e- Learning and Digital Media

Factors Influencing Student Satisfaction and Perceived Learning in Online Courses

ELENA BARBERA
Open University of Catalunya, Barcelona, Spain
MARC CLARÀ
University of Barcelona, Spain
JENNIFER A. LINDER-VANBERSCHOT
University of Colorado-Denver, USA

ABSTRACT Online education, with its genuine characteristics, has changed the way students experience learning processes. This fact led research to study the aspects of online learning settings that influence the way students experience their learning, and several aspects were identified from this effort. However, usually each study focuses on only one or a few of these aspects, and some results are contradictory. In this study the authors consider together, in an integrated model, most of the aspects identified by the literature in order to determine which aspects are more influence for students' satisfaction and perceived learning. With this aim, they conducted a correlation and ANOVA analysis on the responses to a questionnaire answered by 499 students of higher education social sciences online courses in the USA, China and Spain. They found that the most influential aspects of the online courses in social sciences on students' satisfaction and perceived learning were learning content and course design.

Introduction

Educational sciences have long been interested in how students feel and live their educational experiences. This interest was visible at first in the 1920s, when it became a widespread practice for universities to ask students to evaluate their courses (Wachtel, 1998). In this context, Remmers (1930) became the most prominent researcher on the factors that influenced the students' assessments of their university courses and instructors. Since then, there has been a great amount of research on how students live, appreciate and perceive the educational processes in which they are involved, and on which elements influence students' perceptions and assessments of these educational processes (for a review and meta-analysis, see Aleamoni & Hexner, 1980; Wachtel, 1998). The content of the course, the choice possibilities of the course, the level of the course, the class size, and the teacher's support and performance are some of the factors that strongly influence students' satisfaction with the course.

With the eruption of digital technologies some decades ago, the traditional nature of educational processes changed (Ahern & Repman, 1994). One of the effects was the emergence of what Harasim (2000) called online education, defined as a new learning domain which enables new forms of interaction. Harasim (2000) distinguishes five idiosyncratic attributes of online education: (1) many-to-many (group communication); (2) any place (place-independence); (3) any time (asynchronicity, time-independence); (4) text-based (enhanced by multiple media); and (5) computer-mediated messaging (p. 49). The idea that online learning was a new learning domain is crucial. It means that online learning is not a modality of distance learning:

http://dx.doi.org/10.2304/elea.2013.10.3.226

> Online education is not the same as distance education, although it shares some of the same attributes. Both are any place, any time, and largely text-based. However, the critical differentiating factor is that online education is fundamentally a group communication phenomenon. In this respect, it is far closer to face-to-face seminar-type courses. (Harasim, 2000, p. 50)

Thus, online learning is a domain in its own right, and it can be combined in a course with both face-to-face and distance learning, or, also, it can become the only mode for a whole course (Harasim, 2000). According to Howland and Moore (2002), this new domain of learning 'changes the way students have traditionally experienced the learning environment' (p. 183). This seems obvious, since the whole nature of the online learning environment is different from traditional (face-to-face or correspondence) learning environments. We have some warranted ideas on the main factors of a traditional course that influence how students feel about their educational experience; however, we do not know yet which factors are relevant in an online environment.

In order to respond to this question, a considerable amount of research is being conducted. Most of these studies look at how different aspects of an online course affect student satisfaction and the level of perceived learning. The aspects of an online course that the literature finds relevant are diverse. One of these is the issue of interaction among students. Some authors (Swan, 2001; Picciano, 2002) found that interaction influenced student satisfaction and/or level of perceived learning. However, in another study, Jiang and Ting (2000) did not find direct relation between interaction among students and students' perceived learning. Similarly, Eom et al (2006) did not find a relationship between these two variables, although they did find a relationship between interaction among students and satisfaction. Sun et al (2008), however, did not find this relationship.

Another element of online courses which has been reported to be relevant in student satisfaction and learning is instructor assistance. For example, Swan (2001) and Eom et al (2006) found a relation between the amount of assistance from the instructor (level of interaction with instructor; instructor feedback) and satisfaction and perceived learning. However, Jiang and Ting (2000) did not find this relation.

Literature has also suggested the relevance of direct instruction – namely, the explanation of contents by instructor. Regarding this issue, DeBourgh (2003) reported a relationship between instruction and student satisfaction. Eom et al (2006) also found a relationship between instruction (facilitation) and satisfaction, but did not find a relationship with perceived learning.

Another aspect that has received considerable attention is social presence (Rourke et al, 1999; Garrison et al, 2000). Social presence is defined as the projection of participants in online interaction as real persons. Richardson and Swan (2003) found a positive relationship between students' perceptions of social presence and both student satisfaction and perceived learning.

Technology is also a factor which has been highlighted as relevant. Eom et al (2006) suggest that a direction for future research is the need to investigate the influence of technological platforms on satisfaction and perceived learning. Likewise, DeBourgh (2003) included technology as a variable but he did not find a statistical relationship with students' satisfaction. Nevertheless, basing on his qualitative data, this author stresses the difficulties that technology in education creates for both instructors and students. Sun et al (2008) also included technology in their analysis, but did not find a relationship between technology and student satisfaction.

There are yet two more aspects which are worthy to point out as relevant: the learning content of the course, and the course design. Swan (2001) found a relationship between the consistency and density of the learning content and the students' satisfaction and perceived learning. Sun et al (2008) found a strong relationship between flexibility and quality of the course and students' satisfaction. Furthermore, Eom et al (2006) reported a relationship between course structure and satisfaction. However, these last authors did not find relationship between course structure and perceived learning.

Thus, there are several factors that have been reported to influence the overall learning experience of students (as defined by their satisfaction and level of perceived of learning), but the strength of this influence is not always clear. In this study, we aim to measure several of these factors and determine the strength of their influence on student satisfaction and perceived level of learning. Measuring several factors at the same time in the same study will permit us not only to

estimate their influence on student satisfaction and perceived level of learning, but also to determine which factors are more influential than others.

We administered surveys to 499 students in online courses at three different universities located in three different countries and continents. Using the data thus gathered, we conducted a correlation and regression analysis. Data gathering and analysis methods are detailed in the next section.

Methods

In this section we detail the methods of the study. First we present and define each of the variables. Then we present the instrument and procedure used for data collection. Finally, we explain how we analysed the data.

Variables

In this article, we use two groups of variables: institutional and outcome. Institutional variables are the variables of the educational experience that we consider to be potentially affecting the outcome variables. The outcomes variables operationalize the subjective students' perception of the course. We present the institutional and outcome variables in Table I.

Variables		Description
Institutional	Learning Platform	The technological environment supporting the educational experience
	Technological Support	The assistance received by the learner on the usage of the technological environment
	Social Presence	The projection of participants in online interaction as real persons
	Direct Instruction	The direct exposure of contents by instructor
	Instructor Interaction	The interaction between students and instructor
	Students' Interaction	The interaction among students
	Learning Content	The content to be learned
	Course Design	The instructional design of the course
Outcome	Learner Satisfaction	The student's satisfaction with the educational experience
	Perceived Learning: Knowledge Acquisition	The student's perception of his/her learning in the educational experience
	Perceived Learning: Ability to Transfer	The student's perception of to what extent s/he can apply the newly acquired knowledge in new and different contexts

Table I. Institutional and outcome variables.

Note that the variables considered correspond to the main issues represented in the literature (for more development of these correspondences, please see Barbera & Linder-VanBerschot, 2011). However, two variations are to be mentioned. First, we elaborated the issue of technology in two different variables: learning platform and technological support. We did so because of the emphasis of some authors on the difficulties of using technology by students and instructors (e.g. DeBourgh, 2003; Eom et al, 2006). For this reason we felt it was worthy to distinguish between the technologies themselves and the quality of the assistance which students and instructors received to use such technologies. This assistance is not defined as assistance with understanding the content, but instead as assistance with the actual use of the technological tools. Furthermore, the provider of this technological assistance is typically a technician provided by the institution who offers assistance to both students and instructor.

The second variation is on the perceived learning. Following the proposals of Mayer and Moreno (2002), we distinguished between two aspects of learning: knowledge acquisition and knowledge transfer. Knowledge acquisition is related to what Mayer calls retention, defined as the recollection of newly acquired knowledge. Knowledge transfer implies that the learner is able to understand the new knowledge to a level that s/he can use it in other contexts and situations.

Instrument

In this study we used a 39-item questionnaire in which three questions were posed for each institutional variable and five items for each outcome variable. All items were scored using a 5-point Likert scale, measuring the extent to which learners agreed or disagreed with the statement. Cronbach's Alpha was calculated and it resulted in .969. The relation between variables and the questionnaire items and Cronbach's Alpha for each item is provided in Appendix 1.

Data Collection

Data were gathered in online courses of three universities located in different countries: the University of New Mexico (USA), Universitat Oberta de Catalunya (Spain) and Pekin University (China). Without the intention of being exhaustively representative, we aimed to get a sample which includes very diverse data – different courses, different types of participants, different institutions, and different cultural backgrounds. More than fifty courses from the social sciences area mainly related to education and psychology fields (undergraduate and graduate) were involved; 499 students answered the questionnaires. All courses were full-semester courses and were conducted during the same semester.

The online questionnaires and accompanying consent forms were originally written in English and then translated into the official language(s) of the university by an individual chosen by the researcher representing the university. The questionnaires were then built using Opinio and hosted on the secure University of New Mexico Health Sciences application server. The questionnaires used in this study were sent towards the end of the courses, just before announcement of the final grades.

Analysis

We first calculated the Pearson's correlation between the institutional variables and the outcome variables, in order to identify which institutional variables were strongly correlated with the outcomes variables. Then we conducted a regression (one-way analysis of variance [ANOVA], Model I) in order to estimate how those institutional variables are proportionally related to their correlated outcomes variables.

Results

The correlations between the institutional variables and the outcome variables are presented in Table II.

		Learner Satisfaction	Perceived Learning	
			Knowledge Acquisition	Ability of Transfer
Learning Platform	Pearson	.516**	.521**	.418**
	Sig. (2-tailed)	.000	.000	.000
	n	473	473	395
Technological Support	Pearson	.538**	.545**	.388**
	Sig. (2-tailed)	.000	.000	.000
	n	474	474	396
Social Presence	Pearson	.606**	.557**	.548**
	Sig. (2-tailed)	.000	.000	.000
	n	473	473	395
Direct Instruction	Pearson	.624**	.584**	.524**
	Sig. (2-tailed)	.000	.000	.000
	n	472	472	395
Instructor Interaction	Pearson	.568**	.547**	.470**
	Sig. (2-tailed)	.000	.000	.000
	n	474	474	396
Student	Pearson	.496**	.479**	.503**

Interaction	Sig. (2-tailed)	.000	.000	.000
	n	474	474	396
Learning	Pearson	.752**	.715**	.662**
Content	Sig. (2-tailed)	.000	.000	.000
	n	472	472	395
Course Design	Pearson	.754**	.723**	.690**
	Sig. (2-tailed)	.000	.000	.000
	n	473	473	395

**Correlation is significant at the .01 level (2-tailed).

Table II. Correlation between institutional and outcome variables.

Taking into account the purposes and nature of this investigation, we considered that the correlation was strong when $r \geq 0.6$. According to this criterion, we found that learner satisfaction is positively and strongly correlated with social presence (.606), direct instruction (.624), learning content (.752) and course design (.754). Perceived level of knowledge acquisition is positively and strongly correlated with learning content (.715) and course design (.723). Perceived ability to transfer is also positively and strongly correlated with learning content (.662) and course design (.690).

Considering these strongly correlated institutional variables, we conducted a regression analysis (ANOVA) for each outcome variable. These analyses are offered in Tables III, IV and V.

	Learner satisfaction				
	Non-standardised coefficients		Typified coefficients	*t*	Sig.
Independent Variables	*B*	Standard error	Beta		
(Constant)	.392	.099		3957	.000
Course Design	.350	.049	.330	7106	.000
Learning Content	.374	.043	.380	8708	.000
Direct Instruction	.097	.041	.106	2357	.019
Social Presence	.087	.041	.092	2109	.035

Table III. ANOVA for learner satisfaction.

	Perceived learning: knowledge acquisition				
	Non-standardised coefficients		Typified coefficients	*t*	Sig.
Independent variables	*B*	Standard error	Beta		
(Constant)	.798	.095		8429	.000
Course Design	.386	.045	.403	8646	.000
Learning Content	.360	.041	.407	8718	.000

Table IV. ANOVA for knowledge acquisition.

	Perceived learning: ability to transfer				
Independent variables	Non-standardisd coefficients		Typified coefficients	*t*	Sig.
	B	Standard error	Beta		
(Constant)	.679	.120		5654	.000
Course Design	.461	.057	.444	8040	.000
Learning Content	.306	.053	.318	5761	.000

Table V. ANOVA for ability to transfer.

As demonstrated in the tables, the results permit us to refuse the null hypothesis –namely, that the coefficients of the considered independent variables (institutional) are 0 for the dependent variables (outcomes). Thus, we found that course design and learning content significantly influence the

three outcome variables at a .000 significance level. We also found that direct instruction and social presence significantly influence learner satisfaction, at a .05 significance level.

The degree of the influence of the considered institutional variables on outcomes variables is estimated by means of the Beta coefficient. On learner satisfaction, the most influential variables are course design and learning content (.330 and .380, respectively), while direct instruction and social presence are less influential (.106 and .092, respectively).

Course design and learning content have a similar degree of influence on the other two outcome variables. On knowledge acquisition, the influence of course design is .403 and the influence of learning content is .407. On ability to transfer, the influence of course design is .444 and the influence of learning content is .318.

Discussion

From the results of this study we can assume that, among the different institutional variables considered, the most influential variables both for learner satisfaction and perceived learning are the course design and the learning content. These variables present the strongest correlation. Furthermore, their degree of influence (Beta coefficient) is higher (in comparison with social presence and direct instruction in relation to learner satisfaction).

These results are partially in accordance with the literature on this same topic. Thus, our result about the influence of learning content is consistent with the results of the study of Swan (2001). However, while in the study of Eom et al (2006) course design is reported in the literature as an influential factor on learner satisfaction, this influence is not found on perceived learning. Instead, in our study we found that course design is highly influential on both learner satisfaction and level of perceived learning.

In Appendix 1 we provide the instrument we used, in which this factor is operationalized on the basis of objectives, material and expectations, which is very similar to the operationalization of Eom et al (2006). The explanation that these authors offer for this lack of relationship between course design and perceived learning is that the perception of a badly designed course is not highly influential on perceived level of learning if there are other factors which compensate for the bad design – for example, good feedback from the instructor. So, for example, if a student receives good feedback from the instructor, even if s/he considers the course design really bad, s/he may perceive that her learning is good *despite* the course design. This is a plausible explanation if few courses with important similarities between them are involved in the survey – independently of the number of participants. However, if the number of courses involved in the survey was large and the courses were very different, this argument would not explain the result because the different combination of the values in variables would compensate for each other. In the study of Eom et al (2006), the sample of participants was large (*N=397*), but they focused on just one campus online course delivered through the online program of one university. This difference in the sample can potentially explain the discrepancy between their result and ours. Our study has the strength of considering a large number of very different courses delivered by three different universities, with different characteristics, and even with different cultural backgrounds.

Our study also supports the strength of the correlation between social presence and learner satisfaction, and between direct instruction and learner satisfaction, which has been found by the literature. However, findings from the ANOVA suggest that these factors are not as influential on learner satisfaction as course design and learning content. Besides, we should emphasize that our results do not suggest that there is not a correlation between the outcome factors and the remaining institutional factors not considered in the ANOVA. Literature typically reports a positive correlation between them, as did we, despite it being a weak correlation (.388) between technological support and ability of transfer. Our analysis aims to understand which factors are the most strongly correlated, and among them, which are the most influential. In other words, according to our data, although these other factors can be correlated with the outcome variables, they seem not to be crucially influential to them.

One limitation of this study, however, is that all the values of all the variables come from a survey. This is a limitation which a large amount of other research on this topic shares. But this means that what we really measured is not the relation between one institutional factor (for

example, course design) and the students' satisfaction (which is a perception) and perception of learning; rather, what we are measuring is the relation between the *perception* of that institutional factor (i.e. the perception of the course design, and not the course design itself) and students' satisfaction and perception of learning.

Overcoming this limitation would involve directly observing and analyzing the courses, which, with such a huge sample, distributed in three different countries, in three different continents, is not realistic. However, this is an issue that must be considered in reading the results. Another limitation is that the variables that we identified as crucial –namely, course design and learning content – are still opaque in this study. Of course, our aim here was to identify the crucial variables, but we face in the future the task of internally developing these two variables in order to understand, for example, which elements of the course design are more influential than others.

Conclusions

In this study we conducted a correlation and regression analysis in order to determine which are the factors involved in social sciences online courses that crucially influence students' satisfaction with the course and students' perceived learning. We found that there are two crucial factors – namely, the course design and the learning content. We found also that satisfaction, not perceived learning, was strongly correlated with social presence and direct instruction. These results lead us to advocate internal development of these crucial variables in the future in order to understand more precisely their influence on satisfaction and perceived learning.

References

Ahern, T.C. & Repman, J. (1994) The Effects of Technology on Online Education, *Journal of Research on Computing in Education*, 26(4), 537-547.

Aleamoni, L.M. & Hexner, P.Z. (1980) A Review of the Research on Student Evaluation and a Report on the Effect of Different Sets of Instructions on Student Course and Instructor Evaluation, *Instructional Science*, 9, 67-84. http://dx.doi.org/10.1007/BF00118969

Barbera, E. & Linder-VanBerschot, J. (2011) Systemic Multicultural Model for Online Education: tracing connections among learner inputs, instructional processes and outcomes, *Quarterly Review of Distance Education*, 12(3), 167-180.

DeBourgh, G.A. (2003) Predictors of Student Satisfaction in Distance-delivered Graduate Nursing Courses: what matters most? *Journal of Professional Nursing*, 19(3), 149-163.

Eom, S.B., Wen, H.J. & Ashill, N. (2006) The Determinants of Students' Perceived Learning Outcomes and Satisfaction in University Online Education: an empirical investigation, *Decision Sciences Journal of Innovative Education*, 4(2), 215-235. http://dx.doi.org/10.1111/j.1540-4609.2006.00114.x

Garrison, D.R., Anderson, T. & Archer, W. (2000) Critical Inquiry in a Text-based Environment: computer conferencing in higher education, *Internet and Higher Education*, 2(2-3), 87-105.

Harasim, L. (2000) Shift Happens: online education as a new paradigm in learning, *Internet and Higher Education*, 3, 41-61. http://dx.doi.org/10.1016/S1096-7516(00)00032-4

Howland, J.L. & Moore, J.L. (2002) Student Perceptions as Distance Learners in Internet-based Courses, *Distance Education*, 23(2), 183-195. http://dx.doi.org/10.1080/0158791022000009196

Jiang, M. & Ting, E. (2000) A Study of Factors Influencing Students' Perceived Learning in a Web-based Course Environment, *International Journal of Educational Telecommunications*, 6(4), 317-338.

Mayer, E. & Moreno, R. (2002) Animation as an Aid to Multimedia Learning, *Educational Psychology Review*, 14(1), 87-99. http://dx.doi.org/10.1023/A:1013184611077

Picciano, A.G. (2002) Beyond Student Perceptions: issues of interaction, presence, and performance in an online course, *Journal of Asynchronous Learning Networks*, 6(1), 21-40.

Remmers, H.H. (1930) To What Extent Do Grades Influence Student Ratings of Instructors? *Journal of Educational Psychology*, 21, 314-316.

Richardson, J.C. & Swan, K. (2003) Examining Social Presence in Online Courses in Relation to Students' Perceived Learning and Satisfaction, *Journal of Asynchronous Learning Networks*, 7(1), 68-88.

Rourke, L., Anderson, T., Garrison, D.R. & Archer, W. (1999) Assessing Social Presence in Asynchronous Text-based Computer Conferencing, *Journal of Distance Education*, 14(2), 50-71.

Sun, P.C., Tsai, R.J., Finger, G., Chen, Y.Y. & Yeh, D. (2008) What Drives Successful e-Learning? An Empirical Investigation of the Critical Factors Influencing Learner Satisfaction, *Computers & Education*, 50, 1183-1202. http://dx.doi.org/10.1016/j.compedu.2006.11.007

Swan, K. (2001) Virtual Interaction: design factors affecting student satisfaction and perceived learning in asynchronous online courses, *Distance Education*, 22(2), 306-331. http://dx.doi.org/10.1080/0158791010220208

Wachtel, H.K. (1998) Student Evaluation of College Teaching Effectiveness: a brief review, *Assessment & Evaluation in Higher Education*, 23, 191-212. http://dx.doi.org/10.1080/0260293980230207

APPENDIX 1

Variable		Item	Scale mean if item deleted	Scale variance if item deleted	Corrected item–total correlation	Cronbach's alpha if item deleted
Institutional Factors	Learning platform	All important site content was easy to locate and identify.	122.952191	297.101705	0.53987865	0.968443
		The site provided a clear means of obtaining technical help.	122.904382	299.566821	0.46489049	0.96872905
		The media used were appropriate for the content.	122.804781	298.549737	0.56697541	0.9682901
	Technolgical support	I received adequate training on WebCT Vista.	122.7251	297.032127	0.62288752	0.96806803
		I had access to adequate tools and resources (library, textbooks, etc.) to learn in this course.	122.752988	297.858741	0.57165062	0.96827286
		I received the technical support I needed when I had a problem.	122.804781	299.101737	0.50130048	0.96856332
	Social presence	The instructor seemed concerned about my needs as a learner.	122.737052	293.378582	0.68914965	0.96776447
		The instructor actively encouraged me to participate in the course.	122.808765	293.419283	0.66127907	0.9678992
		I felt I was a part of a community of learners in this course.	122.800797	294.784159	0.65761545	0.96790991
	Direct instruction	The instructor used effective teaching strategies.	122.868526	290.682645	0.74463692	0.96749175
		The instructor encouraged a variety of perspectives.	122.868526	291.290645	0.72552176	0.96758781
		The teacher was knowledgeable about his/her field.	122.589641	297.418932	0.57956448	0.96824244
	Instructor interaction	All assignments were returned with useful feedback from the instructor.	122.932271	290.743394	0.6485257	0.9680687
		The instructor responded promptly.	122.784861	293.42553	0.62253491	0.96811432
		The instructor provided individualised guidance that met my needs.	122.940239	291.128414	0.68966686	0.96778474
	Students' intera	Online comments by other participants helped me learn.	122.689243	298.375044	0.52171425	0.96848895

Outcome Factors	Learning content	I contributed to the learning environment by responding to my peers.	122.860558	299.256478	0.48479443	0.9686396
		I learned to value other points of view.	122.657371	299.314135	0.52344954	0.96845837
		Content was presented at an appropriate level for me.	122.804781	293.749737	0.72764889	0.96761002
		Content was relevant to the objectives of the course.	122.760956	293.614629	0.7670516	0.96746651
		Content was stimulating to me as a learner.	122.776892	290.694024	0.75651835	0.96743395
	Course design	The objectives of this course were evident in the learning activities.	122.737052	293.114582	0.76359769	0.96745882
		The course material was presented in ways that suggested future application.	122.860558	294.416478	0.67816245	0.96781929
		My grades have been directly related to learning objectives, activities and application of materials.	122.780876	294.939793	0.70446357	0.96772756
	Learner satisfaction	I was motivated to do well in this course.	122.685259	294.376542	0.67371596	0.96783794
		This course was a useful learning experience.	122.59761	294.089434	0.72509534	0.96762889
		I recommend that other people enrol in this online course.	122.733068	291.188462	0.71640852	0.96763507
		I learned from the activities assigned in the course.	122.621514	295.108175	0.71996968	0.96768043
		The course was relevant to my needs.	122.816733	292.278279	0.73740976	0.96753969
	Knowledge satisfaction	I did well on assignments and quizzes.	122.792829	294.844908	0.66426725	0.96788156
		I can explain the material covered in this course to others.	122.876494	293.772685	0.72436917	0.96762302
		I have noticed the difference between my prior knowledge and the knowledge I gained by the end of the course.	122.681275	293.930008	0.72076012	0.96764067
		During the course, I have been conscious about my strengths and weaknesses in my learning.	122.741036	294.816669	0.67117226	0.96785247
	Ability to transfer	I can make correct decisions and solve problems with the knowledge I have gained in this course.	122.948207	292.881307	0.72295804	0.96761076
		I know how I will use the course material in new situations.	122.868526	293.602645	0.72715599	0.96760812
		I have opportunities to apply the course material.	122.956175	293.490072	0.61953981	0.96812995
		As a result of this course, I am able to apply my learning to other, similar courses.	122.768924	295.73039	0.64639813	0.96796258

With the knowledge gained from this course, I can more broadly explore a problem in the field of study.	122.792829	295.316908	0.64270499	0.96797609
As a result of this course, I am able to apply my learning to a different context, such as my personal or professional life.	122.824701	295.217147	0.6426694	0.96797621

ELENA BARBERA has a PhD in Educational Psychology and is a senior researcher at eLearn Center (Universitat Oberta de Catalunya / Barcelona). She is currently Director of Research for the eLearn Center. She is also director of the doctorate programme in Education and ICT at UOC and adjunct professor for the international doctorate in Nova Southeastern University in Florida (USA). Her research activity is specialised in the area of educational psychology, relating in particular to web-based knowledge-construction processes, interaction in e-learning environments, assessment and quality and time factor in distance learning using ICT. As head of the EDUS research group she currently participates in national and international projects. She trains university teachers around the world and has more than a hundred papers and fifteen books in the field of education with ICT. *Correspondence*: ebarbera@uoc.edu

MARC CLARÀ⋆ has a PhD in Psychology from the University of Barcelona (2011), a Master's degree in Pedagogy from the Autonomous University of Barcelona (2005), and a Bachelor's degree in teaching from the University of Girona (2001). His research revolves around three axes: first, he works on the relations between representation, emotion and action. Second, he discursively studies the nature of joint activity and its relation to processes of learning, both in dyadic and multivocal interactions. Third, he conducts research on the mediation of digital media in processes of learning (e-learning, CSCL), with special interest in the role of time. Currently he is associate professor at the University of Barcelona. *Correspondence*: marc.clara@ub.edu

JENNIFER A. LINDER-VANBERSCHOT is an instructional designer for a large contractor and an adjunct professor for the University of Colorado-Denver. She received her PhD degree from the University of New Mexico in the Organizational Learning and Instructional Technology (OLIT) Program. She is interested in the use of technology and social software to promote interaction across cultures and between international learning communities. She has also conducted educational research and evaluation on the topics of leadership, English language learners, instructional design and classroom instruction. *Correspondence*: jennifer.vanberschot@ucdenver.edu

⋆Contact author