research on impact and transfer. Periodical research studies on the processes, results and the model design are conducted.

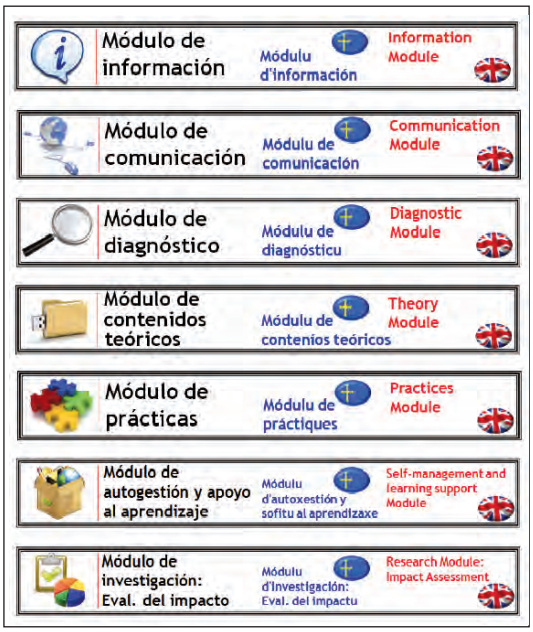

Figure 2. Virtual environment modules.

Talking into account this design, we put forward this research work, with the aim of determining the degree of self-perception the students have on their media competency, and to analyze the degree of influence that the blended-learning ecosystems have within it when used as a training modality. More specifically, we aim to 1) Understand the participating university student's self-perceived media competency; 2) Evaluate the indicators of media competency that are more important for the students; 3) To determine the impact of the training ecosystems in the self-perceived media competency; 4) Analyze the value that the student body grants to the training ecosystems.

2. Materials and methods

2.1. Participants

The empirical study was conducted in Spain and in Mexico through the use of questionnaires. In the case of Spain, this was conducted at the University of Oviedo with students in the Pedagogy Degree (n=122) and the Primary Education Teacher degree (n=182), administered by the Faculty of Teacher Training and Education; as well as the Business Administration Degree (n=192) taught by the Faculty of Economics and Business. And in the case of Mexico, at the Technological Institute of Mexico (Michoacán) with students enrolled in the Business Management Engineering (n=105), in the Industrial Engineering (n=114) and the Electrical Engineering Degrees (n=103).

The target audience of the questionnaire, starting from non-probabilistic sample, was a set of 808 second and third-year students, which totaled 53.7% of the 1505 students enrolled in the 2015-16 academic year at both participating institutions. During the research study, 118 reports were contributed by the students enrolled in the Pedagogy and Teacher Degrees from the Faculty of Teacher Training and Education at the University of Oviedo (Spain; n=60) and the Industrial Engineering and Electrical Engineering Degrees from the Technological Institute (Mexico; n=58) that participated in the implementation of the ecosystemic model of training for the development of media competency.

2.2. Instruments and procedures

The instrument used to evaluate media competency was a questionnaire (77 items) that had already been statistically validated (Gozálvez-Pérez, González-Fernández, & Caldeiro-Pedreira, 2014), while a custom-made scale was used for understanding the level of satisfaction with the training model (20 items), which was validated in previous international research studies (Álvarez-Arregui & Rodríguez-Martín, 2013). These instruments were applied between October, 2015 and January, 2016, and were presented to the participants in an integrated manner divided into four sections (97 items):

• Participant profile (37 items): gender, degree, faculty, type of center attended for upper secondary education

(baccalaureate), academic trajectory, mastery of languages, knowledge of computer programs, time spent and use of computers and mobile phone for study and leisure.

• Self-perceived media competency (29 items), with a range of answers of 4 points: 1 (very low), 2 (low), 3 (average) and 4 (high).

• Importance attributed to different competencies related to media education (11 items), with a range of answers of 4 points: 1 (not important), 2 (low importance), 3 (average importance), 4 (high importance).

• Design of the training ecosystem, its tools and its influence on the development of media competency (20 items), with a range of answers of 4 points: 1 (none), 2 (little), 3 (sufficient), 4 (a lot).

The sampling error was 5.5% (95%), and the level of confidence Z=1.96; p=q=0.5 (95%). The level of reliability was calculated with Cronbach's alpha (.916); the correlation between forms (0.592), Spearman-Brown Coefficient (.770) and Guttman's split-half (.759). Validity was determined through three internal expert reviews, two professors from the University of Oviedo, a professor from the University of Cantabria, and an expert professional from Lausanne (Switzerland).

The quantitative information from the questionnaire's items were analyzed with the SPSS 19 software program for: reliability analysis, frequency analysis, mean differences (T-Test for independent factors, using Student's T-test and Levene's test to estimate equality of variances) as well as Analysis of Variance (ANOVA and the post-hoc Scheffé's test with the one-way subprogram).

Table 1. Qualitative data identification references

Codes	Meaning
Q, R,	Type of instrument (Q: Questionnaire; R: Report)
Numbering	Segment of meaning using digits (003, 005, 125)
M or F	Gender (M: Male; F: Female)
IP, V	Modality of study (IP: In-person; V: Virtual)
P, T, IE, EE	Degree (P: Pedagogy; T: Teacher; IE: Industrial Engineering; EE: Electrical Engineering)
Examples	(Q.123.F.IP.T.) Questionnaire, 123, Female, In-person, Teacher (R.12.M.V.P.) Report, 012, Male, Virtual, Pedagogy

The qualitative data were generated from the comments to the open-ended questions from students enrolled in the three degrees and the 118 open reports provided by the students from the Pedagogy and Teacher degrees. The content analysis was conducted with the Aquad 7.0 program (Huber & Gürtler, 2013). The qualitative information was transcribed and exported to the program, and the analysis conducted were oriented towards reducing/grouping information through a search of keywords, elaboration of segments of meaning, cataloguing, linking and code cross-referencing. The comments that illustrated the arguments were identified with specific codes.

3. Analysis and results

3.1. Self-perceived media competency

The students generally evaluated their media competence as being adequate, although some nuances should be noted. As a group, they considered themselves able (79%) to evaluate the sociopolitical tendencies of the most widely-circulated communication media, to communicate through the media by utilizing a language that was different according to the audience (50%) and the aim of the message (46%), as well as utilizing technology in their learning processes.

These general perceptions should be put into context if we take into account that only 23.4% were able to clearly differentiate between the different codes utilized by the emitter in the messages they received from the media, almost a third (30.6%) believed that their media competency had an adequate level for co-habiting with technological media. To a lesser degree, they were able to interpret and produce messages in a critical, responsible and creative manner, as well as using software programs to edit sequences of images and to create videos.

In general, they were able to differentiate between reliable and non-reliable sources of information. Their failings were associated with the lack of knowledge on the existence and/or aim of the Audiovisual Councils, legislation that protects the users in the production of media content and intellectual property. Their interest for being current on technological and communicative resources was highlighted when they could be applied to academic tasks. Therefore, the students' predisposition in this area should be taken advantage of.

A great majority of the students positively-valued the importance of media competency in society (53.2%) and the management of information (42.7%), but they also recognized its risks (56.9%), which led to their positive opinion on their ethical and responsible consumption. They also recognized the advantages of media use in their day-to-day lives

(40.3%), but they did not grant too much importance at the personal and social levels (28.4%) to using the ICT, technically or critically, as they believed that was enough to be able to use them habitually as consumers. Therefore, being a prosumer did not worry them in excess (26.6%), or trying to understand the structures and super-structures of the media.

Table 2. Participant's self-perceived media competency

Items	Results (%)			
	*1	**2	***3	****4
I am able to communicate in the media using a different language as a function of:				
The context	0.4	5.2	56.0	38.3
The recipient	1.2	6.9	41.9	50.0
The aim of the message	0.4	7.3	46.4	46.0
I use technological educational resources to learn more effectively	0.0	11.7	51.2	37.1
I use different traditional communication media as a resource in learning processes (radio, press, film, TV…)	4.0	23.0	44.4	28.6
I use current communication media to learn (Internet, social networks, YouTube…)	2.0	8.1	42.7	47.2
I am able to use tools to access Internet content	0.4	8.9	50.4	40.3
I am able to manage information gathered from the Internet to more effectively carry out academic tasks	0.4	5.2	52.4	41.9
I use computer programs to edit sequences of images and create videos	5.6	39.5	29.8	25.0
I am able to distinguish socio-political tendencies in the most widely-distributed communication media	0.0	1.2	27.0	79.0
I am able to discern trustworthy sources of information from others that are not	2.0	15.7	54.0	28.2
I like to stay up to date with new technological and communication resources that I could use for academic tasks	2.4	2.4	45.6	24.6
I have knowledge about the existence and aim of Audiovisual Councils	11.3	43.1	36.3	9.3
I know the laws that protect users and consumers in the production of media content	11.3	56.0	22.2	10.5
I possess knowledge on the regulatory policy on intellectual property	18.1	45.2	29.4	7.3
My level of media competency is adequate for being able to interpret messages in a critical, responsible and creative manner	3.2	14.9	60.5	21.4
My level of media competency is adequate for being able to produce messages in a critical, responsible and creative manner	1.6	10.1	65.3	23.0
My level of media competency is adequate for co-habiting with media and technologies	1.2	8.1	60.1	30.6

*1 (none) **2 (little) ***3 (sufficient) ****4 (a lot).

The significant differences found in gender indicated that men communicated better as a function of the recipient (0.17). When attending a public school in the upper two academic years of high school (.018), they used, to a greater degree, computer programs to edit image sequences and create videos (.015), and were able to distinguish the sociopolitical tendencies of the media (.015).

Knowledge of Audiovisual Councils was greater in men (.031), while women had more information on the regulatory policy on intellectual property (.021). The students with a worse academic trajectory were not as worried about being up to date with technological and communicative resources that they could use in their academic tasks (.004).

Use of the computer for study and leisure had differences. In the first case, we found a negative correlation, where the lesser use of technological tools was related to a greater pre-disposition to relying on classical communication media (.000), and was shown to be less linked to the new technological media (.013). However, those who used the computer for more than three hours a day better differentiated the languages as a function of the final aim of the messages (.033), relied more on current communication media (.002), and were able to better distinguish the socio-political tendencies of the media (.009). For those students that used the computer for more than three hours a day for leisure, there was a positive correlation with their media competency in ten of the sixteen items considered, adding value to this habit.

3.2. Importance of media competency

The students indicated that it is important to know the risks of the Internet and the media in their social relationships, so that their importance should be dealt with when the information they provide is adequately managed. They also mention, to a lesser degree, the need to be a "prosumer", to be able to utilize the media in a responsible manner, access relevant information and relate in a more personal, social and professional manner. In any case, there were clusters that were not interested in understanding the superstructures of the media or being "prosumers", which is related to unawareness, deficiencies and opposition.

Table 3. Importance given to media competency by the students

Items	Results (%)			
	*1	**2	***3	****4
Embracing the importance of media in current society	1.6	2.8	42.3	53.2
Recognize the importance of media personally and socially	1.2	3.2	47.2	28.4
Understand the structure and superstructure of the media	1.6	17.3	52.0	29.0
Search for information that is consistent to my life	0.0	12.5	49.2	38.3
Understand the advantages of media use in my life	0.0	10.9	48.8	40.3
Recognize the risks of the Internet and the media in social relationships	1.2	10.5	31.5	56.9
Synthesize media information in an organized manner	1.2	7.7	48.4	42.7
Consume media in an ethical and responsible manner	1.6	7.3	51.2	39.9
Be able to use ICT in a technical capacity	1.6	12.9	47.6	37.9
Be able to use ICT in a critical capacity	1.6	10.1	49.6	38.7
Be a prosumer: producer and consumer of communication media	3.2	14.5	55.6	26.6

*1(none) **2 (barely) ***3 (sufficient) ****4 (very).

The significant differences found indicated that the students from the Business Engineering degree (.017) gave more importance to communication media in society, but granted less importance to searching for information that is important for their life (.002), being a prosumer (.000) and to consume media in an ethical and responsible manner (.028). Those who attended private/public subsidized centers in the last two years of high school granted less value to the media in their personal and social lives (.001), and those who had an excellent trajectory were interested in understanding the structures and superstructures of the media (.022), to look for information that was important for their lives (.017), to consume media in an ethical and responsible manner (.000) and to being prosumers (.013).

As for the use of the computer and the mobile phone for study and leisure, in all the significant differences found, a positive correlation between a greater use of these tools and an increase in the importance that is attributed towards media education, was confirmed.

3.3. Evaluation of the learning ecosystem (ECOFAE)

The 118 reports contributed by the students and the open-ended questions from the 808 questionnaires generated 2,400 paragraphs containing 73,425 words, which were used for content analysis.

– Catalogue 1. Strengths. 340 codes emerged. The aspects that were considered the most positive were the projects that were associated to specific thematic content or linked to real collaboration projects with socio-educational centers (inter-institutional relationships). In the same direction, we found the pedagogic visits, the increase in the participation with active methodologies of work in the classroom, and through tools available on campus and on the Web 2.0, teamwork, treatment of information in multiple formats, innovation, creativity, collaboration and the constructivist focus adopted by the professors.

• "The Snowball technique is very innovative, because we have seen that sharing with our classmate, the group, with the class and through the blog and Twitter allowed us to broaden our knowledge and what was commented in the social networks" (R.12.M.V.P.)

• "Project-based work favors collaboration between classmates, the ecosystem created is a novel way of being able to collaborate with each other…an example is when we share images in Twitter, when create entries in the blog, we upload all kinds of materials that we always have available" (R.6.F.IP.P.).

• "The project that a group presented, where they invited other professors and first-year students, where we changed classrooms according to the activity, where songs were presented, where performances were conducted, where everything that happened was recorded and directly uploaded to Twitter and the blog seemed to me a very clear example that things can be changed" (R.4.M.IP.P.).

– Catalogue 2. Weaknesses. There were 140 segments that were related to the difficulty in debating at the end of the sessions, the presentation time of the projects, the contents addressed, and the low level of coordination among the teaching staff.

The presentation of the ecosystem gave the students an initial anxiety, as it implied a change in the way that didactic relationships were commonly interpreted, although the students were conscious that this focus demanded from them a greater personal, team and collective commitment, as well as the development of proactive attitudes to deploy innovative, creative and co-responsible methodologies mediated by the ICT.

• "The drawback that I give the training ecosystem is that there was a lack of coordination with other courses, and I don't see that the Dean supports these actions either, because there are always problems with outings, for example" (R.7.F.IP.P.).

• "The way of working is different, it sensitizes you, because when you see images of what you do in class, of the pedagogic trips, activities outside of the classroom… I don't know how to explain it, it's different" (Q.55.F.IP.M.).

• "The methodology used to present ourselves, to speak in public from anywhere in the classroom, the fact that your classmates can support you if your mind is blank…all these things make you more secure in yourself and to evaluate the support provided by your classmates (…)" (R.21.F.IP.P.)

Table 4. Content analysis: evaluation of the training ecosystem model

D1	C2	Categories	Codes	fr3	F4	FT5
Ecosystem (E)	Strengths (S)	Collaboration (CB)	E-S-CB	(012)	(340)	720
		Constructivism (CO)	E-S-CO	(030)		
		Creativity (CR)	E-S-CR	(028)		
		Multi-format information (MI)	E-S-MI	(030)		
		Innovation (IN)	E-S-IN	(025)		
		Course manual (CM)	E-S-CM	(022)		
		Participation (PA)	E-S-PA	(033)		
		Presentation of content (PC)	E-S-PC	(032)		
		Projects (PR)	E-S-PR	(048)		
		Teamwork (TE)	E-S-TE	(035)		
		Pedagogic visits (PV)	E-S-PV	(045)		
	Weaknesses (W)	Intra-institutional coordination (IC)	E-W-IC	(030)	(140)	
		Support from the Dean (SDI)	E-W-SD	(022)		
		Unequal capacitation (UC)	E-W-UC	(013)		
		Self-assessment subjectivity (SA)	E-W-SA	(008)		
		Didactic Contracts (DC)	E-W-DC	(012)		
		Debate timing (DT)	E-W-DT	(031)		
		Internet Connection (IA)	E-W-IA	(019)		
	Improvements (I)	Triangulation of evaluation (TE)	E-I-TE	(023)	(240)	
		Institutional Support (IS)	E-I-IS	(037)		
		Professional projects (PP)	E-I-PP	(025)		
		Employment projections (EP)	E-I-EP	(030)		
		Graduate networks (GN)	E-I-GN	(015)		
		Previous training (FT)	E-I-FT	(025)		
		Advanced courses (AC)	E-I-AC	(023)		
		Optional tasks (OT)	E-I-OT	(022)		
		Public debates (PD)	E-I-PD	(025)		
		Group tutorships (GT)	E-I-GT	(015)		

D1: dimension; C2: catalogue; fr3: relative frequency; F4 : dimension frequency; FT5: total frequency.

– Catalogue 3. Improvements. 240 codes emerged. The following are highlighted: The need to increase the institutional support for the development of the projects, orient them to the real-life work environment and to Service-Learning, grant greater freedom in choosing of teams and projects, develop training courses when needed and change the way group tutorships are conducted, as an entire day could be used for them in order to share experiences with other classes or visit good-practices centers. The triangulation between evaluation, video-conferences and round tables with graduates, public debates or the solving of problems with technology are other necessary and logical demands if the implementation of training ecosystems in a generalized way is desired.

• "As an in-person student, I would like to be able to participate in service-learning, at least through technological tools" (R.16.M.IP.P.).

• "In the beginning, I, as well as other classmates, had problems adapting and working with the ecosystem's tools, as we were unaware about their existence. It would be good if we could have had previous training" (R.42.F.IP.P.).

• "The work that we have done within the ecosystem could be more useful if the professors were coordinated with each other, and if we had access to practice sessions and contacts with professional workers through the social networks" (R.33.F.IP.M.).

4. Discussion and conclusions

The results obtained indicate that the blended-learning training ecosystems develop media competency in the Bachelor's degrees and are well-accepted by the student body. They are presented as an attractive proposal that requires an initial high investment of energy in time and dedication, but can provide benefits associated to the development of professional competency, inter-disciplinarity and media literacy. The implementation of the model is backed by the greater self-perception that the students had on their media education and by the importance they granted to the need to bolster literacy in the field of knowledge as a transversal competency in university studies. Therefore, the models should be institutionally backed in the study plans so that they are integrated into organizational cultures in order to answer to the needs of the users, the professional workers and society, in agreement with contributions by other authors (Tello & Aguaded, 2009). The differences found between degrees and faculties

evidence the good self-perception of the students on their media competency, in line with other research works (González-Fernández, Gozálvez-Pérez, & Ramírez-García, 2015), who highlighted the positive impact of active methodologies and the use of digital technologies in the development of this competency.

The over-valuation that the students granted their media competency was the result of their restricted view of the use of tools and programs for relating or informing themselves, as these (simple) actions do not imply a true literacy that can turn them into true prosumers. The study shows a positive correlation where it was evident that the greater the amount of time using computer systems and mobile phones for school-related tasks and leisure, the better self-perception was of media competency. This is also what occurred when the students developed group projects relying on principles that guided training ecosystems, as the processes of blended-learning teaching-learning that were created, favored media competency, the creation of professional communities and the relationships with the labor market.

A training ecosystem that is oriented towards the development of media competency increases the user's satisfaction, independently of its initial demands. Its potential is expanded when it becomes part of the organizational culture under the auspices of the institution, as indicated by other authors (Gewerc, Montero, & Lama, 2014; Senge, 1990). The planning, design, methodologies, resources, tasks and the commitment of its sponsors has a positive effect on the participants when they work on projects that are technologically-based and oriented towards media education (García-Ruiz, Ramírez-García, & Rodríguez-Rossell, 2014).

The problems detected warn us to develop proposals of continuous improvement that could become the benchmark that guides us through the construction of future ecosystems. Therefore, the need for previous training of the users –the staff, professional workers and students–, the infrastructures, the improvement of evaluations systems, the mechanisms of coordination inside and outside of our institutions, and the institutional backing, should be attended to if we want to promote blended-learning training ecosystems in a coherent and holistic manner.

The deployment of the training ecosystems mediated by technology is significant in its use of time and resources, but it can orient processes of change in those Higher Learning institutions where ambiguity of objectives, decoupling and diversity of interests dominate over collaboration, innovation and continuous improvement. The objective of education in the 21st century is to train generations of citizens in media competency, which implies incorporating into the curriculum, in a transversal manner, a process of literacy for everyone throughout their lifetimes, so that they are fully competent in the access, interpretation and re-utilization of varied and multiple digital ways of representation of information and knowledge.

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