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Departamento de Psicología, Sociología y Filosofía

*La web 2.0 en la enseñanza-aprendizaje
de los procesos psicológicos implicados en la escritura: usos,
efectos e intervención instruccional*

Tesis doctoral

Realizada por Dña. Judit García Martín

Dirigida por el Dr. D. Jesús Nicasio García Sánchez

León, 2016

INFORME DEL DIRECTOR DE TESIS

El Dr. D. Jesús Nicasio García Sánchez, como Director de la Tesis Doctoral titulada: **La web 2.0 en la enseñanza-aprendizaje de los procesos psicológicos implicados en la escritura: usos, efectos e intervención instruccional** y cuyo título en inglés es: *Web 2.0 technologies in teaching-learning of the psychological process of writing: uses, effects and instructional intervention*, realizada por Dña. Judit García Martín en el Departamento de Psicología, Sociología y Filosofía, dentro del programa de doctorado de Psicología y Ciencias de la Educación regulado por el R.D. 1393/2007, de 29 de octubre, informa favorablemente el depósito de la citada Tesis doctoral y autoriza la presentación de la misma, dado que reúne las condiciones necesarias para su defensa.

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El órgano responsable del programa de doctorado, Psicología y Ciencias de la Educación, en su reunión celebrada el día 9 de Septiembre de 2016 ha acordado dar su conformidad a la admisión a trámite de lectura de la Tesis Doctoral titulada: **la web 2.0 en la enseñanza-aprendizaje de los procesos psicológicos implicados en la escritura: usos, efectos e intervención instruccional**, dirigida por el Dr. D. Jesús Nicasio García Sánchez, elaborada por Dña. Judit García Martín, y cuyo título en inglés es el siguiente: *Web 2.0 technologies in teaching-learning of the psychological process of writing: uses, effects and instructional intervention*.

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El título de la Tesis Doctoral es: **La web 2.0 en la enseñanza-aprendizaje de los procesos psicológicos implicados en la escritura: usos, efectos e intervención instruccional**, y en inglés es *Web 2.0 technologies in teaching-learning of the psychological process of writing: uses, effects and instructional intervention*. realizada en el Departamento de Psicología, Sociología y Filosofía por la Doctoranda Doña Judit García Martín

En León, a 1 de Septiembre de 2016

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EN EL TÍTULO DE DOCTOR

Doña Judit García Martín con D.N.I. 45688622L, habiendo realizado la tesis doctoral titulada **la web 2.0 en la enseñanza-aprendizaje de los procesos psicológicos implicados en la escritura: usos, efectos e intervención instruccional**, cuyo título en inglés es: *Web 2.0 technologies in teaching-learning of the psychological process of writing: uses, effects and instructional intervention*, dirigida por el Catedrático D. Jesús Nicasio García Sánchez y cumpliendo los requisitos establecidos por el art. 15 del R.D. 99/2011 de 28 de enero,

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Le sea concedida la Mención Internacional en el título de Doctor.

León a 1 de Septiembre de 2016

La Doctoranda

Fdo.: Judit García Martín

SR. DIRECTOR ESCUELA DOCTORADO

A mi familia y en especial a mi abuelo Ramón

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University en Reino Unido (EEBB-I-14-08082). Quisiera aprovechar este momento para expresar mi gratitud a la Dra. Teresa Pessoa con quien compartí intereses comunes durante mi permanencia en la Universidad de Coímbra que dieron lugar a diversas publicaciones, a la Dra. Jennifer Richardson y a su equipo del departamento (Curriculum and Instruction) de la Facultad de Educación de la Purdue University (Belén, Kadir, Nathaniel, Jieun, Secil, Rudy, Lissette...) quienes me permitieron instruirme en el diseño y desarrollo de cursos en línea a través de la Blackboard y al Dr. Reynol Junco quién me dio la oportunidad de conocer otras dinámicas de trabajo. Del mismo modo, me gustaría dar las gracias a mis amigas Yu, Rui, Ariadna y Rebecca con quienes compartí experiencias inolvidables durante mi paso por West Lafayette; a la Dra. Sue Beckingham por ponerme en contacto con doctores de la Sheffield Hallam University (SHU), y de manera especial al Dr. Luke Desforges, al Dr. Guy Merchant y a todos los investigadores del Center for Education and Inclusion Research (Unit 7, Faculty of Development and Society, SHU), por su amabilidad y atención durante mi estancia en su universidad, gracias por dedicarme vuestro tiempo y por hacerme sentir querida y valorada. También, quiero agradecer al resto de personas que conocí durante mi paso por Sheffield y con las que compartí grandes momentos (Ana M^a, Cristina, Rafael, Itziar, Helen...), y a mi querida amiga Ellie Bennet, quién me abrió las puertas de su casa, me dedicó su apreciable tiempo y me dio sabios consejos.

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Introducción¹

En la actualidad el uso de los social media, especialmente de las herramientas de la web 2.0 ha aumentado considerablemente en todos los escenarios de la vida personal, social y profesional de las personas y de manera especial en los jóvenes con edades comprendidas entre los 12-28 años (García-Martín y García-Sánchez, 2013; García-Martín y García-Sánchez, 2015a; García-Martín, Merchant y García-Sánchez, 2016). En este sentido, y con el propósito de aportar evidencias empíricas sólidas y suplir las carencias observadas en la investigación actual en español, se consideró de interés realizar dos estudios: uno exploratorio/descriptivo y otro experimental, en concreto, una intervención instruccional en formato de curso en línea masivo y abierto (CEMA, en inglés MOOC).

El estudio exploratorio/descriptivo tuvo como objetivo analizar el uso que los jóvenes hacían de diversas herramientas de la web 2.0 (García-Martín y García-Sánchez, 2013; García-Martín y García-Sánchez, 2015; García-Martín, Merchant y García-Sánchez, 2016).

Y el experimental, se focalizó en una intervención educativa con la que examinar los efectos instruccionales que se producían, como consecuencia del uso de estas herramientas durante el proceso de enseñanza-aprendizaje de variables psicoeducativas diversas tales como motivación, autoeficacia, autoestima, habilidades socioemocionales, inteligencia emocional y la competencia comunicativa escrita, y que se materializó en el diseño, desarrollo y aplicación de cuatro modalidades instruccionales claramente diferenciales (proceso, producto, mixta y

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tradicional) de un CEMA, en inglés, MOOC (García-Martín y García, 2014; García-Martín y García-Sánchez, en revisión).

A lo largo del diseño, desarrollo, ejecución y análisis de ambos estudios se llevaron a cabo exhaustivas revisiones empíricas sobre el uso y los efectos de estas herramientas a nivel instruccional (García-Martín, Pessoa y García-Sánchez, 2013; García-Martín y García-Sánchez, 2013; García-Martín y García, 2014; García-Martín y García-Sánchez, 2015b).

En esta línea, en relación al primer estudio se escribieron dos artículos empíricos que fueron publicados en dos revistas científicas de impacto (García-Martín y García-Sánchez, 2013; García-Martín y García-Sánchez, 2015a) y un capítulo de un libro (García-Martín, Merchant y García, 2016), constituyendo de este modo, los tres primeros capítulos de la presente tesis doctoral. El primero se centró en examinar el uso que 757 jóvenes españoles hacen de diez herramientas de la web 2.0 (wikis, blogs, moodle, Google Docs, Google Reader, Google Maps, Skype, Flickr, YouTube y de redes sociales), el segundo se focalizó en analizar el uso de las cuatro redes sociales más populares entre la juventud española (Facebook, Tuenti, Twitter y Myspace). Y el capítulo del libro, realizado durante la estancia en la universidad de Sheffield Hallam University, examinó el uso que 919 universitarios hacen de doce tipos de herramientas web (redes sociales, de vídeo, sincrónicas, de fotografías, microbloging, de presentación de contenidos, wikis, blogs, de notas interactivas, de empleo, sistemas de respuestas web y de videoconferencia).

A continuación, se llevó a cabo el segundo estudio, la intervención instruccional, que abarca los otros dos artículos presentados como capítulos cuarto y quinto de esta tesis (García-Martín y García, 2014a; García-Martín y García-Sánchez, en revisión). En este sentido, en el primer artículo se describió la propuesta de programa instruccional 2.0 que se iba a realizar y con la que se pretendían examinar los efectos que el uso de herramientas de la web 2.0 durante el proceso de enseñanza-aprendizaje de contenidos diversos, produce en variables psicoeducativas diversas.

Y en el segundo, se examinó la eficacia de un programa instruccional, Mejora de las Competencias Personales para el Éxito (APS-ÉXITO), diseñado en formato de MOOC, con cuatro enfoques instruccionales (tres experimentales y uno de control) claramente diferenciales: i) producto con énfasis en el resultado final y en la calidad global; ii) procesos con hincapié en la recursividad, y en la autovaloración constante de los procesos; iii) mixto orientado tanto al resultado y calidad global, como a la recursividad, autoreflexión y autovaloración y iv) tradicional (control) centrado en la instrucción en línea de los temas y en la realización de tareas. Todo ello, diseñado y aplicado a través del Moodle Externo de la Universidad de León (Ariadna) en el que participaron 745 personas con edades entre los 10 y 50 años. Los resultados demostraron la efectividad del Moodle para el diseño y desarrollo de un MOOC,

la eficacia del MOOC para la instrucción en contenidos y competencias diversas tales como resiliencia, motivación de logro y autoestima, con independencia del enfoque instruccional seguido, a lo que se añade un aumento estadísticamente significativo en diferentes variables como la autoeficacia.

Asimismo, durante el desarrollo de ambos estudios se llevaron a cabo diversas revisiones empíricas en torno a los usos y efectos instruccionales de estas herramientas a nivel instruccional que dieron lugar a otros tres trabajos de investigación más y que constituyen los capítulos seis, siete, ocho y nueve de la presente tesis doctoral (García-Martín, Pessoa y García-Sánchez, 2013; García-Martín y García, 2013; García-Martín y García, 2014b; García-Martín y García-Sánchez, 2015b).

INFORME SOBRE EL FACTOR DE IMPACTO (FI) DE LAS PUBLICACIONES

- Tesis doctoral presentada por D^a Judit García Martín en la modalidad de “compendio de publicaciones”.
- Número de artículos publicados: 8 + 1 en revisión
- Número de artículos aceptados para su publicación: 8 + 1 en revisión

Factor de impacto (FI) de las publicaciones según el Journal Citation Reports del año 2014

REFERENCIA DE LA PUBLICACIÓN (Autores y título)	REFERENCIA DE LA REVISTA (Vol, n°, páginas, AÑO)	FI	PUESTO EN LA CATEGORÍA	REVISTAS EN LA CATEGORÍA
García-Martín y García, <i>Patterns of Web 2.0 tool use among young Spanish people</i>	Computers & Education (Vol. 67, págs. 105-120, 2013). ISSN: 0360-1315 Elsevier	JCR (2.556) FI-5 años (3.227) SNIP (3.247) SJR (2.578) H Index (93) In the top 5% of all research outputs scored by Altmetric. One of the highest-scoring outputs from this source (#8 of 644) High score compared to outputs of the same age (97th percentile) High score compared to outputs of the same age and source (96th percentile) CARHUS Plus + 2014 (Grupo A) CIRC (Valor superior a D) ICDS (11.0)	JCR, Q1, 8 SJR, Q1,15 H Index, Q1, 1 ICDS, 11.0	JCR, COMPUTER SCIENCE, INTERDISCIPLINARY APPLICATIONS, 16/102 JCR, EDUCATION & EDUCATIONAL RESEARCH, 8/200 SJR, EDUCATION, 15/914 SJR, COMPUTER SCIENCE, 8/234 H Index, Social Science, 1/20

REFERENCIA DE LA PUBLICACIÓN (Autores y título)	REFERENCIA DE LA REVISTA (Vol, nº, páginas, AÑO)	FI	PUESTO EN LA CATEGORÍA	REVISTAS EN LA CATEGORÍA
García-Martín y García, <i>Use of Facebook, Tuenti, Twitter and Myspace among young Spanish people</i>	Behavior and Information Technology (Vol. 34, nº 7, 685-703, 2015). ISSN: 0144-929X Taylor & Francis LTD	JCR (0.891) FI-5 años (1.41) SJR (0.801) H Index (47) Cited half-life (8.10) Immediacy index (0.12) Eigenfactor (0.00) Article influence (0.30) CARHUS Plus + 2014 (Grupo A) CIRC (Valor superior a D) ICDS (11.0)	JCR, Q3, 15 SJR, Q1, 64 H Index, Q1, 10 ICDS, 11.0	JCR, COMPUTER SCIENCE, CYBERNETICS, 15/24 SJR, SOCIAL SCIENCE (MISCELLANEOUS), 64/400 SJR, ARTS AND HUMANITIES (MISCELLANEOUS), 106/431 SJR, HUMAN-COMPUTER INTERACTION, 30/84 SJR, DEVELOPMENTAL AND EDUCATIONAL PSYCHOLOGY, 107/278 H Index, Human Computer Interaction, 10
García-Martín, Merchant y García, <i>Preparing to Teach 21st Century Literacies</i>	Building Bridges: Rethinking Literacy Teacher Education in a Digital Era, section 1, chapter 4, 43-53. Sense Publisher (Springer) ISBN Paperback: 9789463004893 ISBN Hardcover: 9789463004909 ISBN E-Book: 9789463004916	Capítulo de libro	Ranking General (SPI, 2014) Editorial extranjera (69)	PSICOLOGÍA EDUCACIÓN

REFERENCIA DE LA PUBLICACIÓN (Autores y título)	REFERENCIA DE LA REVISTA (Vol, nº, páginas, AÑO)	FI	PUESTO EN LA CATEGORÍA	REVISTAS EN LA CATEGORÍA
García-Martín y García <i>Asesoramiento psicopedagógico virtual</i>	International Journal of Developmental and Educational Psychology (Vol. 26, Nº 1(4), 2014, págs. 349-354). ISSN: 0214-9877	H Index (3) Latindex. Índice de impacto: 35 características cumplidas. ICDS (4.4) <i>Indexada en...</i> Psicodoc Ulrich Redalyc Miar 2014 ISOC Dialnet DICE Sherpa-Romeo	H Index, 3 Latindex, 35 ICDS, 4.4	PSICOLOGÍA
García-Martín y García <i>The efficacy of four instructional approaches used in a MOOC</i>	Computers in human behavior (en revisión)	JCR (2.880) FI-5 años (3.724) SJR (1.646) H Index (82) Immediacy index (0.452) Eigenfactor (0.02252) Article influence (0.883) CARHUS Plus + 2014 (Grupo A) CIRC (Valor superior a D) ICDS (11.0)	JCR, Q1, 20 SJR, Q1, 118 H Index, 82 ICDS, 11.0	JCR, PSYCHOLOGY, MULTIDIPLINARY, 22/2125 JCR, PSYCHOLOGY, EXPERIMENTAL, 26/84 JCR, PSYCHOLOGY, N/A

REFERENCIA DE LA PUBLICACIÓN (Autores y título)	REFERENCIA DE LA REVISTA (Vol, nº, páginas, AÑO)	FI	PUESTO EN LA CATEGORÍA	REVISTAS EN LA CATEGORÍA
<p>García-Martín, Pessoa y García</p> <p><i>Estudos sobre a utilização da web 2.0 na educação em Portugal (2008-2012)</i></p>	<p>Educação, Formação & Tecnologias, (Vol. 6, Nº. 1, 2013, págs. 52-67) ISSN-e 1646-933X</p>	<p>Latindex. Índice de impacto: 35 características cumplidas.</p> <p><i>Indexada en...</i></p> <p>Portal do Educ@ DOAJ Dialnet Periódicos CAPES Public Knowledge Project Genamics Journal Seek Portal LIVRE Google Scholar EBSCO</p>	<p>Latindex, 35</p>	<p>TECNOLOGÍA EDUCATIVA</p>
<p>García-Martín y García</p> <p><i>La web 2.0 y el aprendizaje colaborativo en la educación portuguesa</i></p>	<p>International Journal of Developmental and Educational Psychology, (Vol. 25, Nº 1(2), 2013, págs. 711-720). ISSN: 0214-9877</p>	<p>H Index (3) Latindex. Índice de impacto: 35 características cumplidas.</p> <p>ICDS (4.4)</p> <p><i>Indexada en...</i></p> <p>Psicodoc Ulrich Redalyc Miar 2014 ISOC Dialnet DICE Sherpa-Romeo</p>	<p>H Index, 3</p> <p>Latindex, 35</p> <p>ICDS, 4.4</p>	<p>PSICOLOGÍA</p>

REFERENCIA DE LA PUBLICACIÓN (Autores y título)	REFERENCIA DE LA REVISTA (Vol, nº, páginas, AÑO)	FI	PUESTO EN LA CATEGORÍA	REVISTAS EN LA CATEGORÍA
García-Martín y García <i>Análisis de estudios sobre Facebook® en Computer and Human Behaviour® (2010-2013)</i>	International Journal of Developmental and Educational Psychology, (Vol. 26, Nº 1(3), 2014, págs. 593-598). ISSN: 0214-9877	H Index (3) Latindex. Índice de impacto: 35 características cumplidas. <i>Indexada en...</i> Psicodoc Ulrich Redalyc Miar 2014 ISOC Dialnet DICE Sherpa-Romeo	H Index, 3 Latindex, 35 ICDS, 4.4	PSICOLOGÍA
García-Martín y García <i>Efectos positivos del uso de blogs y wikis en variables psicoeducativas: revisión de estudios internacionales (2010-2013)</i>	Estudio sobre Educación, (Vol. 29, Nº. 103, 2015, págs. 103-122). ISSN: 1578-7001	JCR en 2012 (0.133) FI-5 años (0.124) SJR (0.135) H Index (2) CIRC (A) CARHUS (B) MIAR-ICDS (9.7) ICDS (9.7) En 2013 el Sello de Calidad de Revistas Científicas Españolas otorgado por FECYT	SJR, Q4 H Index, 2 ICDS, 9.7	SJR, EDUCATION 914

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CAPÍTULO 1

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Patterns of Web 2.0 tool use among young Spanish people

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ABSTRACT

Web 2.0 tools have gained strategic importance in personal, social and educational contexts. In this study, we analysed the use made by 757 Spanish students of 10 Web 2.0 tools, namely wikis, blogs, Moodle, Google Docs, Google Reader, Google Maps, Skype, Flickr, YouTube and general or personal social networks. To this end, we administered an online questionnaire, the HEWEZ.0, designed using the Google Docs application, to explore five questions: (i) what information, knowledge and training the subjects had, (ii) how they used the tools: difficulty, preference and satisfaction, (iii) when and where they used them, (iv) why they had begun to use them, and (v) what they used them for. We performed two types of analysis, one descriptive and the other multivariate, using the General Linear Model. The results show specific patterns of response according to sex, educational level and age. We found that female subjects showed a greater preference for social tools than males, who preferred instrumental tools; that the higher the subjects' educational level, the more information they possessed about Web 2.0 tools; and that functional knowledge about those tools requiring greater digital competence increased with age and vice versa. The implications of these results are discussed and evaluated.

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1. Introduction

Web 2.0 tools are ubiquitous in the lives of young people today (Bennett, Bishop, Dalgarno, Waycott, & Kennedy, 2012; Eyyam, Menevis & Doğruer, 2011; Green & Hannon, 2007; Lenhart, Purcell, Smith, & Zickuhr, 2010). These tools include wikis, blogs, social networks, social bookmarking services, instant messaging and audio and video media (YouTube) that allow users to create, collaborate, contribute, connect, share photos (Flickr) and participate in a learning community (Cabada et al., 2009; Yuen & Yuen, 2010). In other words, these are collaborative applications that facilitate communication between individuals in an educational context (Sendall, Ceccuci & Peslak, 2008). However, not all require the same skills or are used for the same purposes. They can be categorised into two main groups: i) *social or emotional applications*, which focus on fostering personal relationships through the creation of profiles or publication of multimedia content and are generally intuitive to use (social networks, Skype, YouTube and Flickr), and ii) *instrumental applications*, which are extensively used in education, require more skills to use and include wikis, blogs and Google tools (Docs, Reader, Maps). Although it is not a Web 2.0 tool, it was decided to include the Learning Management System, Moodle, in this second group, because its use is based on the seven principles of Web 2.0 (O'Really, 2004), namely i) the web as a platform, ii) collective intelligence, iii) database management, iv) no more software updates, v) light programming, vi) software on more than one device and vii) enriching user experiences. Furthermore, the vast majority of schools today use this platform to amalgamate the other tools available.

The aim of this study was to identify differential patterns in Spain as regards the use that students make of the ten Web 2.0 tools most frequently mentioned in the review conducted of the international literature and in the teaching projects and/or analyses published in Spanish journals. Thus, the aim of this study was to identify differential patterns, according to sex, educational level and age, in the use that students made of ten Web 2.0 tools (wikis, blogs, Moodle, Google Docs, Google Reader, Google Maps, Skype, Flickr, YouTube and general or personal social networks). To this end, we explored five key questions: (i) *what?*, (ii) *how?*, (iii) *when and where?*, (iv) *why?* and (v) *what for?* Consequently, this paper is divided into five distinct sections. The following section presents an international empirical framework for the factors which determine the use young people make of Web 2.0 tools. The third section provides a description of the methodology in terms of participants, procedure and instrument used. In the next section, we present the results of the descriptive study of the use made by young

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Spanish people of the ten Web 2.0 tools analysed. Lastly, in the fifth and final section, we discuss the general nature of the results, present our conclusions and suggest future lines of research.

2. Background

Due to the virtual inexistence of Spanish research on the proposed subject of study, since most publications in Spanish report teaching projects and/or analyses that do not provide empirical evidence, we present an international empirical framework with which we aim to analyse the factors that determine the use young people make of 10 Web 2.0 tools, through an exploration of five key questions: (i) *what?*, (ii) *how?*, (iii) *when and where?*, (iv) *why?*, and (v) *what for?*

Firstly, we wished to determine *what* information, knowledge, and training the young people had received about the different Web 2.0 tools. Very few studies have attempted to describe this variable. Nevertheless, in a North American study conducted in Pennsylvania in 2011 with 145 graduate students, it was found that virtually all the subjects used blogs and general or personal social networks. Furthermore, approximately 90% knew about podcasts and 60% knew about microblogging tools and wikis, compared to RSS tools which were unknown by the majority (Weyant & Gardner, 2010). These results are similar to those obtained in a previous American study, which showed that a third of the students were familiar with wikis and about half with podcasts (Frydenberg, 2008). In another study conducted in the United Kingdom with 51 students aged between 18 and 23 years old, it was found that the majority had a high level of functional knowledge about personal social networks, and that YouTube, Flickr and blogs were very well known among young people (Beresford & Cobham, 2011). Thus, the studies which have addressed this issue have shown that young people possess varying levels of knowledge depending on the tool in question. Personal social networks and YouTube are the best known 2.0 tools, followed by wikis (Wikipedia), blogs and Flickr, and social bookmarking is the least well-known. However, our review revealed that in the majority of countries, RSS tools were the least well-known. Secondly, we wished to determine *how* young people use Web 2.0 tools, as well as the degree of difficulty, satisfaction, preference and ease they feel when using them. In a study conducted with 152 students at a university in Northern Cyprus, it was observed that about 30% preferred wikis (Wikipedia) followed by 26.5% and 15.9% who preferred personal social networks and various instant messaging programs, respectively (Eyyam et al., 2011). In another study conducted in America, it was reported that the popularity of blogs has declined considerably among young people and adults since 2006, from 26% to 14%. However, the preference for personal social networks has increased (Lenhart et al., 2010). In this regard and as a general rule in all countries, personal social networks tend to be more popular among young people, whereas social bookmarking services are most popular among relatively older people. One possible explanation for this may be that social bookmarking services are more closely tied to occupational and professional contexts (Corrocher, 2011).

Thirdly, we aimed to analyse *when* young people used Web 2.0 tools and *where* they normally used them. As regards *when*, no studies have been reported that specifically analysed the time young people spend on wikis or blogs, etc., although some research has been conducted on the time they spend on personal social networks (Bosch, 2009; Junco, 2011, 2013). Nevertheless, some data are available. In a study conducted in the United Kingdom in 2009, it was observed that one third of the participants had accessed a Web 2.0 tool “in the last twenty-four hours” (Luckin et al., 2009). Another study, conducted in Australia, also demonstrated that a small proportion of respondents made regular use of Web 2.0 tools such as blogs and wikis. However, very few students used social bookmarking or had created and published podcasts (Kennedy et al., 2009; Kennedy et al., 2007). On the other hand, a study conducted in the United Kingdom that analysed *where* revealed that of the 2611 students surveyed, about half wrote blogs outside the school, 5% only in the educational centre, 4% in both places and the rest in neither of these. In addition, more than half of the students had created a profile on a personal social network outside the school, 3% only in the educational centre, 5% in both places and the remaining percentage in neither of them. Similarly, 14% had edited a wiki page outside the school, 6% only in the school, 3% in both places and the rest in neither of them. Furthermore, 19% searched Wikipedia outside the school, 25% only in the educational centre, approximately half of them in both places and the rest in neither of these (Luckin et al., 2009). Similarly, in a more recent study conducted at a university in Northern Cyprus, it was reported that more than half of the participants used instant messaging software in class, about half of them used audio and video exchange programs, and less than half used personal social networks and video sharing web sites (YouTube) in class. More than half did not use social bookmarking or blogs (Eyyam et al., 2011).

Fourthly, we aimed to analyse *why* young people had begun to use these Web 2.0 tools. The Australian studies reviewed indicated that most of the Web 2.0 tools such as *blogs, wikis, Google Docs* and *personal social networks, etc.*, are beginning to be used for social or entertainment purposes rather than for educational purposes (Bennett et al., 2012). Furthermore, in a recent Italian study it was found that the majority of participants had begun to use Web 2.0 tools for entertainment, although the percentage varied from 65.2% in the case of shared videos (YouTube) to 35.9% for social bookmarking. However, approximately 17% of users had started using video sharing web sites (YouTube) in order to share content or opinions with others, compared to personal social networks where 30% of respondents reported having started to use them in order to stay in touch with friends. As regards social networks, several studies have shown that women began using social networks for communication and socialisation more than men (Pfeil, Arjan & Zaphris, 2009). Lastly, 23.9% of social bookmarking service users had begun to use them for work-related purposes and 21.7% in order to share content or opinions with others (Corrocher, 2011).

Fifthly and lastly, we wished to determine *what* students used the Web 2.0 tools *for*. In this regard, the articles reviewed indicated that the reason for use differed between tools. In an American study it was found that blogs were primarily used to read what other people had written about a topic of interest, or to create a personal online diary (Lenhart et al., 2010). In another study conducted in the United Kingdom, it was observed that virtually all of the respondents used YouTube to share images, videos and music, and Wikipedia to find information (Luckin et al., 2009). Similarly, in another study carried out in Turkey with 870 students, it was found that most young people used social networks for communication. However different gender-related usage patterns were observed, whereby men were more likely to establish new relationships than women, who were more inclined to maintain existing ones (Mazman, 2011). Lastly, in more recent Canadian and Italian studies it has been reported that these tools are normally used to socialise, entertain oneself, have fun and share content (Asselin & Moayeri, 2011; Corrocher, 2011).

In addition, this international empirical framework offers an insight into the temporal evolution of the tools analysed. Thus, the first studies reviewed, which dated to around 2007, described the use of very specific tools such as instant messaging systems (MSN), blogs, wikis and social networks such as Myspace and Facebook. However, later studies included other tools such as Google (Docs, Reader, etc.), Flickr,

YouTube, Skype, other social networks and Learning Management Systems, although these latter are not actually Web 2.0 tools. It should also be borne in mind that few descriptive studies have been reported to date, and most of the literature concerns studies which have analysed the effects of these tools on different personal, social and psychological variables or factors such as social influence, academic performance, motivation, intentions regarding future use, difficulty, satisfaction, preference, gender, social learning, the sense of belonging to a community, peer influence, perceptions, beliefs, personality traits, academic skills, social identity and self-efficacy.

Given these empirical antecedents and the study aims, we hypothesised that: (i) in general, the amount of information students possess about Web 2.0 tools increases with educational level, (ii) young people's functional knowledge about the most widely-used tools increases with age, and (iii) females present a stronger predisposition for social tools than males, who show a preference for instrumental tools. All these hypotheses have important social and educational implications both at theoretical and applied levels.

3. Methodology

3.1. Sample

In early 2012, we surveyed 757 students aged between 11 and 28 years old, of which 418 were male and 339 female, distributed evenly between compulsory secondary education (CSE: 7th to 10th years; $n = 571$), non-compulsory secondary education (non-CSE: 11th year; $n = 113$) and vocational education and training (VET: $n = 73$). This was a representative sample obtained through intentional sampling of seven Spanish educational centres attended by students from both rural and urban areas. All these educational centres are located in Castile and León, the largest autonomous community in Spain and the third largest territory in the European Union. In addition, this is the most typically Spanish, applicable and representative region in Spain, and historically has a greater linguistic heritage (Castilian Spanish) and cultural tradition. Consequently, all participants shared linguistic (monolingual), psychological, educational, instructional, cultural, socio-economic, gender and age characteristics (see Table 1).

3.2. Research instrument

An online questionnaire was designed, the Hewe2.0, consisting of two clearly differentiated parts: (i) *the first part* consisted of eleven questions about participants' general personal details: pseudonym, sex, age, educational level, general information about the terms Web 2.0 and Web 2.0 tools, etc., and (ii) *the second part* included eighteen specific questions scored using five-point Likert-type scales (see Appendices A and B). The questionnaire was designed using the question options available in the Google Docs application, which include: (i) text, (ii) paragraph text, (iii) test type (single or multiple response), (iv) check box, (v) choose from a list, and (vi) scale. The decision to use Google Docs as a web application for the design and implementation of the questionnaire was based on several reasons: i) it is easy to use (very intuitive), ii) little knowledge of office automation and web tools is required for its use, iii) the data matrix can be downloaded in multiple formats (Excel, Word), iv) it is very accessible and v) it keeps costs to a minimum. However, the main reason for choosing Google Docs was that it is a Web 2.0 tool and would also be analysed in this study.

This instrument presented acceptable psychometric properties as regards apparent and construct validity, explaining 40.547% of the variance based on 5 components: (i) degree of difficulty of the Web 2.0 tools, (ii) intentions regarding future use, (iii) degree of preference, (iv) degree of difficulty, and (v) characteristics of the use of Skype (see Table 2), and showed good internal consistency (Cronbach's alpha = .935).

3.3. Design and variables

This was a descriptive study, conducted through the administration of an online questionnaire, the Hewe2.0.

On the one hand, a total of 20 variables were described, of which 5 referred to general or demographic characteristics: (i) sex, (ii) educational level, (iii) age, (iv) academic performance, and (v) socio-economic level. The remaining variables described the use of ten Web 2.0 tools, including: (i) information about Web 2.0, (ii) Web 2.0 tools, (iii) training received, (iv) functional knowledge, (v) frequency, (vi) place of use, (vii) levels of satisfaction, difficulty and preference, (viii) reason for use, (ix) purpose, (x) use activity and (xi) intentions regarding future use.

As regards selection of the Web 2.0 tools analysed in this study, this was based on a review of previous international studies and on teaching projects or analyses published in Spanish. In other words, we selected the ten tools which had been most frequently studied in previous research and which could be classified according to the typology presented earlier: i) *2.0 social or emotional tools*, comprising YouTube, Flickr, Skype and social networks in general (without specifying any network in particular) and ii) *instructional tools*, encompassing wikis, blogs, Moodle, Google Docs, Google Reader and Google Maps.

3.4. Procedure

The instruments used in previous international research on the use of Web 2.0 tools were reviewed and analysed in order to maintain consistency and define the variables analysed in the questionnaire designed. After the questionnaire had been designed and the type of

Table 1
Distribution of participants by educational level and sex ($n = 757$).

	1st year of CSE (7th)	2nd year of CSE (8th)	3rd year of CSE (9th)	4th year of CSE (10th)	1st year of non-CSE (11th)	VET	Total
Male	72	76	72	79	53	66	418
Females	69	68	73	62	60	7	339
Total	141	144	145	141	113	73	757

Table 2
Hewe2.0 construct validity.

No.	Component	Question	% of explained variance	% of cumulative variance	Items	Factor weighting
I	Degree of difficulty of 2.0 tools	How?	16.031	16.031	Degree of difficulty of Wikis	.754
					Degree of difficulty of Blogs	.761
					Degree of difficulty of Moodle	.896
					Degree of difficulty of Google Docs	.890
					Degree of difficulty of Google Reader	.907
					Degree of difficulty of Google Maps	.532
					Degree of difficulty of Skype	.685
					Degree of difficulty of Flickr	.876
					Future use of Wikis	.611
					Future use of Blogs	.706
II	Intentions regarding future use	What?	8.560	24.590	Future use of Moodle	.870
					Future use of Google Docs	.835
					Future use of Google Reader	.856
					Future use of Google Maps	.616
					Future use of Skype	.616
					Future use of Flickr	.827
					Degree of preference for the use of Wikis	.612
					Degree of preference for the use of Blogs	.608
					Degree of preference for the use of Moodle	.890
					Degree of preference for the use of Google Docs	.822
III	Degree of preference of 2.0 tools	How?	6.309	30.900	Degree of preference for the use of Google Reader	.821
					Degree of preference for the use of Google Maps	.524
					Degree of preference for the use of Skype	.549
					Degree of preference for the use of Flickr	.817
					Degree of difficulty of YouTube	.889
					Degree of difficulty of Tuenti	.915
					Degree of difficulty of Facebook	.905
					Degree of difficulty of Twitter	.837
					Degree of difficulty of Myspace	.619
					Functional knowledge of Skype	.819
V	Characteristics of Skype use	What? How? When?	4.429	40.547	Frequency of use of Skype	.819
					Daily frequency of use of Skype	.773
					Degree of personal satisfaction with Skype	.843
					Degree of preference for the use of Skype	.715
					Intentions regarding future use of Skype	.565

sampling selected, a pilot study was carried out with 351 students from two Spanish educational centres in Castile and León in order to verify the time required for administration of the questionnaire, eliminate any problems and difficulties it presented and tailor it to the objective of the research. Once ambiguous items had been modified, the sample was selected and the questionnaire administered. Various educational centres (schools and colleges) in Castile and León providing Secondary Education (compulsory and non-compulsory) and Vocational Training were informed about the study and asked if they wished to participate. To this end, initial telephone contact was established with the head teachers of the respective centres, and then, prior to administration of the questionnaire, informed consent was sought and obtained in writing from the seven participating centres, in accordance with deontological standards for scientific research. The instrument was administered in the computer rooms during tutorials, computing or technology classes in order to interfere as little as possible in the students' education. For the same reason, questionnaire administration required a maximum of 30 min for each group of students.

Once students had completed the questionnaires, the resulting matrix was downloaded, the relevant encoding was performed and the appropriate statistical analyses conducted, using the SPSS version 19.0 software package, in order to obtain the empirical research data.

4. Results

Means and standard deviations were calculated to obtain descriptive data on participants. Subsequently, a parametric analysis was performed by testing for skewness and kurtosis, confirming that distribution met the assumption of normality. Lastly, a multivariate analysis of variance was performed using the general linear model. The results of the descriptive and multivariate analyses are presented below.

4.1. Descriptive analysis

In this section we present the results obtained from a descriptive analysis of the discontinuous variables corresponding to the questions: *what?*, *where?*, *why?*, *what for?*

Firstly, in response to *what?*, over 90% of young people reported using YouTube and personal social networks and 80% used Google Maps, followed by blogs (66%), Skype (49%), wikis (48%), Google Docs (38%), other Web 2.0 tools (13%), Flickr (10%) and Moodle (6%). They also reported having a high level of functional knowledge of around 90% for personal or general social networks and for YouTube in particular, both of which are linked to entertainment. However, the students surveyed reported having less knowledge of the Web 2.0 tools which are more linked to educational contexts, such as Moodle, wikis or Google Docs. Secondly, regarding the category *where?*, Web 2.0 tools were mainly used in the home. Thus, 73.4% of respondents used YouTube at home [e.g., $F_{Home} = 556$ versus $F_{EducationalCentre} = 7$; $p < .001$], 52.4%

Google Maps [e.g., $F_{Home} = 397$ versus $F_{EducationalCentre} = 39$; $p < .001$] and 30% blogs [e.g., $F_{Home} = 227$ versus $F_{EducationalCentre} = 84$; $p < .001$]. Thirdly, regarding *why?*, the tools analysed were used for entertainment purposes rather than because friends had recommended them or for educational reasons. Thus, 35.5% of students reported that they had begun using wikis for fun [e.g., $F_{Fun} = 269$ versus $F_{Recommendation} = 33$; $p < .001$], 24.2% blogs [e.g., $F_{Fun} = 183$ versus $F_{Educational} = 136$; $p < .001$] and 21.5% Google Docs [e.g., $F_{Fun} = 163$ versus $F_{Recommendation} = 24$; $p < .001$] and Google Maps [e.g., $F_{Fun} = 163$ versus $F_{Educational} = 151$; $p < .001$]. Fourthly and lastly, in relation to *what for?*, they used the Web 2.0 tools analysed for various purposes (see Table 3).

4.2. Multivariate linear analysis (GLM)

In the multivariate analyses, all the Hewe2.0 variables explored through Likert-type scales were used as between-subject factors, for example: *general knowledge about wikis* (Very low, Low, Medium, High and Very high), while *educational level*, *age* and *sex* were used as grouping variables. Application of the GLM yielded statistically significant multivariate differences with a large effect size for *educational level* [$\lambda Wilks = .190$, $F_{(3069,169, 685)} = 1.766$; $p \leq .001$, $\eta^2 = .283$] Tests for between-subject effects yielded statistically significant differences (see Table 4).

In addition, application of the GLM yielded statistically significant multivariate differences with a large effect size for *age* [$\lambda Wilks = .168$, $F_{(3678,613, 822)} = 1.551$; $p \leq .001$, $\eta^2 = .257$] Significant differences were also observed when considering *age* as the grouping variable (see Table 6).

Moreover, application of the GLM yielded statistically significant multivariate differences with a large effect size for *sex* [$\lambda Wilks = .751$, $F_{(137, 617)} = 1.490$; $p \leq .001$, $\eta^2 = .249$] (see Table 6). Thus the tests for between-subject effects also showed statistically significant differences for several variables (see Table 8).

Thus, in the post hoc analyses and comparison of the means for each category (*What?*, *How?*, *When?*) and each grouping variable *educational level*, *age* and *sex*, statistically significant differences were observed (see Tables 5, 7 and 8).

For the category *what?* by educational level, statistically significant differences were obtained when comparing *information about Web 2.0* and *information about Web 2.0 tools* [e.g., $M_{3rd\ CSE} = 1.82$ versus $M_{VET} = 2.29$; $p = .002$] possessed by students in their 3rd year of CSE compared to vocational training, in favour of the latter. In addition, statistically significant differences were observed when comparing the *training received* by students in their 1st year of compulsory secondary education with that received by those in their 1st year of non-compulsory secondary education as regards *Google Maps* and *YouTube* [e.g., $M_{1st\ CSE} = 1.01$ versus $M_{1st\ non-CSE} = 1.09$; $p = .025$], and in the *general knowledge* they possessed about *wikis and blogs* in favour of students in their 1st year of non-compulsory secondary education [e.g., *Blogs*, $M_{1st\ CSE} = 1.49$ versus $M_{1st\ non-CSE} = 1.81$; $p < .001$]. These differences were partially maintained when comparing the rest of the CSE years (2nd, 3rd and 4th) with the 1st year of non-CSE as regards *training received about Google Maps* and *general knowledge about Wikis* in favour of 1st year non-CSE students [e.g., *GMaps*, $M_{2nd\ CSE} = 1.00$ versus $M_{1st\ non-CSE} = 1.07$; $p < .001$]; [e.g., *Wikis*, $M_{3rd\ CSE} = 1.32$ versus $M_{1st\ non-CSE} = 1.69$; $p = .004$]. When considering age, significant differences were also observed between the responses of students aged 13 and those aged 14 in terms of *functional knowledge about wikis*, to the detriment of the latter [e.g., $M_{13yrs} = 2.39$ versus $M_{14yrs} = 1.76$; $p < .001$]. However, the opposite trend was observed when comparing the variable *functional knowledge about blogs* between students aged 12, 13 and 14 and those aged 16 and 17 [e.g., $M_{12yrs} = 2.00$ versus $M_{16yrs} = 2.99$; $p < .001$], [e.g., $M_{13yrs} = 2.40$ versus $M_{16yrs} = 2.99$; $p < .001$] and [e.g., $M_{14yrs} = 2.31$ versus $M_{17yrs} = 3.00$; $p < .001$] and the variable *functional knowledge of Google Docs* between students aged 15 and 16 [e.g., $M_{15yrs} = 1.76$ versus $M_{16yrs} = 2.29$; $p < .001$]. When considering sex as a grouping variable, significant differences were also found for the variables *training received about Google Maps* [e.g., $M_{Males} = 1.03$ versus $M_{Females} = 1.00$; $p = .004$], *general knowledge about Google Docs*, *Google Reader* and *Moodle* [e.g., *Moodle*, $M_{Males} = 1.07$ versus $M_{Females} = 1.04$; $p = .036$], and *functional knowledge about the Google tools analysed (Docs, Reader and Maps)* in favour of males [e.g., *Google Reader*, $M_{Males} = 1.94$ versus $M_{Females} = 1.76$; $p = .030$].

In relation to the category *how?*, statistically significant differences were observed between 1st and 4th year CSE students in favour of the former when comparing the *degree of difficulty of use of personal social networks* and *YouTube* [e.g., *YouTube*, $M_{1st\ CSE} = 2.57$ versus $M_{4th\ CSE} = 2.18$; $p < .001$]. Moreover, these differences were maintained and increased when comparing the use of *Flickr* between 4th year CSE students and 1st year non-CSE students to the detriment of 1st year non-CSE students [e.g., *Flickr*, $M_{4th\ CSE} = 2.63$ versus $M_{1st\ non-CSE} = 2.05$; $p = .002$]. Similar differences were observed when comparing the 1st year of non-compulsory secondary education with vocational education and training in the degree of difficulty of social networks. In terms of the variable *personal satisfaction with Blogs*, *Google Docs*, *Google Reader*, *Google Maps* and *personal social networks*, it was observed that most of the statistically significant differences were obtained when comparing the 2nd year of CSE with Vocational Education and Training, in favour of the latter [e.g., *Blogs*, $M_{2nd\ CSE} = 1.89$ versus $M_{VET} = 2.47$; $p < .001$]. The last two significant differences were maintained when comparing 3rd and 4th years of CSE with Vocational Education and Training [e.g., *Google Maps*, $M_{3rd\ CSE} = 2.32$ versus $M_{VET} = 3.08$; $p < .001$]. Moreover, this trend was also observed when considering the variable *degree of preference*.

Table 3
Reason for using the different Web 2.0 tools analysed.

Reason	Tool	%	Frequency	Probability (Pearson's coefficient)
Education	Wikis	34.6	262	<.001
	Blogs	17.4	132	<.001
	Google Docs	19.3	146	<.001
	Google Reader	11.2	85	<.001
	Google Maps	28.1	213	<.001
Social	Personal social networks	61.3	464	<.001
Entertainment	YouTube	48.6	368	<.001

Note. Only variables that show statistically significant results are displayed ($p < .05$).

Table 4
Test for between-subject effects, considering educational level as the grouping variable.

Educational level	1st year of CSE (7th)		2nd year of CSE (8th)		3rd year of CSE (9th)		4th year of CSE (10th)		1st year of non-CSE (11th)		VET		F	p	η^2
	M	σ	M	σ	M	σ	M	σ	M	σ	M	σ			
Information about Web 2.0	1.94	1.002	1.96	.948	1.93	.847	2.21	.860	2.15	.918	2.38	1.062	4.064	.001	.026
Information about Web 2.0 tools	1.88	.993	1.9	.940	1.82	.796	2.04	.861	2.12	.884	2.29	1.047	3.761	.002	.024
Training received about Wikis	1.66	.942	1.73	.897	1.61	.801	1.88	.882	1.98	.991	1.84	.913	3.065	.01	.02
Training received about Blogs	1.01	.085	1.00	.000	1.02	.143	1.10	.300	1.08	.272	1.10	.296	6.329	<.001	.041
Training received about Google Docs	1.00	.000	1.00	.000	1.00	.000	1.01	.084	1.04	.207	1.04	.200	4.232	.001	.027
Training received about Google Maps	1.01	.119	1.00	.000	1.00	.000	1.01	.119	1.07	.258	1.03	.164	4.706	<.001	.03
Training received about YouTube	1.01	.085	1.03	.165	1.03	.164	1.05	.218	1.09	.285	1.04	.200	2.575	.025	.017
General knowledge about Wikis	1.45	.499	1.41	.494	1.32	.470	1.51	.502	1.69	.464	1.60	.493	8.861	<.001	.056
General knowledge about Blogs	1.49	.502	1.52	.501	1.72	.452	1.82	.383	1.81	.398	1.66	.478	13.297	<.001	.082
General knowledge about Moodle	1.09	.291	1.05	.217	1.03	.183	1.01	.084	1.04	.186	1.19	.396	7.564	<.001	.048
General knowledge about Google Docs	1.29	.457	1.24	.431	1.35	.479	1.43	.496	1.52	.502	1.56	.500	7.775	<.001	.049
General knowledge about Google Reader	1.28	.450	1.22	.418	1.19	.391	1.17	.377	1.35	.480	1.40	.493	4.877	<.001	.032
General knowledge about Google Maps	1.73	.446	1.74	.439	1.74	.437	1.85	.357	1.86	.350	1.89	.315	3.642	.003	.024
General knowledge about Skype	1.35	.479	1.45	.499	1.46	.500	1.48	.501	1.65	.480	1.68	.468	7.25	<.001	.046
General knowledge about Flickr	1.09	.281	1.10	.298	1.06	.242	1.08	.269	1.14	.350	1.21	.407	2.894	.013	.019
Functional knowledge about Wikis	2.31	1.383	1.96	1.168	1.93	1.165	2.04	1.155	2.55	1.165	2.44	1.236	5.612	<.001	.036
Functional knowledge about Blogs	2.29	1.159	2.26	1.173	2.71	1.099	2.93	1.012	2.97	1.153	2.55	1.068	10.209	<.001	.064
Functional knowledge about Moodle	1.53	.877	1.32	.678	1.26	.565	1.21	.518	1.14	.398	1.55	.972	6.833	<.001	.044
Functional knowledge about Google Docs	1.86	1.094	1.68	1.011	1.97	1.198	2.06	1.184	2.24	1.167	2.26	1.093	4.591	<.001	.03
Functional knowledge about Google Reader	2.04	1.211	1.73	1.126	1.80	1.058	1.56	.857	2.00	1.077	2.21	1.236	5.241	<.001	.034
Functional knowledge about Google Maps	3.14	1.331	2.84	1.237	3.10	1.194	3.11	1.087	3.18	1.054	3.44	1.080	2.719	.019	.018
Functional knowledge about Skype	2.24	1.437	2.23	1.418	2.34	1.335	2.21	1.279	2.66	1.300	2.64	1.348	2.632	.023	.017
Frequency of use of Wikis	1.90	1.140	1.76	1.121	1.76	1.101	1.82	1.046	2.19	1.133	2.41	1.451	5.394	<.001	.035
Frequency of use of Blogs	1.74	1.015	1.83	1.044	2.23	1.286	2.23	1.017	2.12	1.036	2.40	1.331	6.408	<.001	.041
Frequency of use of Moodle	1.36	.857	1.25	.726	1.18	.597	1.10	.384	1.18	.684	1.33	.708	2.718	.019	.018
Frequency of use of Google Docs	1.59	.996	1.45	.962	1.64	1.005	1.69	.979	1.65	.884	2.00	1.143	3.104	.009	.02
Frequency of use of Google Reader	1.59	.996	1.50	.992	1.42	.770	1.37	.741	1.49	.745	1.99	1.264	5.179	<.001	.033
Frequency of use of Google Maps	2.31	1.126	2.06	.977	2.12	.857	2.12	.824	2.12	.788	2.81	1.036	7.784	<.001	.049
Frequency of use of Skype	1.84	1.339	1.76	1.119	1.86	1.202	1.76	1.088	1.88	1.078	2.29	1.359	2.291	.044	.015
Frequency of use of YouTube	3.89	1.230	4.02	1.135	4.33	.906	4.21	.932	4.31	.856	4.22	.975	3.956	.002	.026
Daily frequency of use of Wikis	1.40	.708	1.19	.427	1.28	.493	1.27	.476	1.44	.566	1.51	.801	5.02	<.001	.032
Daily frequency of use of Blogs	1.34	.665	1.23	.439	1.52	.657	1.52	.581	1.45	.551	1.66	.946	6.52	<.001	.042
Daily frequency of use of Moodle	1.16	.626	1.08	.412	1.04	.200	1.01	.119	1.02	.132	1.19	.700	3.629	.003	.024
Daily frequency of use of Google Docs	1.25	.636	1.13	.426	1.28	.523	1.26	.569	1.22	.458	1.51	.835	4.528	<.001	.029
Daily frequency of use of Google Reader	1.30	.717	1.15	.393	1.12	.323	1.12	.439	1.18	.406	1.47	.765	6.807	<.001	.043
Daily frequency of use of Google Maps	1.61	.793	1.38	.604	1.51	.515	1.47	.671	1.39	.508	1.93	.822	8.649	<.001	.055
Daily frequency of use of Skype	1.43	.907	1.36	.716	1.36	.779	1.33	.662	1.47	.877	1.84	1.214	4.258	.001	.028

Table 4 (continued)

Educational level	1st year of CSE (7th)		2nd year of CSE (8th)		3rd year of CSE (9th)		4th year of CSE (10th)		1st year of non-CSE (11th)		VET		F	p	η^2
	M	σ	M	σ	M	σ	M	σ	M	σ	M	σ			
Degree of personal satisfaction with Wikis	1.99	1.278	1.87	1.244	1.92	1.164	1.90	1.136	2.47	1.240	2.34	1.261	4.949	<.001	.032
Degree of personal satisfaction with Blogs	1.81	1.162	1.89	1.205	2.30	1.151	2.37	1.149	2.38	1.160	2.47	1.237	7.174	<.001	.046
Degree of personal satisfaction with Moodle	1.46	.917	1.34	.815	1.25	.629	1.22	.599	1.28	.647	1.49	.835	2.674	.021	.018
Degree of personal satisfaction with Google Docs	1.66	1.084	1.46	.925	1.67	1.028	1.58	.911	1.88	1.155	2.04	1.073	4.292	.001	.028
Degree of personal satisfaction with Google Reader	1.71	1.146	1.48	.970	1.44	.824	1.45	.858	1.64	.936	2.10	1.215	5.927	<.001	.038
Degree of personal satisfaction with Google Maps	2.46	1.288	2.21	1.288	2.32	1.079	2.33	1.106	2.50	1.196	3.08	1.164	5.848	<.001	.038
Degree of personal satisfaction with Skype	2.03	1.449	2.02	1.335	1.92	1.244	1.96	1.270	2.32	1.403	2.55	1.482	3.19	.007	.021
Degree of personal satisfaction with social networks	4.02	1.466	4.15	1.312	4.31	1.057	4.22	1.056	4.28	.921	3.30	1.497	8.048	<.001	.051
Degree of preference for Wikis	2.62	1.272	2.56	1.225	2.57	1.129	2.62	1.080	3.08	.956	3.08	1.064	5.278	<.001	.034
Degree of preference for Blogs	2.57	1.259	2.59	1.296	2.92	1.170	3.06	.987	3.12	.933	3.15	1.063	6.402	<.001	.041
Degree of preference for Google Docs	2.42	1.287	2.29	1.248	2.46	1.112	2.43	1.002	2.71	1.006	2.78	1.031	2.911	.013	.019
Degree of preference for Google Reader	2.46	1.277	2.28	1.253	2.31	1.064	2.35	1.05	2.56	.935	2.86	1.182	3.373	.005	.022
Degree of preference for Google Maps	3.04	1.255	2.81	1.163	3.1	.948	3.09	1.025	3.21	.959	3.66	1.044	6.322	<.001	.040
Degree of preference for Skype	2.6	1.453	2.62	1.326	2.71	1.236	2.79	1.285	3.18	1.151	3.12	1.269	4.205	.001	.027
Degree of preference for YouTube	4.36	.997	4.25	1.091	4.57	.771	4.5	.683	4.44	.719	4.3	.758	2.690	.020	.018
Degree of preference for social networks	4.29	1.225	4.38	1.162	4.53	.906	4.52	.789	4.49	.836	3.7	1.34	7.848	<.001	.050
Degree of difficulty of Wikis	2.03	1.235	2.29	1.32	2.22	1.205	2.16	1.117	1.88	1.036	2.32	1.141	2.254	.047	.015
Degree of difficulty of Blogs	2.12	1.208	2.24	1.252	2.25	1.058	2.17	1.035	1.83	.972	2.15	1.076	2.295	.044	.015
Degree of difficulty of Moodle	2.18	1.248	2.28	1.308	2.47	1.214	2.58	1.26	2.16	1.229	2.55	1.191	2.739	.018	.018
Degree of difficulty of Flickr	2.24	1.267	2.36	1.387	2.54	1.225	2.63	1.284	2.05	1.156	2.59	1.289	3.800	.002	.025
Degree of difficulty of YouTube	2.57	1.523	2.46	1.457	2.18	1.427	1.92	1.282	2.62	1.749	2.07	1.251	4.826	<.001	.031
Degree of difficulty of social networks	2.62	1.602	2.5	1.542	2.03	1.376	1.94	1.275	2.61	1.75	2.03	1.269	5.876	<.001	.038
Intentions regarding future use of Wikis	3.56	1.56	3.37	1.541	3.48	1.486	3.26	1.566	4.04	1.191	4.01	1.369	5.52	<.001	.036
Intentions regarding future use of Blogs	3.43	1.513	3.22	1.484	3.59	1.352	3.6	1.275	3.72	1.306	3.79	1.354	2.603	.024	.017
Intentions regarding future use of Moodle	2.98	1.505	2.64	1.442	2.77	1.296	2.46	1.198	2.84	1.229	2.74	1.444	2.366	.038	.016
Intentions regarding future use of Google Docs	3.09	1.52	2.8	1.46	3.22	1.382	3.1	1.311	3.53	1.218	3.58	1.374	4.98	<.001	.032
Intentions regarding future use of Google Reader	3.14	1.518	2.85	1.416	3.12	1.336	2.87	1.258	3.35	1.217	3.62	1.36	4.708	<.001	.03
Intentions regarding future use of Google Maps	3.81	1.398	3.52	1.428	3.89	1.22	3.8	1.22	4.08	1.028	4.42	.999	5.839	<.001	.038
Intentions regarding future use of Skype	3.26	1.562	3.17	1.477	3.34	1.361	3.21	1.413	3.81	1.169	3.85	1.421	4.986	<.001	.032

Note. Only variables that show statistically significant results are displayed ($p < .05$); η^2 (eta-squared statistic) = Estimates of effect size. The Cohen (1988) rule states that = .01–.06 (small effect); >.06–.14 (medium effect); >.14 (large effect).

Table 5
Post hoc according to educational level.

Educational level	1st year CSE vs. 3rd year CSE	1st year CSE vs. 4th year CSE	1st year CSE vs. 1st year non-CSE	1st year CSE vs. VET	2nd year CSE vs. 3rd year CSE	2nd year CSE vs. 4th year CSE	2nd year CSE vs. 1st year non-CSE	2nd year CSE vs. VET	3rd year CSE vs. 4th year CSE	3rd year CSE vs. 1st year non-CSE	3rd year CSE vs. VET	4th year CSE vs. 1st year non-CSE	4th year CSE vs. VET	1st year non-CSE vs. VET
Information about Web 2.0	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.04	n.s.	n.s.	n.s.
Information about Web 2.0 tools	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.027	n.s.	n.s.	n.s.
Training received about Wikis	n.s.	.012	n.s.	n.s.	n.s.	.03	n.s.	n.s.	.029	n.s.	n.s.	n.s.	n.s.	n.s.
Training received about Blogs	n.s.	.014	n.s.	n.s.	n.s.	.005	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Training received about Google Maps	n.s.	n.s.	.048	n.s.	n.s.	n.s.	.003	n.s.	n.s.	.003	n.s.	.047	n.s.	n.s.
Training received about YouTube	n.s.	n.s.	.047	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
General knowledge about Wikis	n.s.	n.s.	.01	n.s.	n.s.	n.s.	.001	n.s.	n.s.	<.001	.008	n.s.	n.s.	n.s.
General knowledge about Blogs	.003	<.001	<.001	n.s.	.017	.00	<.001	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
General knowledge about Moodle	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.002	n.s.	n.s.	<.001	n.s.	<.001	.001
General knowledge about Google Docs	n.s.	n.s.	.013	.009	n.s.	n.s.	.001	.001	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
General knowledge about Google Reader	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.04	.044	.02	n.s.	n.s.
General knowledge about Skype	n.s.	n.s.	<.001	<.001	n.s.	n.s.	n.s.	.046	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Functional knowledge about Wikis	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.011	n.s.	n.s.	.006	n.s.	.048	n.s.	n.s.
Functional knowledge about Blogs	n.s.	<.001	<.001	n.s.	.038	<.001	<.001	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Functional knowledge about Moodle	n.s.	.009	.001	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.038	.007
Functional knowledge about Google Docs	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.009	.026	n.s.	n.s.	n.s.	n.s.	n.s.
Functional knowledge about Google Reader	n.s.	.018	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.005	n.s.
Functional knowledge about Google Maps	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.03	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Intentions regarding future use of Wikis	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.023	n.s.	n.s.	n.s.	n.s.	.004	.03	n.s.
Intentions regarding future use of Google Docs	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.004	.011	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Intentions regarding future use of Google Reader	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.009	n.s.	n.s.	n.s.	n.s.	.014	n.s.
Intentions regarding future use of Google Maps	n.s.	n.s.	n.s.	.041	n.s.	n.s.	.031	<.001	n.s.	n.s.	n.s.	n.s.	.037	n.s.
Intentions regarding future use of Skype	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.022	.048	n.s.	n.s.	n.s.	.046	n.s.	n.s.
Degree of difficulty of Flickr	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.025	n.s.	n.s.
Degree of difficulty of YouTube	n.s.	.017	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.015	n.s.	n.s.

Table 5 (continued)

Educational level	1st year CSE vs. 3rd year CSE	1st year CSE vs. 4th year CSE	1st year CSE vs. 1st year non-CSE	1st year CSE vs. VET	2nd year CSE vs. 3rd year CSE	2nd year CSE vs. 4th year CSE	2nd year CSE vs. 1st year non-CSE	2nd year CSE vs. VET	3rd year CSE vs. 4th year CSE	3rd year CSE vs. 1st year non-CSE	3rd year CSE vs. VET	4th year CSE vs. 1st year non-CSE	4th year CSE vs. VET	1st year non-CSE vs. VET
Degree of difficulty of social networks	n.s.	.013	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.028	n.s.	n.s.
Degree of personal satisfaction obtained from the use of Wikis	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.01	n.s.	n.s.	n.s.	.024	n.s.	.018
Degree of personal satisfaction obtained from the use of Blogs	.027	.007	.011	.01	n.s.	.037	n.s.	.04	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Degree of personal satisfaction obtained from the use of Google Docs	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.002	n.s.	n.s.	.001	n.s.	.001	n.s.
Degree of personal satisfaction obtained from the use of Google Reader	n.s.	n.s.	n.s.	.022	n.s.	n.s.	n.s.	<.001	n.s.	n.s.	.002	n.s.	.002	n.s.
Degree of personal satisfaction obtained from the use of Google Maps	n.s.	n.s.	n.s.	.005	n.s.	n.s.	n.s.	<.001	n.s.	n.s.	<.001	n.s.	<.001	<.001
Degree of preference for Wikis	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.022	n.s.	n.s.	.024	n.s.	n.s.	n.s.	n.s.
Degree of preference for Blogs	n.s.	.023	.015	.03	n.s.	.035	.022	.043	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Degree of preference for Google Reader	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.027	n.s.	n.s.	.043	n.s.	n.s.	n.s.
Degree of preference for Google Maps	n.s.	n.s.	n.s.	.007	n.s.	n.s.	n.s.	<.001	n.s.	n.s.	.026	n.s.	.019	n.s.
Degree of preference for Skype	n.s.	n.s.	.031	n.s.	n.s.	n.s.	.038	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Degree of preference for social networks	n.s.	n.s.	n.s.	.01	n.s.	n.s.	n.s.	.001	n.s.	n.s.	<.001	n.s.	<.001	<.001
Frequency of use of Wikis	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.008	n.s.	n.s.	.008	n.s.	.024	n.s.
Frequency of use of Blogs	.014	.019	n.s.	.005	n.s.	n.s.	n.s.	.027	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Frequency of use of Google Docs	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.012	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Frequency of use of Google Reader	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.016	n.s.	n.s.	.002	n.s.	.001	.02
Frequency of use of Google Maps	n.s.	n.s.	n.s.	.021	n.s.	n.s.	n.s.	<.001	n.s.	n.s.	<.001	n.s.	<.001	<.001
Frequency of use of YouTube	.02	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Daily frequency of use of Wikis	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.03	.011	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Daily frequency of use of Blogs	n.s.	n.s.	n.s.	.036	.008	.012	n.s.	.001	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Daily frequency of use of Google Docs	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.001	n.s.	n.s.	n.s.	n.s.	n.s.	.047
Daily frequency of use of Google Reader	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.002	n.s.	n.s.	<.001	n.s.	.001	.015
Daily frequency of use of Google Maps	n.s.	n.s.	n.s.	.037	n.s.	n.s.	n.s.	<.001	n.s.	n.s.	.001	n.s.	<.001	<.001
Daily frequency of use of Skype	n.s.	n.s.	n.s.	.047	n.s.	n.s.	n.s.	.008	n.s.	n.s.	.008	n.s.	.004	n.s.

Note. Only variables that show statistically significant results are displayed ($p < .05$).

Table 6
Test for between-subject effects, considering age as the grouping variable.

AGE	12		13		14		15		16		17		18 and older		F	p	η^2
	M	σ	M	σ	M	σ	M	σ	M	σ	M	σ	M	σ			
Information about Web 2.0	1.84	.986	2.11	.956	1.64	.790	2.11	.956	2.01	.877	2.31	.831	2.32	1.008	6.071	<.001	.046
Information about Web 2.0 tools	1.76	.925	2.01	.983	1.6	.781	1.91	.882	1.93	.847	2.31	.815	2.27	1.008	6.848	<.001	.052
Training received	1.53	.844	1.81	.939	1.45	.787	1.73	.913	1.78	.844	2.14	.983	1.89	.891	5.048	<.001	.039
Training received about Wikis	1.00	.000	1.01	.082	1.00	.000	1.02	.154	1.06	.244	1.06	.248	1.05	.220	2.767	.011	.022
Training received about Blogs	1.00	.000	1.00	.000	1.00	.000	1.04	.202	1.10	.304	1.09	.289	1.07	.258	4.900	<.001	.038
Training received about Google Docs	1.00	.000	1.00	.000	1.00	.000	1.01	.078	1.00	.000	1.05	.223	1.04	.198	3.877	.001	.030
Training received about Google Maps	1.02	.143	1.00	.000	1.00	.000	1.01	.078	1.02	.152	1.09	.289	1.02	.141	4.850	<.001	.037
Training received about YouTube	1.00	.000	1.02	.140	1.01	.107	1.02	.154	1.06	.244	1.12	.323	1.04	.198	3.549	.002	.028
General knowledge about Wikis	1.27	.487	1.51	.501	1.33	.473	1.41	.493	1.56	.498	1.52	.503	1.62	.489	4.404	<.001	.034
General knowledge about Blogs	1.47	.504	1.53	.501	1.53	.502	1.71	.456	1.83	.380	1.79	.408	1.7	.462	8.911	<.001	.067
General knowledge about Moodle	1.08	.277	1.07	.250	1.06	.233	1.01	.110	1.05	.213	1.01	.114	1.16	.370	5.071	<.001	.039
General knowledge about Google Docs	1.29	.456	1.26	.440	1.28	.454	1.30	.458	1.54	.501	1.47	.502	1.57	.498	8.706	<.001	.065
General knowledge about Google Reader	1.24	.434	1.25	.433	1.23	.421	1.17	.377	1.30	.460	1.26	.441	1.36	.483	2.404	.026	.019
General knowledge about Google Maps	1.57	.500	1.77	.420	1.75	.435	1.79	.406	1.83	.380	1.82	.388	1.9	.303	4.070	.001	.032
General knowledge about Skype	1.27	.446	1.46	.500	1.4	.492	1.52	.501	1.49	.502	1.53	.502	1.66	.477	4.341	<.001	.034
General knowledge about Flickr	1.02	.143	1.11	.318	1.08	.272	1.05	.228	1.10	.304	1.16	.365	1.18	.388	2.982	.007	.023
Functional knowledge about Wikis	1.96	1.258	2.39	1.320	1.76	1.194	1.95	1.128	2.23	1.149	2.43	1.271	2.37	1.217	4.789	<.001	.037
Functional knowledge about Blogs	2.00	1.099	2.40	1.147	2.31	1.216	2.65	1.091	2.99	1.050	3.00	1.051	2.64	1.147	8.525	<.001	.064
Functional knowledge about Moodle	1.27	.569	1.50	.817	1.28	.677	1.25	.591	1.19	.484	1.23	.583	1.47	.896	3.941	.001	.031
Functional knowledge about Google Docs	1.69	1.004	1.84	1.056	1.83	1.167	1.76	1.076	2.29	1.242	2.19	1.159	2.26	1.121	5.350	<.001	.041
Functional knowledge about Google Maps	2.67	1.420	3.21	1.246	2.85	1.218	3.18	1.065	3.18	1.065	3.18	1.121	3.37	1.112	3.185	.004	.025
Functional knowledge about Skype	1.96	1.290	2.51	1.487	1.95	1.259	2.28	1.329	2.34	1.286	2.61	1.299	2.60	1.399	3.393	.003	.026
Functional knowledge about Flickr	1.53	1.023	1.63	.951	1.38	.748	1.32	.724	1.38	.835	1.53	.995	1.44	.872	2.188	.042	.017
Functional knowledge about YouTube	4.00	1.208	4.47	.825	4.30	1.030	4.32	.869	4.35	.801	4.42	.750	4.01	1.015	3.722	.001	.029
Frequency of use of Wikis	1.57	.979	2.01	1.173	1.68	1.023	1.81	1.152	1.90	1.038	1.92	.984	2.41	1.464	4.895	<.001	.038
Frequency of use of Blogs	1.47	.739	1.88	1.080	1.91	1.110	2.15	1.228	2.09	1.000	2.29	.998	2.41	1.317	5.621	<.001	.043
Frequency of use of Moodle	1.27	.670	1.38	.924	1.20	.628	1.13	.483	1.20	.667	1.14	.531	1.25	.628	2.212	.040	.017
Frequency of use of Google Docs	1.37	.727	1.61	1.060	1.50	.910	1.55	.984	1.70	.987	1.64	.826	2.02	1.134	3.709	.001	.029
Frequency of use of Google Reader	1.29	.645	1.69	1.112	1.40	.736	1.35	.770	1.50	.844	1.43	.677	1.88	1.189	5.424	<.001	.042
Frequency of use of Google Maps	2.08	1.152	2.31	1.062	2.05	.958	2.11	.819	2.13	.864	2.06	.749	2.67	1.040	5.526	<.001	.042
Frequency of use of Skype	1.61	1.077	1.99	1.368	1.57	.992	1.90	1.208	1.73	.988	1.79	1.08	2.20	1.363	3.244	.004	.025
Frequency of use of YouTube	3.67	1.281	4.00	1.105	4.17	1.127	4.25	.972	4.25	.917	4.32	.850	4.19	.997	3.175	.004	.025
Daily frequency of use of Wikis	1.18	.391	1.24	.429	1.41	.737	1.47	.649	1.52	.602	1.52	.528	1.65	.884	6.338	<.001	.048
Daily frequency of use of Moodle	1.06	.242	1.09	.454	1.17	.698	1.03	.204	1.02	.125	1.03	.160	1.16	.618	2.576	.018	.020
Frequency of use of Google Docs	1.10	.306	1.21	.509	1.27	.707	1.21	.462	1.30	.582	1.18	.388	1.47	.812	3.819	.001	.030
Frequency of use of Google Reader	1.10	.306	1.25	.555	1.23	.690	1.09	.309	1.18	.510	1.17	.377	1.38	.696	3.951	.001	.031
Frequency of use of Google Maps	1.43	.612	1.52	.663	1.51	.844	1.48	.536	1.45	.626	1.44	.596	1.79	.773	3.394	.003	.027
Frequency of use of Skype	1.18	.391	1.49	.895	1.25	.699	1.41	.819	1.33	.655	1.39	.728	1.81	1.226	5.237	<.001	.040
Frequency of use of YouTube	2.04	.576	2.57	1.051	2.61	1.011	2.58	.963	2.61	1.016	2.53	1.008	2.69	1.046	6.639	.015	.021
Degree of personal satisfaction obtained from the use of Wikis	1.86	1.275	2.04	1.279	1.94	1.325	1.81	1.098	2.13	1.184	2.26	1.229	2.34	1.263	2.831	.010	.022
Degree of personal satisfaction obtained from the use of Blogs	1.67	1.162	1.85	1.137	2.16	1.380	2.12	1.123	2.44	1.081	2.49	1.143	2.41	1.245	6.169	<.001	.047
Degree of personal satisfaction obtained from the use of Google Docs	1.53	.981	1.61	1.055	1.63	1.043	1.50	.908	1.76	1.004	1.81	1.124	2.01	1.120	3.199	.004	.025
Degree of personal satisfaction obtained from the use of Google Reader	1.57	1.021	1.65	1.130	1.55	1.016	1.37	.734	1.60	.928	1.57	.938	1.96	1.169	3.807	.001	.030
Degree of personal satisfaction obtained from the use of Google Maps	2.08	1.222	2.41	1.316	2.42	1.275	2.24	1.122	2.38	1.069	2.64	1.180	2.85	1.215	3.814	.001	.030
Degree of personal satisfaction obtained from the use of Skype	1.84	1.280	2.16	1.466	1.78	1.254	1.98	1.273	2.13	1.351	2.13	1.291	2.46	1.480	2.582	.018	.020
Degree of preference for Wikis	2.35	1.217	2.64	1.217	2.63	1.225	2.62	1.155	2.78	1.038	2.94	1.043	2.97	1.120	2.589	.017	.020
Degree of preference for Blogs	2.37	1.202	2.54	1.240	2.80	1.340	2.92	1.150	3.12	.931	3.19	.889	3.05	1.119	6.300	<.001	.048
Degree of preference for Google Docs	2.37	1.286	2.31	1.226	2.35	1.241	2.44	1.133	2.57	1.005	2.64	1.038	2.77	1.028	2.313	.032	.018
Degree of preference for Google Maps	2.73	1.238	2.99	1.226	2.93	1.172	3.09	.999	3.08	.948	3.32	.895	3.48	1.110	4.211	<.001	.033
Degree of preference for Skype	2.29	1.242	2.75	1.447	2.34	1.268	2.85	1.284	2.90	1.220	3.05	1.180	3.10	1.266	4.739	<.001	.037
Degree of preference for YouTube	4.27	1.016	4.43	.901	4.18	1.189	4.48	.816	4.56	.650	4.48	.771	4.30	.749	2.453	.023	.019
Degree of difficulty of YouTube	2.90	1.489	2.36	1.434	2.30	1.495	2.10	1.385	2.44	1.660	2.29	1.613	2.18	1.273	2.198	.041	.017
Intentions regarding future use of Wikis	3.08	1.566	3.53	1.600	3.61	1.442	3.41	1.506	3.63	1.435	3.74	1.427	3.90	1.411	2.250	.037	.018
Intentions regarding future use of Blogs	2.96	1.554	3.37	1.513	3.49	1.438	3.50	1.351	3.72	1.266	3.75	1.205	3.73	1.391	2.777	.011	.022
Intentions regarding future use of Google Docs	2.92	1.512	2.87	1.540	3.08	1.383	3.18	1.367	3.30	1.341	3.42	1.271	3.49	1.312	2.988	.007	.023
Intentions regarding future use of Google Maps	3.43	1.458	3.66	1.487	3.85	1.237	3.88	1.219	3.94	1.129	4.08	1.036	4.14	1.204	2.879	.009	.023
Intentions regarding future use of Skype	2.90	1.610	3.31	1.511	3.22	1.442	3.35	1.413	3.41	1.347	3.69	1.228	3.72	1.407	2.736	.012	.021

Note. Only variables that show statistically significant results are displayed ($p < .05$); η^2 (eta-squared statistic) = Estimates of effect size. The Cohen (1988) rule states that = .01–.06 (small effect); >.06–.14 (medium effect); >.14 (large effect).

Lastly, for the category *when?*, the post hoc comparisons yielded statistically significant differences between the 2nd, 3rd and 4th years of CSE and Vocational Education and Training in relation to the *frequency of use of wikis, blogs, Skype and Google Docs* in favour of vocational training students [e.g., Wikis, M_{2nd} CSE = 1.76 versus M_{VET} = 2.41; $p < .001$]; [e.g., Blogs, M_{3rd} CSE = 2.23 versus M_{VET} = 2.40; $p < .001$]; [e.g., Skype, M_{4th} CSE = 1.76 versus M_{VET} = 2.29; $p = .044$]; [e.g., Google Docs, M_{1st} non-CSE = 1.65 versus M_{VET} = 2.00; $p = .009$]. Statistically significant

Table 7
Post hoc according to age.

Age	12 vs. 15	12 vs. 16	12 vs. 17	12 vs. 18	13 vs. 14	13 vs. 16	13 vs. 17	13 vs. 18	14 vs. 15	14 vs. 16	14 vs. 17	14 vs. 18	15 vs. 16	15 vs. 17	15 vs. 18	16 vs. 18	17 vs. 18
Information about Web 2.0	n. s.	n. s.	n. s.	n. s.	.026	n. s.	n. s.	n. s.	.021	n. s.	.001	<.001	n. s.	n. s.	n. s.	n. s.	n. s.
Information about Web 2.0 tools	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	<.001	<.001	n. s.	n. s.	n. s.	n. s.	n. s.
Training received about Web 2.0 tools	n. s.	n. s.	.03	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.001	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.
Training received about Blogs	n. s.	n. s.	n. s.	n. s.	n. s.	.009	n. s.	n. s.	.044	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.
Training received about Google Maps	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.001	n. s.	n. s.	n. s.	.004	n. s.	n. s.	.002	n. s.	n. s.	n. s.
Training received about YouTube	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.042	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.
Knowledge about Wikis	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.016	n. s.	n. s.	n. s.	n. s.	n. s.
Knowledge about Moodle	n. s.	.002	.022	n. s.	n. s.	<.001	.01	n. s.	.002	.044	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.
Knowledge about Google Docs	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	<.001	.035	.007
Knowledge about Google Maps	n. s.	.027	n. s.	n. s.	.001	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.
Knowledge about Skype	n. s.	n. s.	n. s.	.002	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.048	n. s.	n. s.	n. s.	n. s.	n. s.
Functional knowledge about Wikis	n. s.	n. s.	n. s.	n. s.	.021	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.
Functional knowledge about Blogs	.044	<.001	.001	n. s.	n. s.	.004	.023	n. s.	n. s.	.003	.015	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.
Functional knowledge about Moodle	n. s.	n. s.	n. s.	n. s.	n. s.	.027	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.
Functional knowledge about Google Docs	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.015	n. s.	n. s.	n. s.
Functional knowledge about YouTube	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.02	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.
Frequency of use of Wikis	n. s.	n. s.	n. s.	.007	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.004	n. s.	n. s.	.008	n. s.	n. s.
Frequency of use of Blogs	.029	n. s.	.014	.001	n. s.	n. s.	n. s.	.034	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.
Frequency of use of Google Docs	n. s.	n. s.	n. s.	.026	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.044	n. s.	n. s.	.03	n. s.	n. s.
Frequency of use of Google Reader	n. s.	n. s.	n. s.	.03	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.041	n. s.	n. s.	.002	n. s.	n. s.
Frequency of use of Google Maps	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.003	n. s.	n. s.	.002	.006	.008
Frequency of use of Skype	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.004	n. s.	n. s.	n. s.	n. s.	n. s.
Daily frequency of use of Blogs	n. s.	n. s.	n. s.	.007	n. s.	.035	n. s.	<.001	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.
Daily frequency of use of Google Docs	n. s.	n. s.	n. s.	.029	n. s.	n. s.	n. s.	.039	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.032	n. s.
Daily frequency of use of Google Reader	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.003	n. s.	n. s.
Daily frequency of use of Google Maps	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.037	.024	n. s.
Daily frequency of use of Skype	n. s.	n. s.	n. s.	.006	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.002	n. s.	n. s.	.032	.006	n. s.
Daily frequency of use of YouTube	n. s.	n. s.	n. s.	.032	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.
Degree of personal satisfaction obtained from the use of Blogs	n. s.	.02	.024	.043	n. s.	.009	.02	.035	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.

(continued on next page)

Table 7 (continued)

Age	12 vs. 15	12 vs. 16	12 vs. 17	12 vs. 18	13 vs. 14	13 vs. 16	13 vs. 17	13 vs. 18	14 vs. 15	14 vs. 16	14 vs. 17	14 vs. 18	15 vs. 16	15 vs. 17	15 vs. 18	16 vs. 18	17 vs. 18
Degree of personal satisfaction obtained from the use of Google Docs	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.02	n. s.	n. s.
Degree of personal satisfaction obtained from the use of Google Reader	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.001	n. s.	n. s.
Degree of personal satisfaction obtained from the use of Google Maps	n. s.	n. s.	n. s.	.038	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.015	n. s.	n. s.
Degree of personal satisfaction obtained from the use of social networks	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.003	n. s.	n. s.	n. s.	.001	n. s.	n. s.	<.001	n. s.	.004
Degree of preference for Blogs	n. s.	.018	.015	n. s.	n. s.	.007	.001	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.
Degree of preference for Google Maps	n. s.	n. s.	n. s.	.016	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.
Degree of preference for Skype	n. s.	n. s.	n. s.	.043	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.014	n. s.	n. s.	n. s.	n. s.	n. s.
Degree of preference for social networks	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	.003	n. s.	n. s.	n. s.	n. s.	.026	n. s.	n. s.	.001	<.001
Degree of difficulty of social networks	.023	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.

Note. Only variables that show statistically significant results are displayed ($p < .05$).

Table 8
Test for between-subject effects, considering sex as the grouping variable.

Sex	Males		Females		F	p	η^2
	M	σ	M	σ			
Training received about Wikis	1.04	.203	1.01	.121	5.109	.024	.007
Training received about Google Docs	1.02	.137	1.00	.054	4.185	.041	.006
Training received about Google Maps	1.03	.174	1.00	.054	8.234	.004	.011
General knowledge about Moodle	1.07	.263	1.04	.193	4.393	.036	.006
General knowledge about Google Docs	1.43	.495	1.32	.468	8.707	.003	.011
General knowledge about Google Reader	1.31	.463	1.18	.388	15.953	<.001	.021
General knowledge about Flickr	1.12	.331	1.07	.262	5.270	.022	.007
Functional knowledge about Google Docs	2.06	1.185	1.89	1.081	4.039	.045	.005
Functional knowledge about Google Reader	1.94	1.136	1.76	1.056	4.711	.030	.006
Functional knowledge about Google Maps	3.21	1.199	2.98	1.160	7.062	.008	.009
Frequency of use of Wikis	2.00	1.233	1.83	1.062	4.090	.043	.005
Frequency of use of Google Docs	1.71	1.021	1.56	.955	4.475	.035	.006
Frequency of use of Google Reader	1.59	.960	1.44	.864	4.613	.032	.006
Frequency of use of Google Maps	2.34	.987	2.05	.899	17.470	<.001	.023
Daily frequency of use of Google Maps	1.58	.696	1.44	.625	7.871	.005	.010
Degree of personal satisfaction with Google Maps	2.55	1.214	2.28	1.191	9.091	.003	.012
Degree of preference for Google Maps	3.17	1.145	3.01	1.026	3.891	.049	.005
Intentions regarding future use of YouTube	4.52	1.000	4.70	.773	7.346	.007	.010

Note. Only variables that show statistically significant results are displayed ($p < .05$); η^2 (eta-squared statistic) = Estimates of effect size. The Cohen (1988) rule states that = .01–.06 (small effect); >.06–.14 (medium effect); >.14 (large effect).

differences were also observed between males and females, in favour of the former, when comparing this variable in the case of the Google tools analysed (Docs, Reader and Maps) and of wikis [e.g., Wikis, $M_{\text{Males}} = 2.00$ versus $M_{\text{Females}} = 1.83$; $p = .043$], [e.g., Google Docs, $M_{\text{Males}} = 1.71$ versus $M_{\text{Females}} = 1.56$; $p = .035$].

5. Discussion and conclusions

In recent years, Web 2.0 tools have gained considerable importance and impact in educational and social contexts. The new 2.0 model favours the consolidation of a practical space suitable for the education and socialisation of young people. These tools provide students with access to a large amount of up-to-date information, promote flexible and interactive education, facilitate student autonomy, foster personalised instruction and enable collaborative teamwork in class (Asselin & Moayeri, 2011; Bennett et al., 2012; Laru, Näykki, & Järvelä, 2012; Liawa & Huang, 2013; Timmers, Broek, & Berg, 2013; Top, 2012). Nowadays, Web 2.0 tools are increasingly being used in the classroom. Nevertheless, there remains a clear tendency to use them outside the educational context. Furthermore, it should not be forgotten that research on the use made of them in the classroom is still limited.

The results obtained in this study confirm that differential patterns existed, according to sex, educational level and age, in the use that students made of ten Web 2.0 tools (wikis, blogs, Moodle, Google Docs, Google Reader, Google Maps, Skype, Flickr, YouTube and general or personal social networks). Following a careful analysis of the questionnaire responses, and in line with the aims of the study, the conclusions of this study are presented below in the order of the five key questions concerning the use of the ten Web 2.0 tools explored: (i) *what?*, (ii) *how?*, (iii) *when and where?*, (iv) *why?*, and (v) *what for?*

Regarding the category *what?*, students reported having little information about the terms Web 2.0 and Web 2.0 tools. Nevertheless, in general the results show that the amount of information students possessed about these tools increased with educational level, thus confirming the first hypothesis. In addition, more than half of respondents said that they had not received any training in the use of these tools.

The results also show that the students possessed a high level of functional knowledge of the tools that gave them most satisfaction and which they used with most frequency. Furthermore, this functional knowledge increased with age, confirming the second hypothesis. The young people reported having greater knowledge about personal social networks than about content management systems such as Moodle. This finding coincides with the results obtained in various studies (Beresford & Cobham, 2011; Cluett & Skene, 2011; Moran, Seaman, Tinti-Kane, & Tinti-Kane, 2011; Weyant & Gardner, 2010). The results also show that young females had a greater functional knowledge of personal social networks and used them more frequently than any other Web 2.0 tool. In contrast, males had a greater functional knowledge of the Google tools analysed (Docs, Reader and Maps) and it was these that they used most frequently. This finding is consistent with the results of another recent study (Glynn, Huge, & Hoffman, 2012), and confirms the third hypothesis. Thus, females showed a greater preference for social and emotional tools, compared to males, who favoured instrumental tools.

In relation to the question *how?*, the Web 2.0 tools the young people surveyed valued most were YouTube and personal social networks. These were also the tools that the students reported providing a higher level of personal satisfaction and presenting a lower degree of difficulty. This coincides with the results of several other studies (Corrocher, 2011; Lenhart et al., 2010; Luckin et al., 2009). For the category *when and where?*, students reported using personal social networks and YouTube on a daily basis. This finding is in agreement with the results of other recent studies (Badge, Johnson, Moseley, & Cann, 2011; Burhanna, Seeholzer, & Salem, 2009; Clark, Logan, Luckin, Mee, & Oliver, 2009; Junco, 2011, 2013; Lenhart & Madden, 2007; Mazman & Usluel, 2010; Pempek, Yermolayeva, & Calvert, 2009; Wodzicki, Schwämmlein, & Moskaliuk, 2012). Blogs and wikis were used less frequently, coinciding with the results obtained by Kennedy et al. (2009) and Kennedy et al. (2007), whilst other tools such as Moodle, Google Docs and Flickr were used even less. Another finding was that Web 2.0 tools were normally used in the home, a result which coincides with the results reported by Luckin et al. (2009). Of the ten Web 2.0 tools analysed in this study, the ones which were used most frequently in the classroom were

blogs and wikis, while photo and video management systems and personal social networks received less academic attention despite their educational value.

In relation to the question *why?*, more than half of the students said that the reason they had started using Web 2.0 tools was for entertainment purposes. The second most frequently given reason was that these had been recommended by friends, relatives or acquaintances. This finding does not agree with the results obtained by Corrocher (2011). For the category *what for?*, the majority of the students reported using Web 2.0 tools for entertainment or social purposes rather than for educational reasons. This result is consistent with those presented in previous, similar studies (Asselin & Moayeri, 2011; Bosch, 2009; Cheung & Lee, 2010; Clark et al., 2009; Corrocher, 2011; Greenhow, 2011; Grunwald Associates, 2007; Joinson, 2008; Madge, Meek, Wellens, & Hooley, 2009; Mazman & Usluel, 2010; Popescu, 2010; Sheldon, 2008).

This study also presented a series of *difficulties* which should be taken into consideration. For example, the Google Docs application presented the following limitations: i) limited range of types of questions, answers and templates available, ii) absence of a logic of exclusion, iii) no question randomisation function, iv) no possibility of channelling questions and answers, v) no validation options for obligatory questions, vi) inability to set a password and vii) the data privacy policy. In general, these difficulties were overcome by researchers during design and implementation of the research, and thus did not influence the results obtained. Consequently, for future research we would recommend the use of other online applications such as SurveyMonkey, in order to minimise the limitations presented by Google Docs, facilitate use of a larger sample and enable customisation of the questionnaire. As regards sampling, this was conducted in Castile and León, an autonomous community that can be considered representative of the rest of the Spanish regions given that educational directives are imposed nationwide. Furthermore, official data published by the Spanish Ministry of Education and Culture indicate comparable educational patterns. However, similar studies are required in other Spanish regions in order to analyse specific patterns in the use of these tools.

Furthermore, technological resources at the educational centres were limited (approximately one computer for every three students and an unstable internet connection), which in some cases meant that the time required for administering the questionnaires increased from 30 to 45 min.

In summary, this study confirms that Web 2.0 tools, recently defined as collaborative applications which facilitate communication between individuals in an educational context (Sendall et al., 2008), form part of the daily lives of adolescents, as was clearly indicated in the Demos study (Green & Hannon, 2007). It also seems appropriate to affirm the need for studies that compare the effects that the different emotional, social and instructional Web 2.0 tools analysed in this study have on various psychological and educational variables related to academic performance.

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Appendix A. Hewe2.0 questionnaire.

"There are a number of questions below concerning the use that students make of Web 2.0 tools. Your participation is essential to gain a better understanding of such use in order to promote actions for improvement. Please provide all information requested and answer all questions. The aim is to obtain data for a global rather than an individual or personal statistical analysis. Ethical scientific research standards of confidentiality and professional privacy will be observed at all times. There are no right or wrong answers, only different opinions. The best answers will be those that reflect your views honestly."

Items	Responses					
I) Information and training						
1. How much information you think you have about Web 2.0?	None	Insufficient	Sufficient	A lot		
2. How information do you think you have about Web 2.0 tools?	None	Insufficient	Sufficient	A lot		
3. How much training have you received about Web 2.0 tools?	None	Insufficient	Sufficient	A lot		
4. Please name any training you have received about Web 2.0 tools.						
II) Knowledge of tools						
5. The number of Web 2.0 tools that you know is...	Very low	Low	Medium	High	Very High	
6. The level of knowledge that you believe you possess about how the Web 2.0 tools listed below function is...	Very low	Low	Medium	High	Very High	
III) Frequency						
7. How often do you use the Web 2.0 tools listed below?	Every day	Several times a week	At least once a week	Less often	Never	
8. How many times a day do you use the Web 2.0 tools listed below?	Never	1 h–2 h	2 h–3 h	3 h–4 h	More than 4 h	
IV) Place of use						
9. Where do you use the Web 2.0 tools listed below?	Nowhere	Educational Institution	Home	Educational Institution and Home	Elsewhere	
V) Reasons and purpose						
B. What was the main reason you began using the Web 2.0 tools listed below?	Recommendation from friends	Entertainment or fun	Educational purposes	Other	Do not use	

(continued)

Items	Responses				
11. What is the main purpose for which you use the Web 2.0 tools listed below?	Entertainment	Educational	Social	Social and Educational Communication	Do not use
12. What do you mainly use the Web 2.0 tools listed below for?	Homework	Class Work	Entertainment	Social and Educational Communication	Do not use
VI) Personal satisfaction and communication					
13. What level of personal satisfaction do you obtain from using the Web 2.0 tools listed below?	Very low	Low	Medium	High	Very high
14. Who do you mainly use the Web 2.0 tools listed below to communicate with?	Friends and classmates	Family members	Teachers	Strangers	I don't use them to communicate
VII) Preferences and degree of difficulty					
15. Please indicate your degree of preference for the Web 2.0 tools listed below.	I dislike them a lot	I dislike them	I neither like nor dislike them	I like them	I like them a lot
16. What degree of difficulty do you believe you have when using the Web 2.0 tools listed below?	Very low	Low	Neither low nor high	High	Very high
VIII) Expectations and self-efficacy					
17. In the near future, do you think you will use the Web 2.0 tools listed below?	Definitely	Probably	Don't know	Probably not	Definitely not
18. If you were to use Web 2.0 tools for academic work, how do you think you would feel?	Very uncomfortable	Uncomfortable	Neither comfortable or uncomfortable	Comfortable	Very comfortable

Appendix B. Appearance of online questionnaire HEWE2.0.

CUESTIONARIO HEWE2.0

*Obligatorio

INFORMACIÓN Y FORMACIÓN

1. La información que crees disponer sobre la web 2.0 es... *

Ninguna Poca Suficiente Mucha

Información sobre la web 2.0

2. La información que crees disponer sobre las herramientas de la web 2.0 es... *

Ninguna Poca Suficiente Mucha

Información sobre las herramientas 2.0

3. La formación que has recibido sobre las herramientas de la web 2.0 es... *

Ninguna Poca Suficiente Mucha

Formación sobre las herramientas 2.0

Note. INFORMATION AND TRAINING; 1. How much information you think you have about Web 2.0? Information about Web 2.0 (None, Insufficient, Sufficient, A lot); 2. How information do you think you have about Web 2.0 tools? Information about web 2.0 technologies (None, Insufficient, Sufficient, A lot); 3. How much training have you received about Web 2.0 tools? Training received about web 2.0 tools (None, Insufficient, Sufficient, A lot).

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CAPÍTULO 2

Use of Facebook, Tuenti, Twitter and Myspace among young Spanish people

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Use of Facebook, Tuenti, Twitter and Myspace among young Spanish people

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This research describes and analyses the use made by young Spanish people of Tuenti, Facebook, Twitter and Myspace, exploring several variables: level of functional knowledge; frequency of use; place of use; reason for use; purpose and main activity; recipients of communication; degree of difficulty, satisfaction and preference; and intentions regarding future use. We designed and administered an online questionnaire to 757 students enrolled in secondary education (7th–11th levels and Vocational Education and Training) at seven educational centres. The results show that young Spanish people know about and use social networks on a daily basis. Tuenti was the one used with most frequency, followed by Facebook and Twitter. Myspace was the least known and used. Female subjects had a greater functional knowledge of these networks and reported a higher regular use of them. Participants used the social networks in their homes and preferred Tuenti because it is easy to use, allows them to communicate with friends and classmates and provides them with acceptable satisfaction as regards their need for prestige, acceptance and approval through the creation and maintenance of groups of friends and the publication of their achievements and self-realizations. The implications of the results obtained for psychological and social development are discussed.

Keywords: Facebook; patterns of use; psychological and social development; social networks; Twitter

1. Introduction

With the current rapid growth and development of the knowledge society, social media and social networks in particular have become a global phenomenon (WebIndex 2013; Duggan and Smith 2014). On this point, judging by WebIndex it is possible to state that in a large number of countries, including the USA, the UK, Spain, Sweden, Argentina, Austria, Australia, Indonesia, Japan and Qatar, among others, the monthly total use of social networks is above average (WebIndex 2013). Thus, the majority of young people know about and use social networks, and these social networks form a part of everyday life for young people and adults under 30 (Madden and Zickuhr 2011; Junco 2012b; García-Martín and García-Sánchez 2013). These 2.0 services or applications enable individuals to create a public or semi-public profile within a defined system and to establish a list of users with whom they share information and photographs (Boyd and Ellison 2007).

In recent years, the use that young people make of these tools has increased significantly (Pfeil, Arjan, and Zaphiris 2009; Miller, Parsons, and Lifer 2010; Madden and Zickuhr 2011; Glynn, Huges, and Hoffman 2012; Park, Lee, and Kim 2012; Agosto and Abbas 2013; Chen 2013; Giannakos, Chorianopoulos, Giotopoulos, and Vlamos 2013). This is evidenced by the results of studies conducted as part

of the Pew Research Centre's 'Internet and American Life' project, which indicate that most university students understand and use them (Jones and Fox 2009; Lenhart 2009; Lenhart, Purcell, Smith, and Zickuhr 2010).

This paper is divided into nine distinct sections. In Section 2, we describe the theoretical framework of this study. In Section 3, we explain the background which provides the rationale and context for this study. In Section 4, we provide a description of the research objectives and hypotheses. In Section 5, we explained the methodology employed. In Section 6, we present the results obtained. In Section 7, we discuss the results and in Section 8, we describe the limitations. In Section 9, we present the main conclusions and propose directions for future research.

2. Theoretical framework

This study falls within the bounds of Uses and Gratifications Theory (UGT) (Katz, Blumler, and Gurevitch 1973; Ruggiero 2000; Shao 2009; Giannakos et al. 2013; Ku, Chen, and Zhang 2013; Yeniceri and Erdem 2013). The theory originated in the 1940s and has its roots in functionalism. However, this theory has nowadays achieved greater prominence as a result of the rapid growth and use of social

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media in various aspects of everyday life, especially among young people (Agosto and Abbas 2013; Giannakos et al. 2013; Ku, Chen, and Zhang 2013; Yeniceri and Erdem 2013).

Today, this theory can be applied in practice to people's search for the social networks that best satisfy their needs. According to the UGT theory, people are active subjects who make continuous use of those tools that meet their needs. Hence, users of social networks freely choose the social tool that they wish in order to satisfy their requirements. On these lines, their needs may be categorised into three groups on the basis of which component underlies them: (i) cognitive (cognitive component) as in searching for and exchanging information, curiosity or learning (Park, Kee, and Valenzuela 2009; Kim, Sohn, and Choi 2011; Cheng, Liang, and Leung 2014); (ii) emotional (emotive component) as in communication, satisfaction or self-affirmation (Park, Kee, and Valenzuela 2009) and (iii) social (social component) as in social interaction, empathy, the need for recognition, the sense of belonging to a group or social identity (Park, Kee, and Valenzuela 2009; Dunne, Lawlor, and Rowley 2010; Cheung, Chiu, and Lee 2011; Kim, Sohn, and Choi 2011; Special and Li-Barber 2012; Cheng, Liang, and Leung 2014). To these three categories, a fourth group, entertainment, should be added, to include other needs crucial for the optimum development of any human being such as amusement, relaxation, a way of escaping from problems or simply a means of filling up spare time (Park, Kee, and Valenzuela 2009; Cheung, Chiu, and Lee 2011; Kim, Sohn, and Choi 2011).

3. Review of the literature on social networking

With the aim of providing a rationale and context for the present study, a literature review was conducted, after which empirical data from numerous national and international studies relating to the variables involved were undertaken. These comprised the functional knowledge; frequency; place of use; reason for use; purpose and main activity; recipients of communication; degree of difficulty, satisfaction and preference; and intentions regarding future use, and they were then investigated for the four social networks studied (Table 1).

On an international level, the most popular and most frequently used social networks among young people and adults are Facebook, Twitter, LinkedIn and Myspace. In the case of Spain, Tuenti is also used. Of these social networks, Facebook appears to be the most popular (Lewis et al. 2008; Smith and Caruso 2010; Hampton et al. 2011; Hew 2011; Alexa 2012; Dabner 2012; Junco 2012a; Chen 2013; Veletsianos, Kimmons, and French 2013). Thus, in a study conducted in late 2010 with nearly 37,000 students from 100 universities in the USA, it was found that virtually all the students surveyed used social networks and most of them preferred Facebook (Smith and Caruso 2010). This preference has also been observed in Germany

and Spain, followed by StudiVZ and Tuenti, respectively (Elogia Ipsosfacto and IAB Spain Research 2010; Lee, Schermgell, and Barber 2011; Wodzicki, Schwämmlein, and Moskaliuk 2012). However, it should be borne in mind that the social and cultural context, as well as the ultimate goal of the research, may modify the preferences obtained. The scientific research which has been carried out in Spain on this subject has been directly related to marketing and consumer studies, and indirectly related to advertising and communication, and has thus disregarded other social and educational contexts and purposes considered essential for personal development.

Moreover, researchers who have studied the variable frequency all coincide in stating that social networks are consulted by young people on a daily basis (Lewis et al. 2008; Miller, Parsons, and Lifer 2010; Aydin 2012; Dabner 2012; Hampton et al. 2012; Junco 2012a, 2012b; García-Martín and García-Sánchez 2013). For example, in an American study it was found that almost 100% of students used social networks nearly every day (Smith and Caruso 2010), coinciding with the results obtained in a survey conducted by the Pew Research Centre, which indicated that approximately half of young North Americans aged between 12 and 17 years consulted their social network accounts once or several times a day (Lenhart and Madden 2007), and with the results of another study carried out in 2012 with 774 German students, where it was found that about half of the participants accessed their account every day (Wodzicki, Schwämmlein, and Moskaliuk 2012). In another American study, the participating students reported that they spent about an hour and a half each day on social networks (Junco 2012a). In addition, in a European study of 606 participants, of whom the great majority were young people aged between 18 and 25 years, it was found that about half of the respondents accessed their account several times a day, a tenth of them opened the page at least once a day and a quarter of them visited their account several times a month; the remaining students reported using social networks with less frequency (Mazman and Usluel 2010). In Spain, more than half of the social network users consult them every day, approximately one quarter accesses them several times a week, one-tenth at least once a week and the remaining users less frequently. Furthermore, around 80% of these users reported spending at least one hour a week on their favourite social network (Elogia Ipsosfacto and IAB Spain Research 2009). Nevertheless, these data should be approached with some caution, since daily frequency tends to vary from one social network to another, as demonstrated by the results obtained in the studies carried out in 2009, 2011 and 2012 by Hampton et al.

On the other hand, in studies on the place of use, it has been found that social networks are mainly used outside educational centres. Thus, in a survey conducted in the USA it was found that they are used more frequently outside the school context (Rideout, Foehr, and Roberts 2010).

Table 1. Comparison between the results obtained in previous studies and in ours.

	Previous studies			Our study
	America	Europe		
	Lenhart and Madden (2007) Luckin et al. (2008) Hampton et al. (2009) Sharples et al. (2009) Smith and Caruso (2010) Hampton et al. (2011) Hampton et al. (2012) Junco (2012a)	Elogia Ipsofacto and IAB Spain Research (2009) Madge et al. (2009) Elogia Ipsofacto and IAB Spain Research (2010) Madrid Network (2010) Mazman and Usuel (2010) Rideout, Foehr, and Roberts (2010) Lee et al. (2011) Wodzicki, Schwämmlein, and Moskaliuk (2012)		
	North America	Germany	Spain	Spain
Functional knowledge	Facebook	Facebook StudiVZ	Facebook Tuenti	Tuenti Facebook Twitter Myspace
Frequency	100% of the participants used them every day (for about one and a half hours)	50% of the participants used them every day	50% of the participants used them every day	100% of the participants used them every day (more than two and a half hours)
Place of use	Outside of the educational context	Outside of the educational context	Outside of the educational context	At home At school
Reason for starting to use the tool	To keep in touch with friends Entertainment Because the tool is easy to use Because it is popular For educational purposes	Friends and colleagues	Not considered in previous studies	Tuenti: ease of use Facebook: because it is fashionable
Purpose	To maintain friendships To meet and get to know people For fun and entertainment To create a personal image For educational purposes	To maintain friendships For fun and entertainment	Not considered in previous studies Market research	To communicate For fun For educational purposes
Recipients of communication	Current and past friends More than half with strangers	Current and past friends	Almost all with current friends Half with past friends and family A quarter with friends from work A tenth with strangers	Friends and colleagues Family Strangers

This trend has also been observed in Spain; in an online survey carried out by Elogia Ipsofacto in November 2009, administering a self-report questionnaire (CAWI) to 500 social tool users aged between 18 and 55 years, it was found that 87% used them in their homes, against 17%

in the workplace and 8% in educational centres (Elogia Ipsofacto and IAB Spain Research (2009)).

Other studies have focused on analysing the main reason for social network use. Five possible reasons have been identified from those reviewed: (i) to keep in touch

with friends (Ellison, Steinfield, and Lampe 2007; Lenhart and Madden 2007; Joinson 2008; Sheldon 2008a; Sheldon 2008b; Bosch 2009; Lewis and West 2009; Madge et al. 2009; Pempek, Yermolayeva, and Calvert 2009; Güzin and Koçak 2010; Mazman and Usluel 2010; Aydin 2012; Dabner 2012; Special and Li-Barber 2012), (ii) for entertainment (Joinson 2008; Sheldon 2008a; Lewis and West 2009; Madge et al. 2009; Pempek, Yermolayeva, and Calvert 2009; Mazman and Usluel 2010; Special and Li-Barber 2012), (iii) because the tool is easy to use (Bosch 2009; Elogia Ipsofacto and IAB Spain Research 2010), (iv) because it is popular (Joinson 2008; Pempek, Yermolayeva, and Calvert 2009; Urista, Dong, and Day 2009) and (v) for educational purposes (Bosch 2009; Madge et al. 2009; Pempek, Yermolayeva, and Calvert 2009; Young and Quan-Hasse 2009; Aydin 2012). Thus, in a study conducted recently in Spain, it was observed that about half of the young people surveyed had started to use Facebook because their friends used it, followed by other reasons such as its ease of use and its popularity. In contrast, more than half of Tuenti users reported that the main reason for starting was that the tool was easy to use (Elogia Ipsofacto and IAB Spain Research 2010).

When analysing the main purposes for which social networks are used by students, it was observed that these were very similar to the reasons and therefore they have also been divided into five categories: (i) to maintain friendships (Ellison, Steinfield, and Lampe 2007; Lenhart and Madden 2007; Joinson 2008; Sheldon 2008b; Bosch 2009; Lewis and West 2009; Madge et al. 2009; Pempek, Yermolayeva, and Calvert 2009; Güzin and Koçak 2010; Mazman and Usluel 2010; Aydin 2012; Chen and Marcus 2012; Dabner 2012; Special and Li-Barber 2012), (ii) to meet people (Lenhart and Madden 2007; Zhao, Grasmuck, and Martin 2008; Sheldon 2008a; Madge et al. 2009; Urista, Dong, and Day 2009; Güzin and Koçak 2010), (iii) to have fun and for entertainment (Joinson 2008; Sheldon 2008b; Lewis and West 2009; Madge et al. 2009; Pempek, Yermolayeva, and Calvert 2009; Mazman and Usluel 2010; Special and Li-Barber 2012), (iv) to create a personal image (Joinson 2008; Pempek, Yermolayeva, and Calvert 2009; Urista, Dong, and Day 2009) and (v) for educational purposes (Grunwald Associates 2007; Bosch 2009; Madge et al. 2009; Pempek, Yermolayeva, and Calvert 2009; Young and Quan-Hasse 2009; Aydin 2012). In 2008, Joinson administered a questionnaire to 241 students concerning the use they made of Facebook. The results indicated that they primarily used it to keep in touch with friends, to join shared interest groups, to organise or participate in events, to look at and share photographs and to play games. The results of another survey conducted by Madge et al. in 2009, in which 213 university students in Great Britain participated, indicated that the subjects principally used these tools to maintain friendships, to meet people and to organise or participate in events. However, one-tenth of the participants in the

study reported that they also used social networks for educational purposes, such as organising a study group or for revision.

In addition, studies on the variable recipients of communication have shown that social network users employ them to communicate with both childhood and current friends (Elogia Ipsofacto and IAB Spain Research 2009; Elogia Ipsofacto and IAB Spain Research 2010; Madrid Network 2010; Hew 2011). In another recent study conducted in Spain, it was found that practically all users employed social networks to communicate with their current friends, half with past friends and with relatives, a quarter with work and study colleagues and one-tenth with strangers (Elogia Ipsofacto and IAB Spain Research 2009). However, the percentage of young people in an American study who communicated with strangers increased to 66% via email and 77% through instant messaging (Luckin et al. 2008). This last aspect has also been reported by Sharples et al. (2009).

4. Research objectives and hypotheses

Given the theoretical framework and these empirical antecedents, the aims of the present study were to analyse the variables related to the use made by young people of four social networks: Tuenti, Facebook, Twitter and Myspace, and how these affect their social and personal development. In this regard, the variables employed for analysing use were several: (a) their level of functional knowledge, that is to say, the knowledge they have of how the social network under consideration functions; (b) the frequency; (c) the place of use; (d) the reason for use, purpose and main activity; (e) the recipients of communication; (f) the degree of difficulty, satisfaction and preference and (g) intentions regarding future use.

We predicted that a response pattern would be found indicating that the way in which young people used these applications was related to their personal and social development; hence the importance of asking users about the characteristics of the use they make of these tools in order to determine their reasons and motives for using them, since this will enable us to apprehend the personal, social and instrumental functionality of each of the four social networks analysed (Agosto and Abbas 2013; Giannakos et al. 2013; Ku, Chen, and Zhang 2013; Yenicieri and Erdem 2013).

Thus, we hypothesised that (i) young people's functional knowledge about social networks is high; (ii) the respondents' functional knowledge about these tools increases with age and educational level; (iii) the majority of Spanish students, especially female students, make frequent use of these tools; (iv) young Spanish people's favourite social network is Tuenti, followed by Facebook and Twitter; (v) Tuenti presents the least degree of difficulty for young people; (vi) Tuenti provides them with an acceptable level of satisfaction as regards their need

Table 2. Distribution of participants by sex and educational level.

	First year of CSE (7th)	Second year of CSE (8th)	Third year of CSE (9th)	Fourth year of CSE (10th)	First year of non-CSE (11th)	VET (vocational education and training)	Total
Males	72	76	72	79	53	66	418
Females	69	68	73	62	60	7	339
Total	141	144	145	141	113	73	757
Mean age	13	14	15	16	17	21	

for social prestige, acceptance and approval, through the creation and maintenance of groups of friends and the publication of their achievements and self-realizations and (vii) Tuenti is the social network that discriminates most between educational level, age and sex.

5. Methods

5.1. Participants

We surveyed 757 students aged between 11 and 28 years, of whom 418 were male and 339 female, distributed evenly among compulsory secondary education (CSE: 7th–10th years; $n = 571$), non-compulsory secondary education (non-CSE: 11th year; $n = 113$) and vocational education and training (VET: $n = 73$). This was a representative sample obtained through intentional sampling of seven Spanish educational centres. Consequently, all shared cultural and socio-economic characteristics (Table 2).

5.2. Questionnaire

An online questionnaire was designed consisting of two clearly differentiated parts: the first part consisted of five questions about participants' general personal details: (i) sex, (ii) educational level, (iii) age, (iv) academic performance and (v) socio-economic level, and the second part included specific questions about functional knowledge, frequency, place of use, reason for use, purpose and main activity, recipients of communication, degree of difficulty, satisfaction and preference and intentions regarding future use. In this regard, the questions about functional knowledge, degree of difficulty, satisfaction and preference and intentions regarding future use, were scored using five-point Likert-type scales (see Table 3). The questionnaire was designed using the question options available in the Google Docs application, which include (i) text, (ii) paragraph text, (iii) test type (single or multiple response), (iv) check box, (v) choose from a list and (vi) scale.

5.3. Design and variables

This was a descriptive study, conducted through the administration of an online questionnaire. A total of 16 variables were described, of which five referred to general or demographic characteristics: (i) sex, (ii) educational

level, (iii) age, (iv) academic performance and (v) socio-economic level. The remaining variables describe the use of four social networks: (i) Facebook, (ii) Tuenti, (iii) Twitter and (iv) Myspace. The rationale for selecting these social networks was threefold: firstly, they all permit free registration and participation. Secondly, their target audience encompasses everyone, regardless of gender, age, educational level or occupational activity and thirdly, they are not limited to a particular issue. The variables employed for analysing use were functional knowledge; frequency; place of use; reason for use; purpose and main activity; recipients of communication; degree of difficulty, satisfaction and preference; and intentions regarding future use (Table 3). Some of these have been examined a number of times in previous international research relating to UGT. Others, in contrast, have not, among these being functional knowledge; frequency of use; place of use; and degree of satisfaction, difficulty and preference, together with intentions in respect of future use.

5.4. Procedure

The instruments employed in previous international research on the use of social networks were reviewed and analysed in order to provide coherence and define the variables analysed in the questionnaire designed. After the questionnaire had been designed and the type of sampling selected, a pilot study was carried out with 351 students from two Spanish educational centres in order to verify the time required for the administration of the questionnaire, eliminate any problems and difficulties it presented and tailor it to the objective of the research. Once ambiguous items had been modified, the sample was selected and the questionnaire administered. To this end, initial telephone contact was established with the head teachers of the respective centres, and informed consent was sought and obtained in writing from the seven participating centres prior to the administration of the questionnaire, in strict accordance with the deontological standards for scientific research.

The instrument was administered in the computer rooms during tutorials, computing or technology classes in order to interfere as little as possible in the students' education. Administration of the questionnaire took 30 minutes for each group of students.

Table 3. Variables, previous studies and questionnaire items.

Variables	Previous empirical studies about social networks	Questionnaire items
Functional knowledge	García-Martín and García-Sánchez (2013)	1. The level of knowledge that you believe you possess about how the social networks listed below function is ...
Frequency	Ellison et al. (2007), Elogia Ipsofacto and IAB Spain Research (2009), Mazman and Ustuel (2010), Miller, Parsons, and Lifer (2010), Dogruer et al. (2011), Chen and Marcus (2012), Glynn, Huge, and Hoffman (2012), García-Martín and García-Sánchez (2013), Giannakos et al. (2013) and Johnston et al. (2013)	2. How often do you use the social networks listed below? 3. How many times a day do you use the social networks listed below?
Place of use	Ellison et al. (2007), Elogia Ipsofacto and IAB Spain Research (2009), Elogia Ipsofacto and IAB Spain Research (2010) and García-Martín and García-Sánchez (2013)	4. Where do you use the social networks listed below?
Reasons, purpose and main activity	Ellison et al. (2007), Elogia Ipsofacto and IAB Spain Research (2009), Elogia Ipsofacto and IAB Spain Research (2010), Güzin and Koçak (2010), Miller, Parsons, and Lifer (2010), Dogruer et al. (2011), Chen and Marcus (2012), García-Martín and García-Sánchez (2013), Giannakos et al. (2013) and Johnston et al. (2013)	5. What was the main reason you began using the social networks listed below? 6. What is the main purpose for which you use the social networks listed below? 7. What do you mainly use the social networks listed below for?
Recipients of communication	Luckin et al. (2008), Elogia Ipsofacto and IAB Spain Research (2009), Sharples et al. (2009), Elogia Ipsofacto and IAB Spain Research (2010), Hew (2011), Madrid Network (2010) and García-Martín and García-Sánchez (2013)	8. Who do you mainly use the social networks listed below to communicate with?
Degree of difficulty, satisfaction and preference	Ellison et al. (2007), Güzin and Koçak (2010), Mazman and Ustuel (2010), Miller, Parsons, and Lifer (2010), Glynn, Huge, and Hoffman (2012) and García-Martín and García-Sánchez (2013)	9. What degree of difficulty do you believe you have when using the social networks listed below? 10. What level of personal satisfaction do you obtain from using the social networks listed below? 11. Please indicate your degree of preference for the social networks listed below.
Intentions regarding future use	Dogruer et al. (2011) and García-Martín and García-Sánchez (2013)	12. In the near future, do you think you will use the social networks listed below?

Once the students had completed the questionnaires, the resulting matrix was downloaded, the relevant encoding was performed and the appropriate statistical analyses conducted, using the SPSS version 21 software package, in order to obtain the empirical research data.

6. Results

The results obtained for each of the variables – functional knowledge; frequency; place of use; reason for use; purpose and main activity; recipients of communication; degree of difficulty, satisfaction and preference; and intentions regarding future use – are presented in the following. Firstly, we calculated the mean (M) and standard deviation (σ) for descriptive data on the participants. Subsequently, the normality of the variables was tested by calculating skewness and kurtosis in order to ascertain whether a parametric analysis could be performed. Lastly, we conducted an analysis based on the general linear model (GLM), using the statistical software package IBM SPSS Statistics, version 21. Each of the aspects was analysed in order to detect statistically significant differences according to educational level, sex and age.

Multivariate analysis of variance using the GLM and considering *educational level* [λ Wilks = 0.190, $F_{(3069,169,685)} = 1.766, p \leq .001, \eta^2 = 0.283$] as the grouping variable and the *post hoc* comparison yielded statistically significant differences (Tables 4 and 5).

Similarly, statistically significant differences were also observed when *age* was considered [λ Wilks = 0.168, $F_{(3678,613,822)} = 1.551, p \leq .001, \eta^2 = 0.257$] as the grouping variable and in the *post hoc* comparison (Tables 6 and 7).

Again, statistically significant differences were found when *sex* was considered [λ Wilks = 0.751, $F_{(137,617)} = 1.490, p \leq .001, \eta^2 = 0.249$] as the grouping variable (Table 8).

Prior to proceeding with a detailed analysis of the results obtained for each of the variables being examined, it is necessary to clarify the nomenclature employed. Thus, from this point onward, the expression CSE will be used to refer to compulsory secondary education (Years 7–10 of schooling in Spain), non-CSE for non-compulsory secondary education (Year 11), VET for vocational education and training, M for the arithmetic mean, F for frequency and yrs for years. Thus, the expression ' $M_{1st\ CSE}$ ' would indicate the average (arithmetic mean) for pupils in the

Table 4. Test for between-subject effects considering educational level as the grouping variable.

Educational level	First year of CSE (7th)		Second year of CSE (8th)		Third year of CSE (9th)		Fourth year of CSE (10th)		First year of non-CSE (11th)		VET		F	p	η^2
	M	σ	M	σ	M	σ	M	σ	M	σ	M	σ			
Functional knowledge of Tuenti	4.36	1.100	4.44	1.039	4.48	0.929	4.48	0.883	4.52	0.721	3.70	1.421	7.819	<0.001	0.05
Functional knowledge of Facebook	3.93	1.301	3.90	1.115	3.70	1.314	3.96	1.027	3.72	1.169	3.38	1.440	3.007	0.011	0.02
Functional knowledge of Twitter	3.44	1.485	3.32	1.387	3.06	1.348	3.23	1.302	3.15	1.269	2.86	1.446	2.35	0.039	0.015
Frequency of use of Tuenti	3.96	1.421	4.16	1.341	4.37	1.105	4.53	0.975	4.66	0.751	3.77	1.629	8.442	<0.001	0.053
Daily frequency of use of Tuenti	2.64	1.254	2.87	1.210	3.03	1.187	3.21	1.264	3.24	1.182	2.68	1.373	5.221	<0.001	0.034
Daily frequency of use of Tuenti	1.79	1.051	1.73	0.958	1.57	0.872	1.72	0.942	1.81	1.209	2.05	1.322	2.237	0.049	0.015
Degree of personal satisfaction with Tuenti	4.02	1.466	4.15	1.312	4.31	1.057	4.22	1.056	4.28	0.921	3.30	1.497	8.048	<0.001	0.051
Degree of preference for Tuenti	4.29	1.225	4.38	1.162	4.53	0.906	4.52	0.789	4.49	0.836	3.7	1.34	7.848	<0.001	0.050
Degree of preference for Facebook	3.84	1.317	3.94	1.26	3.79	1.19	4.01	1.092	3.64	1.111	3.44	1.344	2.931	.012	.019
Degree of difficulty of Tuenti	2.62	1.602	2.5	1.542	2.03	1.376	1.94	1.275	2.61	1.75	2.03	1.269	5.876	<0.001	0.038
Degree of difficulty of Facebook	2.56	1.494	2.55	1.504	2.37	1.389	2.11	1.243	2.9	1.669	2.18	1.229	4.718	<0.001	0.031
Degree of difficulty of Twitter	2.41	1.434	2.33	1.428	2.41	1.283	2.23	1.244	2.88	1.657	2.18	1.24	3.632	0.003	0.024
Degree of difficulty of Myspace	2.31	1.378	2.32	1.372	2.48	1.264	2.3	1.223	3.02	1.57	2.45	1.302	4.918	<0.001	0.032
Intentions regarding future use of Myspace	3.47	1.486	3.28	1.484	3.46	1.4	2.96	1.393	3.08	1.446	2.85	1.647	3.722	0.002	0.024

Note: Only variables that show statistically significant results are displayed ($p < .05$); η^2 (eta-squared statistic) = estimates of effect size. The Cohen (1988) rule states that = 0.01–0.06 (small effect), > 0.06–0.14 (medium effect) and > 0.14 (large effect).

first year of CSE, and similarly ' M_{2ndCSE} ', the average for those in the second year; ' M_{3rdCSE} ', the average for those in the third year and ' M_{4thCSE} ', the average for those in the fourth year of CSE. Likewise, ' $M_{1stnon-CSE}$ ' indicates the average for students in the first year of Non-compulsory Secondary Education, and ' M_{VET} ', the average for students undertaking VET. On similar lines, ' M_{males} ' refers to the average for all male pupils or students and ' $M_{females}$ ' to the average for all females. Finally, in respect of ages, ' M_{13yrs} ' refers to the average for participants aged 13, ' M_{14yrs} ' to that for those aged 14, ' M_{15yrs} ' to the average for 15-year olds, ' M_{16yrs} ' to that for 16-year olds, ' M_{17yrs} ' indicates the average for students aged 17 and ' M_{18+} ' that for students aged 18 and above.

6.1. Functional knowledge about social networks

Most of the young people had a high functional knowledge of Tuenti, a medium level of functional knowledge about Facebook and Twitter and a low level for Myspace (Figure 1). However, statistically significant differences were observed when comparing vocational training students' level of functional knowledge of Tuenti with that of students from any other CSE year, to the detriment of the vocational training students (e.g. $M_{1stCSE} = 4.36$ versus $M_{VET} = 3.70$, $p = .001$; $M_{2ndCSE} = 4.44$ versus $M_{VET} = 3.70$, $p = .001$; $M_{3rdCSE} = 4.48$ versus $M_{VET} = 3.70$, $p = .001$; $M_{4thCSE} = 4.48$ versus $M_{VET} = 3.70$, $p < .001$ and $M_{males} = 3.70$ versus $M_{females} = 3.93$, $p = .011$). Likewise,

Table 5. *Post hoc* comparison according to educational level.

Educational level	First year CSE versus fourth year CSE	First year CSE versus first year non-CSE	First year CSE versus VET	second year CSE versus first year non-CSE	Second year CSE versus VET	Third year CSE versus VET	Fourth year CSE versus First year non-CSE	Fourth year CSE versus VET	First year non-CSE versus VET
Functional knowledge about Tuenti	n.s.	n.s.	0.001	n.s.	< 0.001	< 0.001	n.s.	< 0.001	< 0.001
Degree of difficulty of Tuenti	0.013	n.s.	n.s.	n.s.	n.s.	n.s.	0.028	n.s.	n.s.
Degree of difficulty of Facebook	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	0.002	n.s.	0.047
Degree of difficulty of Twitter	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	0.016	n.s.	0.044
Degree of difficulty of Myspace	n.s.	0.004	n.s.	0.005	n.s.	n.s.	0.003	n.s.	n.s.
Degree of personal satisfaction obtained from the use of Tuenti	n.s.	n.s.	0.005	n.s.	< 0.001	< 0.001	n.s.	< 0.001	< 0.001
Degree of preference for Tuenti	n.s.	n.s.	.01	n.s.	0.001	< 0.001	n.s.	< 0.001	< 0.001
Frequency of use of Tuenti	0.009	0.001	n.s.	n.s.	n.s.	0.034	n.s.	0.002	< 0.001
Daily frequency of use of Tuenti	0.01	0.011	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.

Note: Only variables that show statistically significant results are displayed ($p < .05$)

a statistically significant difference was observed when comparing male with female students for the variable *functional knowledge of Facebook*, in favour of the female students (e.g. $M_{1stCSE} = 4.36$ versus $M_{VET} = 3.70$, $p = .001$). This difference was maintained when comparing students aged 13 with those aged 18 and above, in favour of the former (e.g. $M_{13yrs} = 4.05$ versus $M_{18+} = 3.48$, $p = .049$), and the comparison was extended to other social networks, specifically Twitter (e.g. $M_{13yrs} = 3.55$ versus $M_{18+} = 2.90$, $p = .035$) and Tuenti (e.g. $M_{13yrs} = 4.50$ versus $M_{18+} = 3.91$, $p = .049$). In the case of Tuenti, this difference was maintained when comparing students aged 14, 15 and 16 with those aged 18 and above, in detriment to the latter (e.g. $M_{14yrs} = 4.50$ versus $M_{18+} = 3.91$, $p = .015$; $M_{15yrs} = 4.41$ versus $M_{18+} = 3.91$, $p = .021$ and $M_{16yrs} = 4.57$ versus $M_{18+} = 3.91$, $p = .001$).

6.2. Frequency

In terms of frequency of use, Tuenti was used daily, Facebook several times a week, Twitter at least once a week and Myspace less frequently. Most respondents used Tuenti for more than one hour a day.

However, the *post hoc* comparisons only yielded statistically significant differences for the variable *frequency of use of Tuenti* when comparing the first year of CSE with the fourth year of CSE and the first year of non-CSE, to the detriment of the first year of CSE (e.g. $M_{1stCSE} = 3.96$

versus $M_{4thCSE} = 4.53$, $p = .009$ and $M_{1stCSE} = 3.96$ versus $M_{1stnon-CSE} = 4.66$, $p = .001$) and also when comparing vocational training students with third and fourth year CSE and first year non-CSE students, to the detriment of the vocational training students (e.g. $M_{VET} = 3.77$ versus $M_{3rdCSE} = 4.37$, $p = .034$; $M_{VET} = 3.77$ versus $M_{4thCSE} = 4.53$, $p = .002$ and $M_{VET} = 3.77$ versus $M_{1stnon-CSE} = 4.66$, $p < .001$). Differences were also observed for this variable when comparing the responses given by male and female students, in favour of the latter (e.g. $M_{males} = 4.18$ versus $M_{females} = 4.38$, $p = .033$) and when comparing the responses of students aged 16 with those aged 18 and above, to the detriment of those aged 16 (e.g. $M_{16yrs} = 4.54$ versus $M_{18+} = 3.94$, $p = .035$). When *daily frequency of use in hours* for the four social networks was analysed, statistically significant differences were obtained only when comparing the daily use of Tuenti made by first year CSE students with that of fourth year CSE students and first year non-CSE students, respectively, to the detriment of first year CSE students (e.g. $M_{1stCSE} = 2.64$ versus $M_{4thCSE} = 3.21$, $p = .01$ and $M_{1stCSE} = 2.64$ versus $M_{1stnon-CSE} = 3.24$, $p = .011$), as shown in Figure 2. Differences were also found for this variable when comparing the responses given by male and female students, in favour of the latter (e.g. $M_{males} = 2.86$ versus $M_{females} = 3.08$, $p = .018$) and when comparing the responses of students aged 12 with those aged 15, 16 and 17, respectively, to the detriment of those aged 12 (e.g. $M_{12yrs} = 2.24$ versus $M_{15yrs} = 3.05$,

Table 6. Test for between-subject effects considering age as the grouping variable.

Age	12		13		14		15		16		17		18 and above		F	p	η^2
	M	σ	M	σ	M	σ	M	σ	M	σ	M	σ	M	σ			
Functional knowledge of Tuenti	4.08	1.272	4.50	0.968	4.50	0.959	4.41	0.956	4.57	0.761	4.43	0.938	3.91	1.341	5.695	< 0.001	0.044
Functional knowledge of Facebook	3.55	1.385	4.05	1.125	3.95	1.212	3.72	1.187	3.87	1.148	3.75	1.205	3.48	1.395	2.927	0.008	0.023
Functional knowledge of Twitter	3.12	1.481	3.55	1.388	3.55	1.388	3.06	1.374	3.25	1.247	3.10	1.324	2.90	1.432	2.961	0.007	0.023
Frequency of use of Tuenti	3.8	1.568	4.08	1.319	4.31	1.263	4.41	1.076	4.54	0.949	4.58	0.978	3.94	1.504	5.351	< 0.001	0.041
Daily frequency of use of Tuenti	2.24	0.879	2.73	1.241	3.00	1.250	3.05	1.168	3.24	1.256	3.27	1.232	2.88	1.402	5.731	< 0.001	0.044
Degree of personal satisfaction obtained from the use of Tuenti	3.82	1.577	4.14	1.316	4.31	1.272	4.24	1.076	4.32	0.933	4.25	1.053	3.43	1.472	7.025	< 0.001	0.053
Degree of personal satisfaction obtained from the use of Facebook	3.12	1.728	3.47	1.566	3.75	1.464	3.19	1.430	3.51	1.447	3.30	1.415	3.07	1.459	2.596	0.017	0.020
Degree of personal satisfaction obtained from the use of Twitter	2.73	1.789	3.07	1.678	3.08	1.703	2.45	1.496	2.75	1.517	2.84	1.557	2.72	1.623	2.541	0.019	0.020
Degree of personal satisfaction obtained from the use of Myspace	2.12	1.550	2.29	1.538	2.42	1.680	1.78	1.211	1.99	1.312	2.13	1.341	1.92	1.259	3.030	0.006	0.024
Degree of preference for Tuenti	4.06	1.420	4.43	1.064	4.41	1.228	4.48	0.901	4.59	0.683	4.51	0.912	3.83	1.278	6.741	< 0.001	0.051
Degree of preference for Facebook	3.61	1.483	3.96	1.220	3.93	1.276	3.75	1.181	3.97	1.091	3.84	1.089	3.45	1.304	2.591	0.017	0.020
Degree of difficulty of Tuenti	2.90	1.558	2.42	1.543	2.35	1.583	1.96	1.325	2.46	1.622	2.29	1.653	2.14	1.270	3.316	0.003	0.026
Degree of difficulty of Twitter	2.49	1.543	2.32	1.343	2.34	1.515	2.22	1.256	2.80	1.487	2.65	1.546	2.19	1.218	3.068	0.006	0.024
Degree of difficulty of Myspace	2.24	1.362	2.34	1.355	2.26	1.394	2.42	1.250	2.83	1.489	2.62	1.451	2.40	1.269	2.554	0.019	0.020
Intentions regarding the future use of Tuenti	4.22	1.263	4.57	0.944	4.47	1.164	4.58	0.856	4.54	0.949	4.62	0.795	4.22	1.234	2.427	0.025	0.019
Intentions regarding future use of Facebook	4.04	1.399	4.42	1.070	4.44	1.081	4.18	1.215	4.27	1.185	4.34	0.995	3.93	1.452	2.510	0.021	0.020
Intentions regarding future use of Myspace	3.14	1.568	3.43	1.458	3.34	1.492	3.22	1.471	3.20	1.397	3.31	1.369	2.78	1.575	2.166	0.044	0.017

Note: Only variables that show statistically significant results are displayed ($p < .05$); η^2 (eta-squared statistic) = Estimates of effect size. The Cohen (1988) rule states that = 0.01-0.06 (small effect), > 0.06-0.14 (medium effect) and > 0.14 (large effect).

Table 7. *Post hoc* comparison according to age.

Age	12	12	12	13	13	13	14	15	16	17
	versus 15	versus 16	versus 17	versus 16	versus 17	versus 18	versus 18	versus 18	versus 18	versus 18
Functional knowledge about Tuenti	n. s.	n. s.	n. s.	n. s.	n. s.	0.003	0.015	0.021	0.001	n. s.
Functional knowledge about Facebook	n. s.	n. s.	n. s.	n. s.	n. s.	0.049	n. s.	n. s.	n. s.	n. s.
Functional knowledge about Twitter	n. s.	n. s.	n. s.	n. s.	n. s.	0.035	n. s.	n. s.	n. s.	n. s.
Frequency of use of Tuenti	n. s.	0.04	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	0.035	n. s.
Daily frequency of use of Tuenti	0.014	0.001	0.002	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.
Degree of personal satisfaction obtained from the use of Tuenti	n. s.	n. s.	n. s.	n. s.	n. s.	0.003	0.001	<0.001	n. s.	0.004
Degree of preference for Tuenti	n. s.	n. s.	n. s.	n. s.	n. s.	0.003	0.026	0.001	<0.001	0.006
Degree of difficulty of Tuenti	0.023	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.	n. s.

Note: Only variables that show statistically significant results are displayed ($p < .05$)

Table 8. Test for between-subject effects considering sex as the grouping variable.

Sex	Males		Females		<i>F</i>	<i>p</i>	η^2
	<i>M</i>	σ	<i>M</i>	σ			
Functional knowledge of Facebook	3.70	1.277	3.93	1.149	6.518	0.011	0.009
Frequency of use of Tuenti	4.18	1.309	4.38	1.145	4.586	0.033	0.006
Daily frequency of use of Tuenti	2.86	1.253	3.08	1.246	5.606	0.018	0.007
Degree of personal satisfaction obtained from the use of Tuenti	4.02	1.299	4.21	1.179	4.292	0.039	0.006
Degree of preference for Tuenti	4.28	1.106	4.49	1.002	7.273	0.007	0.010
Intentions regarding future use of Tuenti	4.40	1.116	4.61	0.855	8.030	0.005	0.011
Intentions regarding future use of Facebook	4.16	1.281	4.36	1.086	5.314	0.021	0.007

Note: Only variables that show statistically significant results are displayed ($p < .05$); η^2 (eta-squared statistic) = Estimates of effect size. The Cohen (1988) rule states that = 0.01–0.06 (small effect), > 0.06–0.14 (medium effect) and > 0.14 (large effect).

$p = .014$; $M_{12\text{yrs}} = 2.24$ versus $M_{16\text{yrs}} = 3.24$, $p = .001$ and $M_{12\text{yrs}} = 2.24$ versus $M_{17\text{yrs}} = 2.88$, $p = .002$).

6.3. Place of use

As regards *place of use*, all the social networks analysed were preferentially used at home. However, statistically significant differences were obtained when comparing this aspect in relation to *Tuenti*, in favour of home use (e.g. $F_{\text{Home}} = 558$ versus $F_{\text{EducationalCentre}} = 2$, $p < .001$). In this case, 73.7% of students used it at home, compared with 14% who used it at home and in the educational centre (Figure 3).

6.4. Reason for use, the purpose and main activity

As regards *reason for use*, participants had started to use the four social networks studied for fun or entertainment. Statistically significant differences were observed only in the case of the *Tuenti* social network between those who had started using it as a result of recommendations and

those who had begun for fun, in favour of the latter (e.g. $F_{\text{recommendation}} = 320$ versus $F_{\text{fun}} = 344$, $p < .001$).

On the one hand, the data analysis showed that the main *purpose* for using the four social networks studied was social (e.g. *Tuenti*, $F_{\text{Social}} = 464$ versus $F_{\text{Entertainment}} = 178$, $p < .001$), followed by entertainment and education, the latter coming last. These results agree with those obtained for the following variable analysed, *main activity*, in which a clear preference was observed for communication, followed by entertainment (Figure 4).

6.5. Recipients of communication

The main *recipients of communication* were friends and classmates (Figure 5). Depending on the social network used, friends were followed by relatives, teachers and strangers. As shown in Figure 5, 7% of the sample that used Facebook used it to communicate with relatives, whereas in contrast, 5% of Twitter users and 4% of Myspace users used these networks to communicate with strangers.

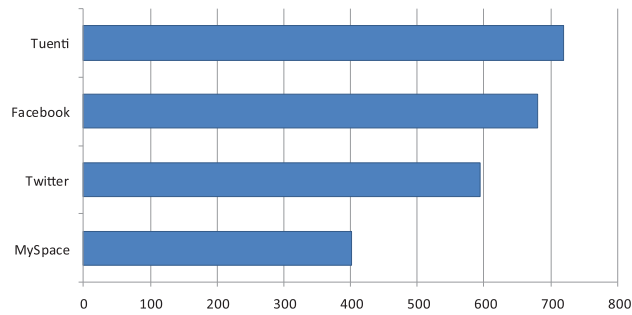


Figure 1. Functional knowledge of social networks.

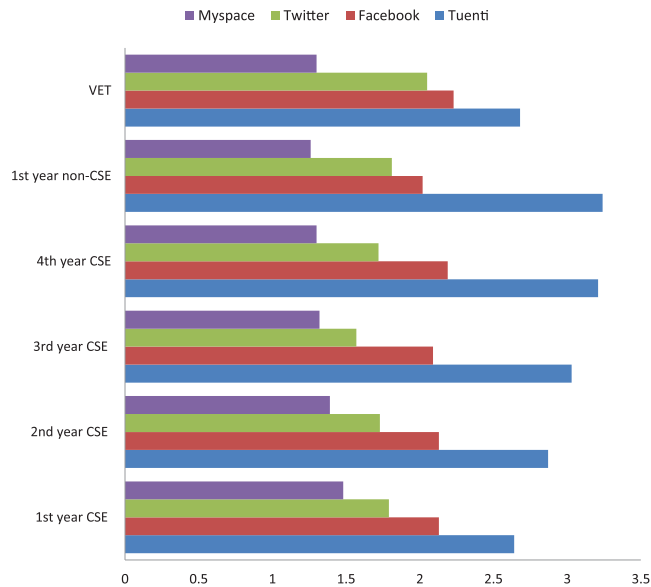


Figure 2. Overall frequency of daily use by educational level.

6.6. Degree of difficulty, satisfaction and preference of social networks

The four social networks analysed all presented a low degree of difficulty; however, they differed with respect to level of satisfaction and preference. Thus, a very high level of satisfaction was reported for Tuenti and Facebook, a medium level for Twitter and a low level for Myspace. As regards preference, Tuenti and Facebook were the most popular, whereas neutral opinions were recorded for Twitter and Myspace.

Statistically significant differences were found in relation to degree of difficulty when comparing Tuenti between first year and fourth year CSE students, in favour of the former (e.g. $M_{1st\ CSE} = 2.62$ versus $M_{4th\ CSE} = 2.03$, $p < .001$). These differences were maintained, and extended to the use of other social networks (Facebook, Twitter and Myspace) when comparing fourth CSE and first non-CSE students, to the detriment of the former (e.g. Facebook, $M_{4th\ CSE} = 2.11$ versus $M_{1st\ non-CSE} = 2.90$, $p = .002$). Similar differences

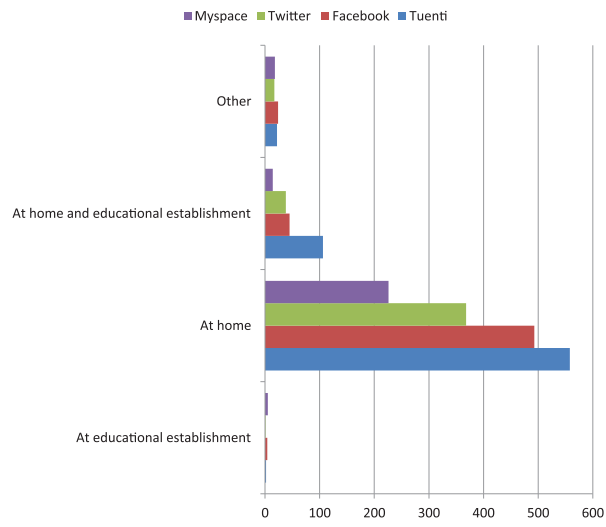


Figure 3. Place of use.

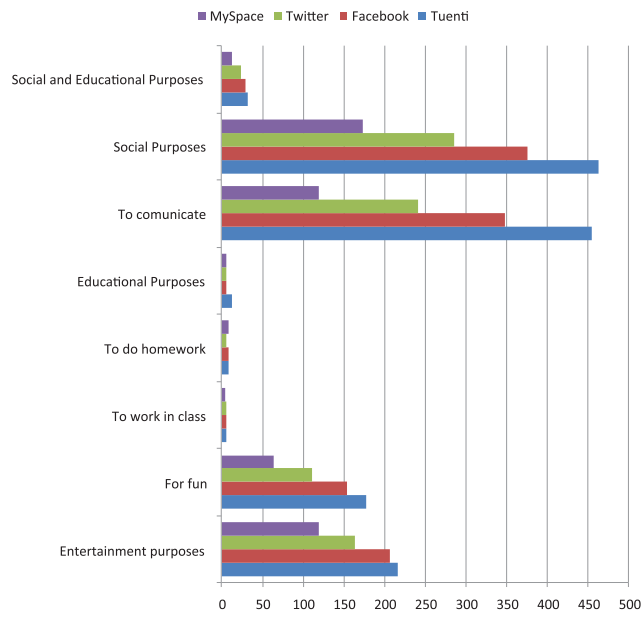


Figure 4. Purpose and main activity.

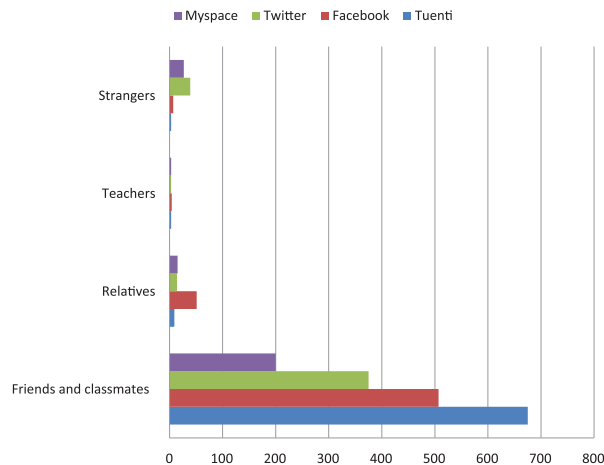


Figure 5. Recipients of communication.

were observed when comparing first year non-CSE students with vocational training students as regards degree of difficulty of Tuenti and Facebook (e.g. *Tuenti*, $M_{1st\ non-CSE} = 2.61$ versus $M_{VET} = 2.03$, $p = .047$) and *Facebook*, $M_{1st\ non-CSE} = 2.9$ versus $M_{VET} = 2.18$, $p = .044$). A statistically significant difference was also found when comparing responses from students aged 12 and those aged 15, in favour of the former (e.g. $M_{12yrs} = 2.90$ versus $M_{15yrs} = 1.96$, $p = .023$).

Continuing with this category and in terms of the variable *personal satisfaction with Tuenti*, statistically significant differences were obtained when comparing the vocational training students with students at any other educational level, to the detriment of the former (e.g. *Tuenti*, $M_{2nd\ CSE} = 4.15$ versus $M_{VET} = 3.30$, $p < .001$ and *Tuenti*, $M_{4th\ CSE} = 4.22$ versus $M_{VET} = 3.30$, $p < .001$). This trend was also observed when examining the variable *degree of preference for Tuenti* (e.g. *Tuenti*, $M_{1st\ CSE} = 4.29$ versus $M_{VET} = 3.70$, $p < .01$ and *Tuenti*, $M_{2nd\ CSE} = 4.38$ versus $M_{VET} = 3.70$, $p = .001$). Similarly, statistically significant differences were seen when comparing the responses of students aged 18 years and above with those given by students aged 13, 14, 15 and 17, respectively, to the detriment of those aged 18 and above (e.g. $M_{18+} = 3.83$ versus $M_{13yrs} = 4.43$, $p = .003$; $M_{18+} = 3.83$ versus $M_{14yrs} = 4.41$, $p = .026$; $M_{18+} = 3.83$ versus $M_{15yrs} = 4.48$, $p = .001$ and $M_{18+} = 3.83$ versus $M_{17yrs} = 4.51$, $p = .006$), and when comparing male and female students, in favour of the latter (e.g. $M_{males} = 4.28$ versus $M_{females} = 4.49$, $p = .007$).

6.7. Intentions regarding future use

Lastly, as can be seen in Figure 6, 73% of the participants reported their intention to continue using Tuenti, 62% Facebook, 47% Twitter and 26% Myspace. However, 4% stated that they would not continue using Tuenti, 7% Facebook, 12% Twitter and 22% Myspace. Statistically significant differences were observed for this category when comparing male and female students' responses about their intentions regarding future use of Tuenti and Facebook, in favour of the female students (e.g. *futureuseTuenti*, $M_{males} = 4.40$ versus $M_{females} = 4.61$, $p = .005$ and *futureuseFacebook*, $M_{males} = 4.16$ versus $M_{females} = 4.36$, $p = .021$).

7. Discussion

This study and the results obtained from the analyses conducted are consistent and illustrate the scientific and technological advances taking place in today's society, and the changes occurring in values, patterns of social behaviour, in the media and in the presence of social networks (Pfeil, Arjan, and Zaphiris 2009; Hampton et al. 2011; Glynn, Huge, and Hoffman 2012; Park, Lee, and Kim 2012; Chen 2013; Giannakos et al. 2013; Zhu et al. 2013). These demands oblige young people to adapt to a new reality, to modify their way of thinking and to adopt new attitudes, especially with regard to the limited time available for socialisation, bearing in mind that the human being is, by nature, a social being, that is, humans need to feel part of a group (Park, Kee, and Valenzuela 2009; Dunne, Lawlor, and Rowley 2010; Cheung, Chiu,

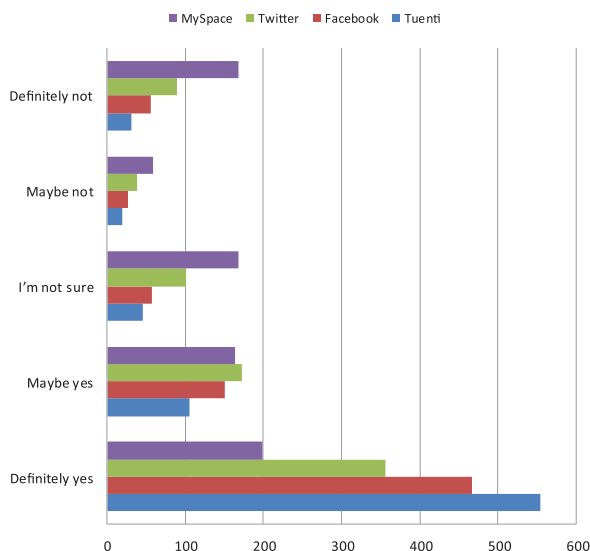


Figure 6. Intentions regarding future use.

and Lee 2011; Kim, Sohn, and Choi 2011; Special and Li-Barber 2012; Cheng, Liang, and Leung 2014). As the results show, social networks play a very important role in this, since they enable and facilitate the transformation of social structures and forms of relating through the creation of a new platform for social relationships, accessed by a range of different people in order to meet their expectations or needs, to collaborate and to feel part of a collective (Park, Kee, and Valenzuela 2009; Dunne, Lawlor, and Rowley 2010; Cheung, Chiu, and Lee 2011; Kim, Sohn, and Choi 2011; Cheng, Liang, and Leung 2014), thus favouring their personal and social development (Chen 2013; Zhu et al. 2013). In addition, the results also revealed that young people are increasingly finding that social networks can satisfy their needs, especially the *social*, among which the most noteworthy are the needs to gain prestige, acceptance and approval through the creation of groups of friends and the publication of their achievements and self-realizations (Hampton et al. 2009; Pempek, Yermolayeva, and Calvert 2009; Dogruer, Menevis, and Eyyam 2011; Chen and Marcus 2012; Glynn, Hüge, and Hoffman 2012; Special and Li-Barber 2012; Park, Lee, and Kim 2012; Chen, 2013; Johnston et al. 2013; Zhu et al. 2013; Cheng, Liang, and Leung 2014). In the second place is the *entertainment* needs, in which the amusement and the use of them as a means of avoiding problems or to fill up spare time would be to the fore (Park, Kee, and Valenzuela 2009; Cheung, Chiu, and Lee 2011; Kim, Sohn, and

Choi 2011). In the third place is the *emotional* needs, of which the most prominent are communication, satisfaction or self-assertion (Park, Kee, and Valenzuela 2009), and to a lesser extent, the *cognitive*, among which pride of place goes to the need to seek out and exchange information and curiosity (Park, Kee, and Valenzuela 2009; Kim, Sohn, and Choi 2011; Cheng, Liang, and Leung 2014). Thus, as predicted, the response pattern observed does indeed indicate that the way in which young people use these applications is related to their needs of personal and social development.

Following a careful analysis of the questionnaire responses, and in line with the aims of the study, the conclusions of this study on the use of the four social networks are presented in the following.

Firstly, the young people surveyed possessed a high level of functional knowledge of Tuenti, a medium level as regards Facebook and a low level with respect to Twitter and Myspace. This result confirms our first hypothesis and is consistent with the findings obtained in previous Spanish studies, most of which concerned market research and which reported that Tuenti is the most well-known and most frequently used social network in Spain (Elogia Ipsosfacto and IAB Spain Research 2010; Madden and Zickuhr 2011; Junco 2012b), in contrast to other European and North American countries, where Facebook is the most widely known and used social tool (Güzin and Koçak 2010; Dogruer, Menevis, and Eyyam 2011; Chen

and Marcus 2012; Hampton et al. 2012; Chen 2013; Gianakos et al. 2013). The results also show that functional knowledge of these tools increased with age, but only in the case of Tuenti and up to 17 years of age; this effect was not observed for the other social networks analysed, or when educational level or sex was considered as the grouping variables. Thus, the second hypothesis is partially confirmed as well as the last one. This result is in partial agreement with the findings reported in studies conducted in other European and North American countries (Hampton et al. 2012; Wodzicki, Schwämmlein, and Moskaliuk 2012). Furthermore, the results show that vocational training students, 90% of whom are males, possessed lower levels of functional knowledge of Tuenti in comparison with the rest of the students, and that males possessed less functional knowledge of Facebook than females, from which it can be concluded that females have a greater functional knowledge of these tools. This finding is also consistent with observations in other European Union and North American countries (Luckin et al. 2008; Hampton et al. 2012).

Secondly, the results for *frequency* show substantial variations as regards the amount of time spent on the four networks analysed, as has been found worldwide (Smith and Caruso 2010; Hampton et al. 2011; Hew 2011; Alexa 2012; Dabner 2012; Junco 2012a). Thus, this result is consistent with the American study conducted in 2011 by Hampton et al. Nevertheless, this research also shows that although all young people make frequent use of these tools, it is females who use them the most, thus confirming the third hypothesis. However, no sex-related difference was observed when analysing *place of use*, since all respondents reported using these tools mainly in the home. This finding is consistent with previous American and Spanish studies (Elogia Ipsofacto and IAB Spain Research 2009; Elogia Ipsofacto and IAB Spain Research 2010; Rideout, Foehr, and Roberts 2010), but contrasts with the study conducted in Korea by Lim and Meyer (2011). As regards the main *reason* for use, more than half of the students surveyed stated that they had started to use it for entertainment. The second most frequently cited reason was the recommendation of friends, relatives or acquaintances. This result contrasts with that reported by Elogia Ipsofacto and IAB Spain Research in 2010, but is consistent with the findings obtained in other American and European studies (Hew 2011; Special and Li-Barber 2012; Wodzicki, Schwämmlein, and Moskaliuk 2012).

Thirdly, Tuenti was the preferred social network for most respondents, obtaining very high levels of *personal satisfaction* and very low levels of difficulty, closely followed by Facebook. This result confirms our fourth, fifth and sixth hypotheses, although this diverges somewhat from those obtained in recent American and European studies (Ellison, Steinfield, and Lampe 2007; Lenhart and Madden 2007; Joinson 2008; Sheldon 2008a; Jones and Fox 2009; Lenhart 2009; Pempek, Yermolayeva,

and Calvert 2009; Lenhart et al. 2010; Mazman and Usluel 2010; Badge et al. 2011; Dabner 2012; Wodzicki, Schwämmlein, and Moskaliuk 2012; Junco 2012a; Junco 2012b; Johnston et al. 2013).

Fourthly, as regards *purpose*, the majority of young people reported using these networks for social rather than recreational or educational purposes. This result shows that the majority of young people questioned satisfy their social needs through the creation and maintenance of groups of friends and the publication of their achievements and self-realizations in the social networks. This result confirms our sixth hypothesis. However, this finding differs from the results of three previous African and European studies in which it was reported that social networks are sometimes used informally for educational purposes (Bosch 2009; Madge et al. 2009; Wodzicki, Schwämmlein, and Moskaliuk 2012), but is similar to those obtained in other American and European studies (Grunwald Associates 2007; Joinson 2008; Sheldon 2008b; Güzin and Koçak 2010; Mazman and Usluel 2010; Greenhow 2011; Chen and Marcus 2012; Special and Li-Barber 2012). In fifth and final place, in terms of *recipient*, virtually all respondents reported using these networks to communicate with friends and classmates rather than with relatives, teachers or strangers. This result differs from that obtained in the European study conducted by Sharples et al. (2009), where it was found that a minority of young people communicate with strangers, but is consistent with the results obtained in other European and American studies (Ellison, Steinfield, and Lampe 2007; Elogia Ipsofacto and IAB Spain Research 2009; Pempek, Yermolayeva, and Calvert 2009; Elogia Ipsofacto and IAB Spain Research 2010).

8. Limitations

This research has presented a number of difficulties, the foremost of which has been the limitations of the Google Docs application as regards the structure of the questions, the response options and the privacy policy. Consequently, the use that young people make of social networks requires further research, using other online applications such as SurveyMonkey, in order to minimise the inherent limitations presented by Google Docs and facilitate the use of a larger sample.

9. Conclusions

The results obtained show that (i) Tuenti is the social network that discriminates most in terms of educational level, age and sex; (ii) nowadays, young Spanish people possess a relatively high level of knowledge about social networks, and in particular about Tuenti; (iii) this knowledge stems from the large amount of time spent on them, their low degree of difficulty and the high level of personal satisfaction they produce, especially among females; (iv) entertainment is the reason that most young

people started using them and (v) they are used for a clearly social purpose, particularly for communicating with friends and classmates and to a lesser extent with relatives, thus excluding communication with teachers and strangers.

The present study therefore provides empirical evidence on the use of these tools and redresses the lack of information encountered in Spanish research on the subject under study, in two respects. Firstly, most publications in Spanish have concerned proposals or reflections which lacked solid and consolidated empirical analyses that confirmed or contradicted the assertions and conclusions presented. Secondly, the small number of studies that do provide empirical evidence is directly related to market research and consumer studies, and indirectly to advertising and mass communication (Elogia Ipsosfacto and IAB Spain Research 2009; Elogia Ipsosfacto and IAB Spain Research 2010; Fundación Telefónica 2012; García 2013). Furthermore, whilst it is true that recent reports have begun to include an analysis of behavioural and social aspects, this has been conducted using a broad and generic approach (Fundación Telefónica 2013). Thus, other aspects considered essential for personal and social development have been neglected; for example, an analysis of the existence of differential behavioural patterns in the use of these tools according to sex, age and educational level, and the personal, psychological, social and educational implications such patterns entail. This deficiency has been redressed in the present study. At the same time, this study confirms that social networks form part of the daily lives of adolescents, as was clearly indicated in the Demos study (Green and Hannon 2007). It therefore seems appropriate to affirm the need for further national and international research focusing on the variables in educational or social contexts that influence the use that young people make of these tools. Furthermore, another possible line of future research would be to conduct an analysis of the personal, social, educational and psychological effects (Aydin 2012; Paul, Baker and Cochran 2012; Johnston et al. 2013; Veletsianos, Kimmons, and French 2013) of incorporating these tools into the teaching–learning process.

The use of these social networks entails personal, psychological, social and educational benefits and risks. According to Agosto and Abbas (2013), the most characteristic benefits include exploration of personal and social identity, increased self-esteem, increased training and increased technological literacy and support for education, and hence, for formal learning. To these we can add the development of competencies, abilities and skills which are useful for daily life, creative and critical thinking and decision-making. On the other hand, and again according to Agosto and Abbas (2013), the main risks entailed in the use of these social networks by young people concern the privacy and security of the content.

In sum, future directions for research could include replicating this study using a larger sample, including other

social networks such as professional ones (LinkedIn, Xing and ResearchGate) and examining other educational levels, for example university students. Another possible line of future research would be an analysis of the devices used to access such social networks, or an investigation of the relationship between the use of these social networks and various psychological, social and personal constructs such as motivation, personality traits, human behaviour and learning (Chen and Marcus 2012; Giannakos et al. 2013).

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Conflict of interest disclosure statement


No potential conflict of interest was reported by the authors.

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CAPÍTULO 3

Preparing to Teach 21st Century Literacies

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FACTOR DE IMPACTO

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Building Bridges

Rethinking Literacy Teacher Education in a Digital Era

Clare Kosnik, Simone White, Clive Beck,
Bethan Marshall, A. Lin Goodwin and
Jean Murray (Eds.)

Foreword by Neil Selwyn

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JUDIT GARCÍA-MARTÍN, GUY MERCHANT AND
JESÚS-NICASIO GARCÍA-SÁNCHEZ

4. PREPARING TO TEACH 21ST CENTURY LITERACIES

INTRODUCTION

Ever since the widespread availability of affordable desktop computers for domestic use, digital technologies have been referred to in terms of their transformative potential. Adoption of these new technologies has been rapid, as survey data show (CRTC, 2013; IAB, 2015; OfCom, 2014; Pew Research Centre, 2014), and in some sectors of the population they have quickly been absorbed into everyday life. In many jurisdictions high-speed broadband provision and mobile connectivity have tapped into a growing appetite for digitally mediated social interaction (García-Martín & García-Sánchez, 2013; Merchant, 2012). Observing the ways in which mobile technology is “subtly insinuating itself into the capillaries of everyday life” (Gergen, 2003) draws attention to how different social groups have taken up the affordances of these technologies and used them to fulfil their diverse needs and purposes (p. 103). This now includes various forms of activism (McCaughey & Ayers, 2013), social enterprise (Donner, 2006), and financial transaction (Morawczynski, 2009), as well as everyday social interaction between partners and friends, parents and siblings, and families or interest groups. These interactions are often to a greater or lesser extent transacted through digital media such as Facebook, Instagram, Skype, and WhatsApp. As a result of these changes, the ways in which literacy, technology, and everyday social practice are interwoven is certainly of concern for educators.

Despite the proliferation of innovatory projects and initiatives, and the repeated iteration of aspirational rhetoric, education systems have been slow to respond to these new configurations of communication. Although the need for teachers and their students to engage with digital literacies at all stages of education has been articulated in numerous policy documents and directives, there has been little sustained impact in the classroom. Such policies frequently underline the economic desirability of 21st Century skills, and some also make reference to the role of digital literacy in citizenship and participatory culture (Jenkins et al., 2006; Mascheroni & Murru, 2014), but statutory curriculum requirements do not always reflect this (Burnett et al., 2014). It is not surprising then that preparing teachers to operate effectively with digital literacies in this changing environment is fraught with difficulty.

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Any identification of priorities for teacher education must acknowledge this background alongside the more specific key challenges. First among these are that teacher preparation takes place in a wide variety of situations and contexts. This variation includes different models of training such as the traditional university course-with-practicum provision, university-school training partnerships, and newer programmes that are entirely school-based. As a result, trainee teachers, and for that matter early career teachers, are likely to need access to training and support materials at different stages in their professional training and development, and at a variety of points during their academic study or professional preparation. Second, the field of digital literacy is characterised by fluidity and rapid development, as new devices become available and new programmes and applications are developed. Initial teacher education cannot be expected to prepare the profession for continuing waves of technological innovation and can therefore never be completely future-proof (Davies & Merchant, 2014). In addition to these two challenges, rapid changes in the curriculum structures of compulsory schooling, in an era of unprecedented reform, add to this whole sense of fluidity. At school level, large-scale curriculum reforms contribute to the difficulty of implementing digital practices, and as a result trainee and newly qualified teachers often enter an unpredictable and uncertain environment, characterised by shifting priorities and an uneven technological infrastructure.

In this chapter we draw on two perspectives to illuminate the call for better preparation of teachers to meet the challenges of integrating digital literacies in the classroom. We begin by looking at the current state of play in developing these new literacies in compulsory schooling. Given that this is an ambitious undertaking, we have simplified the task by teasing out key themes before going on to illustrate these as they play out in research and practice on three illustrative areas: “virtual play,” “social networking,” and “the extended classroom.” We then turn our attention to the adult population, focusing on students entering Higher Education, in order to gain a picture of the sorts of attitudes and experiences that graduates will bring to the classroom. This perspective is based on empirical work using the *Digital Technologies Survey* undertaken by the authors at the Sheffield Institute of Education. These two perspectives are then brought together in a set of recommendations for future development in training teachers to face the challenges of teaching 21st century literacies in school settings.

DIGITAL LITERACIES – CLASSROOM PRACTICE

For many teachers working in the compulsory sector, curriculum content and time allocation are tightly constrained. As neo-liberal education policies move towards tighter accountability structures, the pressure on schools to perform to standard, quantifiable success measures often has a narrowing influence on the curriculum (Ball, 2012). Those aspects of literacy, mathematics, and science that are amenable to simple assessment measures have tended to be favoured (see Williams, 2007),

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leaving teachers with little time or scope for “non-core subjects” and even less for developing innovative approaches. As a direct result of this, the use of digital technology and the development of appropriate pedagogy in classrooms are patchy, with pockets of innovation often dependent on individual enthusiasm or local initiative (Burnett et al., 2014).

In addition to this, the rapid dissemination of new technologies has led to important, but unresolved, debates about the nature of learning and teaching in the “digital age.” Whether or not new technologies themselves lead to, or determine, transformations in learning and teaching is highly contentious (Crook, 2012; Merchant, 2012), but it is nonetheless quite clear that working in digital environments at least prompts us to raise questions about traditional practices and relationships, and to explore new approaches in the classroom. Of course, introducing new practices into educational settings *always* constitutes a challenge. Whether such practices involve resources, materials, approaches to teaching and learning, or curriculum content, the extensive literature on innovation in schools repeatedly reminds us that change is never a simple process (Fullan, 2001; Hargreaves, 2005). Digital literacies, and the wider social practices in which they are embedded, add to this complexity and often seem to disturb the “fragile ecology of the classroom” (Merchant, 2009). This effect can be accounted for in a number of ways, but some key issues seem to surface in the literature:

- *Digital practices have emerged alongside significant changes in social life.* These changes have precipitated a reconsideration of the relationship between learners and teachers, an acknowledgement of the permeability of classroom space, and new ideas about how knowledge is generated and distributed, some of which are deeply embedded in non-formal learning, popular culture and out-of-school contexts (Lankshear & Knobel, 2010).
- *Digital practices, particularly those that take place in online spaces, foreground issues of identity and self-presentation.* Although these identities are not separate from everyday life, managing an online identity or presence on social media raises new issues. As a result of this, children and young people need to learn how to manage their digital identities in all aspects of their lives in order to develop safe, ethical, and advantageous practices (Greenhow & Robelia, 2010).
- *Digital competence is not evenly distributed.* Often, following Prensky (2001), children and young people are positioned as an homogeneous group of “digital natives” who know more than adults – but we now understand that differences in confidence, competence, and use are patterned in more nuanced ways. The naivety of the “digital natives” debate has been clearly exposed (Bennett & Maton, 2011) and the utopian rhetoric about equal access has been challenged (see Warschauer & Matuchniak, 2010).

Despite the wide range of complex and constraining factors – the overall policy and curriculum context, and the specific issues that new technologies raise – research and practice, although often the result of small-scale work, continue to thrive. In

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what follows, we focus on three areas that illustrate how these issues play out in classroom studies. We begin with an overview of the research and development on educational uses of videogames and virtual worlds (referred to here as virtual play), before moving on to look at the contentious area of social networking. We then turn our attention to various strands of research and practice that constellate around ideas about “the extended classroom.”

Virtual play. Video games and virtual worlds occupy an important place in the lives of many children and young people. In common with other imaginary realms they are culturally significant in that they can both entertain and educate. They provide a rich context for the development of new communities of play (Pearce & Artemisia, 2010) – communities that may be co-present, dispersed, or a hybrid of both. Research suggests that virtual play presents opportunities for the sorts of active engagement, production, and interaction that constitute 21st century literacies and are hallmarks of an emerging participatory culture (Jenkins et al., 2006). So at their best these environments nurture communicative practices that are important in contemporary life, and provide an arena for problem-solving and higher order thinking skills (Squire, 2012). However, not all videogames and virtual worlds do this; they may simply entertain their players, or at worst provide unhelpful models of consumerism or gender (Carrington & Hodgetts, 2010).

Investigations of the meaning making practices associated with virtual play constitute a distinct subset of the research on new literacies. For example, Steinkuehler (2007) suggests that a “constellation of literacy practices” is involved in gaming, whereas Marsh’s (2010) work on *Club Penguin*, Gillen’s (2009) study of *Teen Second Life*, and research with *Active Worlds* (Merchant, 2009) all illustrate the digital literacy practices that constitute and accompany virtual play. These studies show that children and young people not only find virtual play compelling, but that they engage in sophisticated multimedia practices that often spill out into different aspects of their life including real world play, traditional forms of writing, and other online activity (Burnett & Merchant, 2014). The implications of this work for formal education are significant. Educators may need to take these new experiences of literacy into account and acknowledge their role in learners’ lives, but they may also want to incorporate some gaming and virtual world play into school life, and in this respect claims made about the learning that takes place in gaming (Gee, 2003) and around gaming (Stevens et al., 2008) are particularly significant.

Social networking. Since its inception the Internet has worked as a channel for communication and social connection, and yet one of the most noteworthy developments of recent years is the growth of “social software,” and the spread of the ‘read/write web’ (Richardson, 2006). Applications specifically designed to support and develop friendship and social interaction have a relatively short history. Facebook, Instagram, and Twitter are currently the most popular of these, but importantly social networking has become a global phenomenon with sites like

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V Kontakte, Q Zone, and Tuenti providing for different language groups. Social networking is a prime site for identity performance and public displays of friendship, but it also involves knowledge-sharing and dialogic exchange (Gillen & Merchant, 2013), the flow of news and current affairs (Vis, 2013), and the enactment of micro-celebrity (Page, 2012).

Despite some of the moral panics that seem to attach to online social networking (see, for example, Cassell & Cramer, 2008), this unparalleled explosion of everyday digital communication has provoked a range of reactions amongst educators. Social networking sites have been vilified by some – who suggest that they have a corrosive influence on friendship, face-to-face interaction, and standards of written communication (Palmer, 2006). Others have argued that they provide important opportunities and challenges for classroom exploration. For example, Hull and Stornaiuolo (2010) in describing an initiative to promote cosmopolitanism through education-based social software assert that:

...the rewards could not be greater, or the risk of failure more grave for educating a citizenry able and willing to communicate with digital tools across differences in a radically interconnected yet divided world. (185)

In many ways the different orientations to using social software in education rehearse familiar positions concerning the relationship between the popular culture of children and young people and the more formal world of school. Nevertheless, we argue that the mere fact that children and young people are becoming literate across a range of social media has implications for educators.

Greenhow and Robelia (2009) in their investigation of high school students' social networking suggest that: "...educators must help students enact legal, ethical, responsible, safe and advantageous online community practices" (p. 136). They note that alongside issues about Internet safety, educators should promote what they describe as *advantageous* practices. For Burnett and Merchant (2011), advantageous practices are those that contribute to: increasing individuals' life chances; enhancing civic engagement; empowerment through collaboration and participation; making a positive contribution to the wider community; and recognising and responding to diverse identities and viewpoints.

The extended classroom. A growing number of studies, including those by teacher researchers, report on ways in which a variety of different technologies can be combined to connect classrooms with the wider world. In one study, Davies and Merchant (2009) report on the work of a Canadian teacher whose philosophy is to "invite the world" into her classroom in order to help her 6 year old students to learn. She used a class blog, a YouTube channel, Skype, and other digital tools to promote this work. The urge to harness connectivity to enrich, and sometimes to drive learning suggests the idea of an extended classroom – an idea that has caught the interest of many educators who are using social media for educational purposes. For example, Waller (2013) describes his use of Twitter in the classroom, detailing

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how safe and ethical practices are observed, but also how microblogging ties in with learning that combines both new and traditional literacies. In his work with older students, Parry (2011) argues that teachers need to show students:

...how to use these technologies effectively to ensure they end up on the right side of the digital divide: the side that knows how to use social media. (p. 2)

In developing a rationale for what he calls “mobile literacy,” Parry identifies three areas of focus. These are: (1) understanding information access, (2) understanding hyperconnectivity, and (3) understanding the new sense of space. The first is about encouraging students to use technology to access information; the second, relates specifically to developing new types of learning relationships, and concerns the use of social media to connect learners with those outside the immediate classroom context in advantageous ways; and the third concerns the ways in which technology mediates one’s experience of the material/physical world.

Work on virtual play, social networking and the extended classroom suggest some ways in which new technologically mediated practices are being used to enrich students’ educational experience. They do however, introduce new pedagogical considerations and raise quite specific issues for teachers. Furthermore, it is worth noting that the work described has mostly been undertaken by *experienced* teachers, often in collaboration with researchers – those who are keen to explore new developments in the classroom. If a new generation of teachers is to respond to the challenge of integrating digital literacies in the classroom, we need a sense of what understandings and experience they bring to the profession. In order to address this we now turn attention to our own empirical work with students entering Higher Education.

THE DIGITAL EXPERIENCE OF STUDENTS IN HIGHER EDUCATION

As we have seen, digital technologies, and particularly social media, have rapidly increased their importance in personal, social, and educational contexts (Bennett et al., 2012; García-Martín & García-Sánchez, 2013; García-Martín & García-Sánchez, 2015; Merchant, 2009; Weyant & Gardner, 2010). Students entering higher education are now regularly expected to use these tools in the course of their study (Bennett et al., 2012; Laru, Näykki, & Järvelä, 2012) and sometimes as part of their assessment, and of course this is particularly relevant to student teachers in the light of what has already been discussed. Despite this we know relatively little about how students feel about this, or their prior experience.

In order to shed some light on this, in October 2014, we surveyed 919 new undergraduate and postgraduate students at Sheffield Hallam University. Although we would not claim that these students are necessary typical of a wider population, the survey does provide a snapshot of students entering higher education, based on a contemporary student cohort attending a large provincial university in the UK. The students’ average age was 22, 35.3% being male and 64.7% female, and they

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were evenly distributed between six different faculties at the university. Most were full-time students with a small percentage enrolled on part-time courses (5.1%). Although only a small percentage of this student cohort would be likely to enter the teaching force, the data enable us to think about the digital lives of those whose age and level of education make them eligible for teacher education.

We designed the *Digital Technologies Survey*, which was made available online to these students. The survey consisted of four clearly differentiated sections: the first provided basic information about the characteristics of the survey, including its purpose and estimated duration; the second addressed data protection and confidentiality issues; the third contained the substantive survey questions; and the final part acknowledged the importance of student participation and project funding. To gain an impression of students' digital lives the key survey questions addressed three areas¹:

- i. *Students' general use of digital technologies* – this included questions on use, frequency, and device preference for twelve kinds of digital technologies: blogging software; wiki software; applications for synchronous communication (such as Skype and FaceTime); video sharing; presentation tools; microblogging; social networking; business-oriented networking sites (such as LinkedIn); screencasting tools, web-based response systems; interactive online stickies (such as Pinterest and Picassa), and photo sharing tools.
- ii. *Students' feelings about using digital technologies* – this included two questions about familiarity and confidence with the use of the above group of technologies.
- iii. *Students' perceptions of the use of digital technologies in their studies* – this included three questions about expectations about the use of these tools in the university studies.

The results from our descriptive analysis of the eleven variables – (i) pattern of use, (ii) frequency and duration of use, (iii) place of use, (iv) device used, (v) who recommended the specific tool, (vi) reason or purpose for use, (vii) recipient of the communication, (viii) familiarity and confidence in doing specific tasks, (ix) expectations, (x) confidence and (xi) importance – are explained below.

Firstly, over 90% of the students reported using video-sharing and social networking, and 85% used synchronous communication. This was followed by photo sharing tools (70.5%), and microblogging (67.8%). About half of the sample reported using presentation tools and wikis, whereas fewer used interactive online sticky notes (37.1%), blogging (32.5%), or business-oriented social software (28.6%). Web-based response systems (19.5%) and screencasting tools (10.9%) were used the least. These findings are similar to the results obtained in previous European and American studies and reports (García-Martín & García-Sánchez, 2013; IAB, 2015; Junco, 2013; Pew Research Center, 2014). On the one hand, they seem to suggest a split between personal social use and educational use, and on the other a clear preference for synchronous tools over asynchronous tools.

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Secondly, regarding frequency of use, many of these technologies (such as web-based responses systems, screencasting, wikis, business-oriented social networking tools, interactive stickies, blogging and presentation tools) were used for less than 1 hour per week, whereas photo sharing, synchronous communication, microblogging and video were used more regularly – from between 1 to 3 hours a week. A higher frequency of use was reported for social networking with estimates of between 3 and 6 hours a week. This is also consistent with the results of recent European and American studies and again suggests that more time is devoted to personal social uses of technology than educational software.

Thirdly, with regard to the place of use, digital technologies were mainly used in the home (50%), less often on campus (16%), in the library (10%), or at a place of work (4%). Nevertheless, there were some differences of use in function of the digital technology. In this regard, the digital tool most used in the library and on campus was blogging (37%). However, social networking sites, as one might expect, were used across the domains, in the place of work, at home and on campus. Photo sharing, microblogging, presentation and video were also mainly used on campus. Over 80% of the students surveyed used social networking sites, video, and synchronous tools at home. This suggests some distinctions between the domains of use, although the responses do lend support to the popular belief in the ubiquity of social networking.

With respect to how students were introduced to these particular tools we can see a strong pattern of peer recommendation and discovery with over 46% reporting that they found out about them from their friends, or discovered them by themselves (24%). Teachers (8%), family (7%), and others (2%) were less influential. With respect to the purpose, in general students used the tools for social (29%), entertainment (27%), and less for educational (21%) reasons. A third of the students reported using digital tools for communication with friends, with smaller numbers for family (18%) and classmates (12%). Only 5% used them to communicate with teachers. This finding is consistent with the results of a recent Spanish study (García-Martín & García-Sánchez, 2015) and highlights the importance of peer recommendation in discovering new digital tools and the over-riding significance of digital communication in social interaction and entertainment. Interestingly though, there was some recognition of their role in education.

In general, most students expected to use these digital tools in their university studies. Although they did not anticipate using photo sharing applications in their studies, they saw that they might use some of the other tools listed for educational purposes. Generally though, they anticipated using presentation and video tools for their university studies, and this could well reflect their prior use of them in school and other educational settings.

Many students reported a lack of confidence in using more unfamiliar tools in their university studies (screencasting, web-based response systems, business-oriented social networking, blogging and interactive online sticky notes in particular). Confidence in the use of presentation tools, wikis, photo sharing, synchronous tools, and microblogging was higher, and as might be expected they felt very confident

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in using video tools or social networking for their university studies. Finally, it seemed that students thought that digital technologies were an important part of their university studies. However, they were not convinced of the importance of photo sharing, microblogging, synchronous communication, and interactive online stickies. This could well reflect their lack of experience in using these technologies in educational contexts.

These findings provide more evidence to support the claim that digital technologies are omnipresent in the daily life of young people. The results also show that university students would like to use the digital tools that they know in their studies, and in the case of some tools they believe that they *should* use them for learning. At the same time the results suggest that it is necessary to spend more time in training new teachers in the use of these technologies for educational purposes. Although these new entrants to higher education were familiar with a range of new technologies, their experience of using them was mainly restricted to everyday social interaction. What is encouraging about the findings is their recognition that technologies have a role to play in their own learning. However, as Burnett's (2009) work so clearly illustrates, personal use, whether social or educational, does not necessarily translate into professional use in the classroom.

THE WAY FORWARD

We began this chapter by observing that the wide reaching change in communicative practices associated with new technologies has yet to make a significant impact on compulsory schooling, and we suggested a number of reasons why this might be the case. These include the disconnect between policy rhetoric, curriculum reform, and school accountability in this area. We also noted that digital literacies challenge how we think about teaching and learning – as well as how we think about teachers and learners. This could be seen as part of what Lankshear and Knobel (2010) describe as the “mind-set” of new literacies. Yet, despite all this, interesting and innovative developments are taking place, and the literature on virtual play, social networking, and extended classrooms gives promising examples that indicate useful ways forward.

Our survey of students entering higher education adds to this picture by suggesting that graduates joining the teaching profession are likely to have “insider knowledge” of digital technology and at least some understanding of how it might be put to use for educational purposes. But such an understanding on its own is unlikely to be sufficient to drive the sort of changes that are required to develop 21st century literacies in the classroom. Clearly work is needed at many levels, but in drawing this discussion to a close we make 4 recommendations that we believe could have a lasting impact.

- i. *Provide student teachers with first hand experiences of using digital literacies in the classroom.* Partly because digital practices raise quite specific issues for

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practitioners, those who are preparing to join the profession need to know what actually happens in practical situations. In order to achieve this, student teachers need to work with confident, innovative, and reflective practitioners who have a working knowledge of some of the challenges – including how to promote safe, ethical, and advantageous practices and how to deal with resource issues and technical glitches.

- ii. *Provide structured opportunities for student teachers to reflect on innovative classroom practices that they have participated in or observed.* Optimising the learning of student teachers may well be dependent on the kinds of critical reflection that they engage in, and structuring reflective discussion and activity are an important part of this. Evaluating what works, and why, as well as what might not be so successful can be instructive particularly when this is done in the context of an understanding of the characteristics of 21st century literacy practices (see Burnett & Merchant, 2014).
- iii. *Provide opportunities for student teachers to explore the affordances of a range of applications that could be used in the classroom.* Our Digital Technologies Survey shows that students in Higher Education are very familiar with some applications and not others. They may also be unaware of what digital tools are being used in school settings. Given that our survey data show the significance of peer recommendation, it might well be useful to think about how student teachers could explore and trial applications that are new to them, before demonstrating and recommending them to their peers. This replicates the sort of informal professional development that already occurs within teacher groups on Twitter.
- iv. *Provide student teachers with opportunities to critically evaluate the literature on digital literacies in education.* Because innovation in digital technology is fast moving, opportunities to look at current research and professional literature are important for those in teaching. But along with this there is now a strong literature base of theoretical and empirical work that informs current thinking and innovation in classroom practice. Being familiar with this literature will provide student teachers with critical purchase on their explorations of 21st century literacies in practice.

Finally, to return to a point made at the beginning of this chapter, we need to acknowledge the emergent nature of digital literacies. Initial teacher education cannot be expected to offer a future-proof set of skills, understandings, and classroom practices. Keeping pace with new technologies and evaluating their use and usefulness in classroom contexts also has to be part of continuing professional development.

NOTE

- ¹ The questions in the first and second theme were adapted from the HEWE2.0 questionnaire (García-Martín & García-Sánchez, 2013).

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CAPÍTULO 4

Asesoramiento psicopedagógico virtual

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FACTOR DE IMPACTO

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Sherpa-Romeo

García-Martín, J. y García, J. N. (2014a). Asesoramiento psicopedagógico virtual. *International Journal of Developmental and Educational Psychology*, 26, nº 1(4), 349-354.

**ASESORAMIENTO PSICOPEDAGÓGICO VIRTUAL
ON-LINE PSYCHOEDUCATIONAL COUNSELLING AND GUIDANCE**

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ABSTRACT

With the emergence of “knowledge society”, new approaches and educational and psychological theories have emerged. We have described a proposal of instructional program have been designed with Web 2.0 tools. We want to analyze the effects that the use of different web tools in the process of teaching and learning generate in various psychological and educational constructs, at the same time, we instruct in writing and others psychological and educational variables. We expect that the effectiveness and efficiency of various web tools for instruction will be confirmed. We hope to observe an increase of motivation, self-efficacy and academic performance as well as an improvement in quality of writing. This study is funded by the Spanish Ministry of Science and Innovation, National Program for Human Resources, Training of Research Staff, Predoctoral Research Grants subprogram (FPI-MICINN, currently MINECO) was awarded to J. García- Martín for four years (2011-2015).

Keywords: writing, motivation, competences, web 2.0, instruction

RESUMEN

Con el surgimiento de la “sociedad del conocimiento” emergen nuevos enfoques y teorías educativas y psicológicas en las que se fundamentan los programas instruccionales actuales. Se describe una propuesta de programa instruccional 2.0 con el que se persigue analizar los efectos que el uso de herramientas web, durante el proceso de enseñanza-aprendizaje, produce en constructos psicológicos y educativos diversos al mismo tiempo que se ofrece asesoramiento psicopedagógico en variables psicoeducativas. Se prevé que se confirme la utilidad, efectividad y eficiencia de diversas herramientas web para la instrucción, que se observó un incremento de la motivación, de la autoeficacia y del rendimiento académico así como un aumento en la calidad de la escritura. Este estudio está financiado por el Ministerio de Ciencia e Innovación (MICINN) actual Ministerio de

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Economía y Competitividad (MINECO), Programa nacional de Formación de Personal Investigador (FPI-MICINN), Subprograma de becas de investigación predoctorales, concedida a J. García-Martín para el cuatrienio (2011-2015).

Palabras Clave: escritura, motivación, competencias, web 2.0, instrucción

INTRODUCCIÓN

En la actualidad es más que sabido que la forma de acceder, seleccionar, facilitar, gestionar y clasificar la información y el conocimiento que recibimos ha evolucionado considerablemente en las últimas décadas, especialmente en la Educación Superior, es decir hemos pasado de un aprendizaje estático y centralizado a otro dinámico y distribuido, de un escenario centrado en la transmisión a uno focalizado en la construcción y en el que el docente cede el protagonismo al alumno, convirtiéndose él, en un asesor (Gunawardena et al., 2009). Por ello, es evidente que las *interacciones*, las *instrucciones* (Moore, Dickson-Deane, & Galyen, 2011), los *enfoques* (Knoblauch, 2013; O'Donnell, 2012) y las *intervenciones educativas y psicológicas* se deben de adaptar a los nuevos tiempos, en definitiva a la denominada *sociedad de la información* fundamentada entre otros aspectos en la *educación de excelencia* y en un *currículum para la vida* cuya máxima premisa debe ser ayudar a los *Digital Natives* [nativos digitales] (Prensky, 2001; Margaryan, Littlejohn, & Vojt, 2011) o *Net Generation* [Generación Net] (Tapscott, 1998; Margaryan et al., 2011) o *Generation M* [Generación M] (Vie, 2008) a adquirir las actitudes, habilidades, destrezas y competencias necesarias para enfrentarse al mundo *en condiciones de excelencia*.

En esta línea, por una parte, en los últimos años, estudios internacionales previos han analizado y descrito el uso personal, educativo y social que los jóvenes hacen de diversas herramientas de la web, de los factores que influyen en ese uso y de las percepciones y creencias que profesores y estudiantes tienen sobre ellas. En cuanto a los *Learning System Management (LSM)* [*Ambiente, Escenario o Entorno virtuales de aprendizaje*] (Costa, Alvelos, & Teixeira, 2012), y en relación a otras herramientas de la web 2.0 como los *blogs* (Lai & Chen, 2011), los *wikis* (Deters, Cuthrell, & Stapleton, 2010) y las *redes sociales* (Chen, 2011; Cheung, Chiu & Lee, 2011; Veletsianos & Kimmons, 2013). Pues bien, por un lado, la mayoría de las investigaciones han demostrado que el uso de estas herramientas es muy elevado, llegándose a afirmar en el caso de las *redes sociales* que están omnipresentes en diferentes escenarios de la vida cotidiana de los jóvenes (Dabner, 2012; García-Martín & García, 2013; Junco, 2012). Y por el otro, la mayor parte de los estudios realizados en el ambiente educativo coinciden en que tanto profesores como alumnos tienen percepciones y creencias positivas en torno al uso de estas herramientas durante el proceso de enseñanza-aprendizaje (Chen, 2011; Cheung et al., 2011; García-Martín & García, 2013; Veletsianos & Kimmons, 2013). Sin embargo, en lo que respecta a este aspecto la investigación nacional es bastante deficiente pues la mayoría de las publicaciones en español son experiencias educativas o didácticas que carecen de análisis empíricos sólidos y consolidados que avalen o contradigan sus afirmaciones o conclusiones (Cano & Cabrera, 2013; González, 2012). A pesar de ello, en los últimos años se han venido desarrollando estudios descriptivos e intervenciones instruccionales que están comenzando a suplir dicha carencia (Álvarez, García, García-Martín & Díez, 2012; García-Martín, García, Álvarez & Díez, 2014; García-Martín, García, Álvarez & Díez, 2013; García-Martín, García, Álvarez & Díez, 2012).

Por todo ello, con la presente investigación se persiguen analizar los efectos que el uso de determinadas herramientas de la web durante el proceso de enseñanza-aprendizaje producen en variables psicológicas y educativas diversas a través de la aplicación de un programa instruccional en la Educación Secundaria Obligatoria.

MÉTODO

Participantes

La muestra estará compuesta por estudiantes del primer ciclo de la Educación Secundaria Obligatoria de distintos centros educativos del territorio español que compartirán características similares en cuanto a edad, nivel educativo, formativo y social se refiere.

Diseño

Se diseñará un programa instruccional mediante herramientas webs diversas tales como el Moodle, el SurveyMonkey, YouTube, Hot Potatoes... De modo que estará compuesto por *bloques temáticos* diversos que a su vez estarán formados por *unidades instruccionales o sesiones con tareas y actividades* variadas que estarán engarzadas cuidadosamente en forma de enseñanza programada, garantizando de este modo, el seguimiento efectivo del programa instruccional completo y un aprovechamiento máximo, dada la secuencia de auto-evaluaciones y feedbacks. En esta línea, cada unidad instruccional contará con una dedicación temporal mínima de aproximadamente treinta minutos.

Asimismo, se diferenciarán cuatro modalidades instruccionales claramente: *i) proceso, ii) producto, iii) mixto y iv) tradicional* al que se pretende añadir una medida de seguimiento posterior a la intervención, es decir, este estudio contará con cuatro grupos: tres experimentales y uno de control, con las mismas condiciones, contenidos y personal docente. Así mismo guardará una estructura clásica de comparación pretest-postest y postest-postest, al que se pretende añadir un grupo con tratamiento tradicional de control (cuarto grupo), y una medida de seguimiento posterior a la conclusión de la intervención como procedimiento de evaluación del mantenimiento de sus efectos (pretest-postest-seguimiento). Cumpliéndose de este modo, el criterio de consistencia.

En el primer grupo, se llevará a cabo un *enfoque de procesos* centrado en la escritura como actividad compleja que implica tres grandes subprocesos, planificar, escribir o editar y revisar: (i) la *planificación*, que incluye la recogida de información, el propósito, la audiencia y el contenido; (ii) la *edición*, que englobaría las características del tipo de texto, la elección de un léxico adecuado, la cohesión, la ortografía, la puntuación y la morfosintaxis; y (iii) la *revisión*, que consistiría en volver sobre lo escrito, releendo y evaluándolo a nivel de contenido y de forma, y haciendo los cambios mecánicos y sustantivos precisos del mismo.

En el segundo, se aplicará un modelo basado en el *producto*, centrado en la evaluación de la composición escrita como resultado, sin considerar los procesos psicológicos, los pasos a seguir o el momento del mismo. En el que se pondrán en práctica una serie de habilidades, generación de información, organización de ideas: coherencia referencial y relacional, puntuación y ortografía. Además de enfatizarse la calidad final del texto.

En el tercero, se trabajará un enfoque mixto que englobará tanto los *procesos psicológicos* implicados en la escritura como el *producto final*.

Y en el cuarto grupo, se llevará a cabo una *enseñanza tradicional* en base a la escritura sin establecimiento de pasos, centrada en el contenido y no en los procesos.

Todos estos grupos reunirán las características que debe tener una intervención de calidad, rigor y que pueda ser homologable, replicable y publicable en las revistas científicas internacionales para ser validados empíricamente. Para ello, se seguirán las directrices acordadas en la reunión ERN-LWE (2007): *i) target learners and design, ii) goals, iii) instructional activities (teacher / student), iv) assessment as part of instruction, v) professional development / teacher's training, vi) implementation control groups, vii) fidelity of treatment, viii) durability and generalizativity, ix) length, amount of time, x) to do an empirical based intervention (EBI), and xi) and how to describe the interventions in the future?* Para responder a estos aspectos se diseñarán diferentes indicadores. Algunos son

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habitualmente usados en las intervenciones, pero otros no, como la necesidad de controlar y evaluar la fidelidad del tratamiento según grupo de intervención, la necesidad de estudiar el mantenimiento y la generalización de los efectos.

VARIABLES

Con este programa instruccional se explorará el impacto que diferentes herramientas producen en *variables psicológicas, educativas e instruccionales* diversas tales como la motivación, la autoeficacia... así como en competencias personales y básicas (el tratamiento de la información y competencia digital, la competencia de aprender a aprender, la competencia social y ciudadana, la autonomía e iniciativa personal, la cultural y artística, el conocimiento y la interacción con el mundo y la competencia en comunicación lingüística) y se examinarán los cambios e influencias producidos dentro del proceso y producto de la escritura propiciados por su uso continuado e intencional en las aulas.

Al mismo tiempo que se asesorará y orientará a los alumnos en torno a variables psicoeducativas diversas tales como *el autoconocimiento, la asertividad, las relaciones interpersonales, los estilos de pensamiento, la motivación, el pensamiento creativo y el crítico y el control de emociones y de estrés*.

RESULTADOS PREVISIBLES

Se espera que los resultados de la presente investigación confirmen aspectos diversos que pueden ser clasificados en dos bloques.

El primero incluye todo lo relacionado con los usos y efectos de herramientas de la web diversas durante el proceso de enseñanza-aprendizaje de contenidos instruccionales y psicológicos variados. En sentido, se espera confirmar que las herramientas de la web 2.0 son útiles y eficaces para llevar a cabo el proceso de enseñanza-aprendizaje de cualquier temática (Liaw & Huang, 2013). Además, se prevé obtener conclusiones concretas y específicas sobre la eficacia y eficiencia de determinadas herramientas para la instrucción de contenidos psicológicos, académicos, instruccionales y sociales determinados. Asimismo, también se espera demostrar que el uso correcto de estas herramientas no conlleva un aumento del tiempo que dedican los docentes a la preparación de las enseñanzas presenciales.

El segundo bloque de resultados abarca todos los resultados obtenidos relacionados con la instrucción en escritura. En este sentido, se espera que la instrucción mixta (proceso y producto) sea más eficaz y eficiente que las centradas en el proceso o en el producto de manera independiente y mucho más aún que la tradicional (Álvarez et al., 2012). Asimismo, se predice un incremento en la calidad, organización y estructura de los textos de los alumnos como consecuencia del uso de las herramientas de la web durante el proceso de enseñanza-aprendizaje. Igualmente se prevé que se incremente el rendimiento académico así como otros efectos más inespecíficos como mejora de las creencias de capacidad, aumento de la motivación, de la autorregulación en el aprendizaje y el desarrollo de competencias diversas (García-Martín et al., 2013; García-Martín et al., 2014; Joo, Lim, & Kim, 2013; Liaw & Huang, 2013).

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CAPÍTULO 5

The effects of four instructional approaches used in a MOOC

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The efficacy of four instructional approaches used in a MOOC

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ABSTRACT

This study examines the efficacy of a MOOC-format instructional program, *Improvement of personal competencies for success*, which entailed the use of four clearly differentiated instructional approaches (three experimental approaches and one control approach): i) *product*, with an emphasis on the final result and the overall quality; ii) *processes*, with an emphasis on recursion and constant self-assessment of the processes; (iii) *mixed*, oriented on the result and overall quality as well as to recursion, self-reflection and self-assessment; and iv) *traditional (control)* focused on online instruction of the subjects and on the accomplishment of tasks. The MOOC was designed and implemented through the Universidad de León's external Moodle (Ariadne). It involved 745 people aged between 10 and 50, though only 336 completed it. The results demonstrate the efficacy of the MOOC—irrespective of the instructional approach followed—for instruction on different contents and competencies, such as resilience, achievement motivation and self-esteem; they reveal a statistically significant increase in different variables such as self-efficacy and they confirm the effectiveness of Moodle for the design and development of a MOOC. The implications of these findings are discussed and evaluated.

Introduction

In recent years, Massive Open Online Courses (MOOCs) have become more popular in higher education (Alraimi, Zo & Ciganek, 2015; Bonk, Lee, Kou, Xu & Sheu, 2015; Chang, Hung & Lin, 2015; Hew & Cheung, 2014; Muñoz-Merino, Ruipérez-Valiente, Alario-Hoyos, Pérez-Sanagustín & Delgado, 2015) as a result of the proliferation of new information and communication technologies (Ng, 2012; Yang, 2012; Yu, Liao & Su, 2013), of e-learning platforms (Liaw & Huang, 2013; Lin, 2012; Yu, Liao & Su, 2013), of the development of active methodologies such as collaborative work, of instruction in skills (Odersky, Rytz, Miller and Haller, 2014) and of the launch of Web 2.0 tools such as blogs, wikis and social networks in different areas of young people's everyday lives (Clará & Barbera, 2013; García-Martín & García, 2013; García-Martín & García, 2015; García-Martín, Pessoa & García, 2013).

These factors, coupled with the recent psychological interest in improving the quality of people's lives based on the analysis of the positive aspects of the human mind, which emerged as a result of the incorporation of a new psychological orientation (known as Positive Psychology) characterized by its positive hedonic tone and by its complementary nature, have resulted in a MOOC-format instructional program, *Improvement of personal competencies for success*, with four clearly differentiated instructional approaches (three experimental approaches and one control approach): i) *product*, with an emphasis on the final

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result, performance, formal aspects, the execution of a series of indicators, the overall quality and constant self-evaluation of the final product (Frydrychova, 2014; Hashemnezhad & Hashemnezhad, 2012; Thulasi, Bin & Bte, 2014); ii) *processes*, with an emphasis on the orchestration, dynamics and deployment of the participant's mental processes, and also on recursion, self-reflection and constant self-assessment of the processes (Frydrychova, 2014; Hashemnezhad & Hashemnezhad, 2012; Thulasi et al., 2014); iii) *mixed*, oriented on the final result, performance, overall quality and execution of indicators, as well as the orchestration, dynamics and deployment of mental processes, recursion and constant self-reflection on and self-assessment of the final product of the processes (Thulasi et al., 2014); and iv) *traditional (control)* focused on online instruction of the subjects and on the accomplishment of tasks.

Gaps of literature review about MOOCs

Firstly, the review of the literature suggests that MOOCs have had a significant impact on the development of online education, with many MOOCs having been produced through platforms such as Coursera, MiriadaX, FutureLearn, Udacity, edX and Owc (Alraimi et al., 2015; Bonk et al., 2015; Chang et al., 2015), as a result of which previously used virtual learning environments such as Moodle seem to have been forgotten. Secondly, the characteristics of MOOCs are that they are free and available to any person, though it is also true that the majority of them are primarily focused on teaching specific content on artificial intelligence, programming systems, languages and psychological theories—areas that are useful for university-level adults and young people but not of great relevance to the rest of the population. Thirdly, there have been numerous exploratory or descriptive studies (Alraimi et al., 2015; Bonk et al., 2015; Chang et al., 2015), and meta-analysis or review studies (Hew & Cheung, 2014; Margaryan, Bianco & Littlejohn, 2015) that have focused on MOOCs, largely due to the change that they represent for the process of teaching and learning of any content, material, competency or ability. However, it can be seen that the number of MOOCs that meet all the criteria of empirical validation are greatly reduced, because a large number of MOOC do not take into account some of the validation criteria of instructional interventions—for example, the analysis of the maintenance of the effects once the instructional intervention has been completed, and/or the existence of experimental and control groups, and/or the application of the same instruments before and after the intervention—in order for these criteria to be considered as evidence-based interventions (EBI). In addition, it must be kept in mind that among the majority of MOOCs has not been made a distinction between experimental and control groups, the instructional approach (product, process, mixed and traditional) followed neither the maintenance of the effects of instruction (follow-up). Along these lines, a recent study on MOOCs produced in Spain based on a sample of 186 people shows the influence of the satisfaction and motivation of participants on performance as a result of their participation in a cooperative MOOC, though it is unknown if these effects are maintained over time (Castaño et al., 2015).

As a result, with the objective of examining, understanding and describing the efficacy of a MOOCs for teaching on various psychological and educational variables and providing solid empirical evidence, a MOOC was designed according to criteria of evidence-based interventions (EBI), with four clearly differentiated instructional approaches (product, process, mixed and traditional), and delivered through Moodle. This MOOC was focused on the teaching of basic personal and psychological skills such as resilience, motivation, self-efficacy, self-esteem, emotional intelligence and, of course, written communication skills. This focus ensured that the MOOC would be relevant and significant to any individual, regardless of his or her age, gender or educational level.

Instructional Approaches

The MOOC contained four clearly differentiated approaches (three experimental ones and a control one): i) *product*, with an emphasis on the final result, performance, formal aspects, the execution of a series of indicators, the overall quality and constant self-evaluation of the final product; ii) *processes*, with an emphasis on the orchestration, dynamics and deployment of the participant's mental processes, and also on recursion, self-reflection and constant self-assessment of the processes; iii) *mixed*, oriented on the final result, performance, overall quality and execution of indicators, as well as on the orchestration, dynamics and deployment of mental processes, recursion and constant self-reflection on and self-assessment of the final product of the processes; iv) *traditional (control)* focused on the specific online instruction of the subjects and on the accomplishment of tasks.

All the approaches shared the following aspects: a) they were virtual (Moodle); b) they were designed with the same web tools (YouTube, SurveyMonkey and HotPotatoes); c) they developed the same content; d) they had the same number of levels; e) they had identical linked activities, in the form of programmed learning, ensuring effective following of the course and gaining maximum benefit from the MOOC; f) the same duration; g) same level of demand and difficulty; h) identical instructional sequence (introduction, guided practice, execution of the task and feedback); i) they bring together the characteristics of quality so as to be replicable and publishable in journals with a high impact factor. To this end, the guides and

directives agreed at *European Research Network Learning to Write Effectively (ERN-LWE ISO703)* were followed. These included the specification of different aspects such as target learners, objective, duration, instructional sequence, teaching tasks and evaluation (Barlow et al., 1999; García & García-Martín, 2012). As a result of these factors, the only variable was the resulting interactive structure.

In addition, various validation criteria for the instructional interventions were incorporated so that the MOOC could be considered to be evidence based (EBI). These included: i) the *existence of three experimental groups* (product, process and mixed approaches) and *one control group* (traditional approach); ii) the presence of subsequent *follow-up* after the intervention (pretest – post-test – follow-up); iii) the existence of measures related to the *maintenance* of the effects derived from the application of the four instructional approaches, with the same evaluation instruments being applied before and after the instruction, along with a follow-up measure three months after the completing of the MOOC; iv) the *generalizability* produced through the existence of a representative and balanced sample for each group; v) the *durability*, understood as the analysis of the effects of the intervention made through the application and analysis of a specific instrument applied during the post-test and follow-up; vi) the *faithfulness* of the instruction (same content, level of difficulty, and so forth); vii) the *reliability* of the instruments (pretest – post-test – follow-up); viii) the *personal, psychological and social usefulness and relevance* of the MOOC (Barlow et al., 1999; García & García-Martín, 2012; Graham & Harris, 2014).

Objective and hypotheses

The objective of this study is to examine the efficacy of four instructional approaches (processes, product, mixed and traditional) of a MOOC with regard to the teaching of various personal skills (resilience, motivation, self-efficacy, self-esteem, emotional intelligence and written composition). The study puts forward the following hypotheses: i) it is expected that Moodle will be a useful virtual environment for the design, development and execution of a MOOC; ii) it is predicted that all of the instructional approaches will favour the acquisition of personal skills such as self-efficacy that are conducive to success; iii) it is expected to observe some sort of trend towards an increase in the experimental instructional approaches (processes, product and mixed) relative to control one (traditional); iv) it is predicted to observe increases in learning and v) it is envisaged an increase in emotional competencies.

Method

Participants

Initially, 745 people made the informed and voluntary decision to participate in the MOOC. They were randomly distributed between the four instructional approaches -three experimental ones (processes, product and mixed) and a control one (traditional) -of the MOOC, which had a duration of 40 hours and had the objective of improving personal skills for success (see table 1). The relative sample of those that completed the MOOC was $N = 336$.

Table 1. Distribution of participants according to instructional approach, gender and age

	Approach	Experimental groups			Control groups	Total Gender
		Processes	Product	Mixed	Traditional	
Gender	Men	32	27	25	26	110
	Women	58	56	60	52	226
	Total Approach	90	83	85	78	336
	Min.-Max. Age	10-58	10-47	10-52	10-44	

Design

4 x 3 mixed factorial design analysis with repeated measures was carried out. The *intersubject factor* was considered as the instructional approach followed (processes vs product vs mixed vs traditional) and the *intrasubject factor* as the moment of evaluation (pretest vs post-test vs follow-up) to analyse the instructional efficacy of the four approaches that made up the MOOC.

Instruments and variables

With the goal of obtaining empirical evidence that corroborates the instructional efficacy of each one of the four approaches that the MOOC comprised, various online evaluation instruments and activities (for example, questionnaires, self-reporting and texts) were designed and implemented for pretest, post-test and follow-up, for the purpose of evaluating the participants' different competencies and psychoeducational variables (see table 2). In this regard, the texts written by the participants as part of the pretest and post-test were the basis for evaluating the textual product and the cognitive processes involved in the task of writing.

Table 2. Evaluation tasks and instruments

SELF-REPORTING						
Instruments	Aspect evaluated	Apparent reliability (Cronbach's alpha)	Previous studies on validation and implementation of the instrument	Pre-test	Post-test	Follow-up
CIG	Informed consent General information		García-Martín & García (2013); García-Martín & García (2015)	X		
EMSO	Emotional expressiveness (EE) Emotional sensitivity (ES) Emotional control (EC) Social expressiveness (SE) Social sensitivity (SS) Social control (SC)	.798	Oldmeadow et al., (2013)	X	X	X
SEN	Feelings about writing	.894	García, Marbán & De Caso (2001)	X		X
ACT	Attitudes towards writing	.857		X		X
DIF. SEM.	Effects (emotional component, practical realization, effects on learning and generalization)	.665	Diez, García & IPDDA (2010)	X	X	X
EMI	Methodologies deployed and preferred ED: Expected and Desired DP: Deployed and Preferred	.901		X	X	
AEF	Self-efficacy	.969		X	X	X
ELE_POST	Effects on learning	.916	Liaw & Huang (2013); Lin (2012)		X	X
WRITING PRODUCT MEASURES						
PROD	Textual product through measures based on the text (productivity etc.) and the reader (coherence etc.)		García et al., (2014); García, Robledo et al., (2014)	X	X	
WRITING PROCESS MEASURES						
WL	Processes involved in the task of writing (planning, editing and revising)		Álvarez & García (2014)	X	X	

Accordingly, on the one hand, the written compositions were analysed on the basis of measures based on the text (García et al., 2014; García, Robledo, Álvarez & García-Martín, 2014) and on the reader (García et al., 2014; García, Robledo et al., 2014), with text quality, productivity, structure and coherence being examined. On the other, an evaluation of the cognitive processes involved in the task of writing a text was conducted, through a variant of Kellogg's triple task technique (Olive et al., 2002). To this end, the technique of "online writing log" was used. This technique involves the student needing to identify the specific action that he or she is taking during the task of writing the text when a visual signal to record it appears online (Álvarez & García, 2014). Eight of the nine actions analysed fit within the processes of planning, editing and revising the text, with the other action relating to processes that are not related to written composition. All this was carried out without the presence of an instructor.

As can be seen in table 2, the psychometric properties of these instruments are suitable and acceptable, as are the agreement indices between the codifiers for the writing tasks (Cohen's kappa above 0.85), as has been observed in previous studies on their design and implementation. However, with regard to the data of this study, these instruments present a high internal consistency, with a Cronbach's alpha of between .70 and .96 and a construct validity that broadly confirms the groupings by scales (see table 3).

Table 3. Factorial analysis of principal components with Varimax normalized rotation

FACTOR I: Self-efficacy on psychological processes			
	<i>Factor weighting</i>	<i>Explained Variance %</i>	<i>Accumulated %</i>
Self-efficacy on achievement motivation: task value	.715		
Self-efficacy on achievement motivation: attributions	.724		
Self-efficacy on achievement motivation	.808		
Self-efficacy on self-knowledge	.706		
Self-efficacy on self-regulation	.701	25.85	25.85
Self-efficacy on metacognition	.857		
Self-efficacy on self-esteem (intrapersonal aspects).	.830		
Self-efficacy on self-esteem (interpersonal aspects).	.770		
Self-efficacy on self-esteem	.828		
Self-efficacy on emotional control	.710		
FACTOR II: Self-efficacy on emotional competencies			
	<i>Factor weighting</i>	<i>Explained Variance %</i>	<i>Accumulated %</i>
Self-efficacy on personal autonomy: self-esteem	.791		
Self-efficacy on empathy	.794		
Self-efficacy on personal autonomy after instruction: self-esteem	.828	8.081	33.931
Emotional regulation after instruction: self-control	.648		
Emotional awareness after instruction	.651		
FACTOR III: Evaluation of the instruction			
	<i>Factor weighting</i>	<i>Explained Variance %</i>	<i>Accumulated %</i>
Satisfaction	.871		
Usefulness	.880	6.321	40.252
Effects	.878		

FACTOR IV: Self-efficacy on Attributions			
	<i>Factor weighting</i>	<i>Explained Variance %</i>	<i>Accumulated %</i>
Self-efficacy on achievement motivation: attributions after instruction.	.662	4.738	44.989
Self-efficacy on source of proven mastery after instruction	.757		
FACTOR V: Emotional and Social Expressiveness			
	<i>Factor weighting</i>	<i>Explained Variance %</i>	<i>Accumulated %</i>
Emotional Expressiveness	.743		
Emotional Expressiveness after Instruction	.715	4.334	49.323
Social Expressiveness	.676		
Social Expressiveness after Instruction	.708		
FACTOR VI: Psychological Measures on Written Composition			
	<i>Factor weighting</i>	<i>Explained Variance %</i>	<i>Accumulated %</i>
Feelings towards written composition	.847		
Attitudes towards written composition	.872	4.282	53.605
Feelings towards written composition after instruction	.862		
Attitudes towards written composition after instruction	.835		
FACTOR VII: Self-efficacy on Metacognition			
	<i>Factor weighting</i>	<i>Explained Variance %</i>	<i>Accumulated %</i>
Self-efficacy on self-knowledge	.477		
Self-efficacy on self-regulation	.501		
Self-efficacy on metacognition	.528	3.785	57.390
Self-efficacy on self-regulation after instruction	.758		
Self-efficacy on metacognition after instruction	.774		
FACTOR VIII: Self-Efficacy on Own Sources of Self-Efficacy			
	<i>Factor weighting</i>	<i>Explained Variance %</i>	<i>Accumulated %</i>
Self-efficacy on psychological and emotional states	.804	3.157	60.547
Self-efficacy on verbal persuasion	.796		

Instructional Programme

The MOOC was made up of fifteen instructional units with an approximate duration of one hour, without including the complementary or optional tasks (see table 4). To these should be added the use of a code recorder and the assignment of virtual badges. Each time an instructional block was satisfactorily completed, a cup and an access code that needed to be included in the code recorder were issued. However, if the block comprised two instructional units, upon the conclusion of each unit a medal was awarded, and when the whole block was completed a cup was issued. Accordingly, satisfactory completion of the MOOC required all the access codes and the ten cups.

Table 4. Explicative design of the MOOC's different competencies and constructs, instructional units and tasks (basic and complementary)

Competencies/ Constructs	Instructional units	Basic tasks	Complementary tasks
Prior evaluation	Self-reporting Written communicative competency processes		
Resilience	I. The resilient being		
Achievement motivation	II. Task value, levels of demand and expectations		
	III. Attributions		
Self-efficacy	IV. Proven mastery and vicarious expe- rience	INTRODUCTION TO THE TASK (Introductions* and Videos**)	INTRODUCTION TO THE TASK (Brief explanations****)
	V. Psychological and affective states and verbal persuasion		
Written communication	VI. Written composition	GUIDED PRACTICE (Quiz- zes***)	GUIDED PRACTICE (Quiz- zes****)
Metacognition	VII. Self-knowledge		
	VIII. Self-regulation	EXECUTION OF THE TASK (Quizzes***, challenges*** and texts***)	EXECUTION OF THE TASK (Quizzes****, challenges and texts****)
Self-esteem	IX. Intrapersonal aspects		
	X. Interpersonal aspects	FEEDBACK	FEEDBACK
Written communicative competence	XI. Written composition	(Comments, suggestions, ad- ditional information***)	(Comments, suggestions, addi- tional information****)
Emotional competencies	XII. Emotional control		
	XIII. Socioemotional skills		
Final evaluation	Self-reporting Written communicative competence processes		

Note. * Designed using PowerPoint; ** 5-10 minute YouTube videos. *** Designed with SurveyMonkey; **** Designed with Hot Potatoes.

Procedure

At first, national and international scientific research articles were examined for identifying the psychological variables and personal competencies that influence personal success, and examining the effectiveness of MOOCs as an instructional and intervention tool on personal competencies and different psychological variables. This examination raised the need for the current study. Then, selection, adaptation and design of the evaluation instruments (pre, post and follow-up) was conducted, both for the psychological variables and personal competencies on the one hand and on the other for the written communication skills and the repeated psychological and educational measures such as the levels of difficulty, satisfaction and learning, which were to be examined through the fifteen levels that the MOOC comprised. Afterwards, the MOOC was designed in accordance with the aforementioned studies and previously developed instructional programmes that had an instructional psychology focus and were centred on the processes, product, mixed and traditional approaches. Numerous versions of the four approaches were made; these were tried out by novice and expert instructors, and each of the levels, challenges and basic and complementary tasks was evaluated and graded in order to determine whether or not they focused on the selected construct.

Once this step was completed, the MOOC was designed on the Universidad de León's external Moodle (Ariadna) using SurveyMonkey, YouTube and Hot Potatoes. All these tools allowed the recording of access to the different levels, tasks and challenges, as well as the time spent on their completion, their execution itself and various other factors that would allow the teaching-learning process to be adjusted and any type of incidence to be detected. Moreover, with the goal of refining the approaches, various participants who were external to the design process and who had no knowledge of the subject area did the MOOC, providing important data on its difficulty, usability and accessibility.

Next, prior to the launch of the MOOC and with a view to complying at all times with the deontological norms pertinent to any scientific study, all of the participants in the study were contacted in writing to request a signed authorization. In the case of minors, this authorization had to include a signature from the mother, father or legal guardian.

After these steps had been taken, the MOOC was delivered as a Universidad de León 40-hour extension course. It was available 24 hours a day, 7 days a week for a period of six months. Although its preferred audience was secondary-level students in compulsory or noncompulsory education and university students, it was available to anyone, regardless of age, with an interest in furthering their personal competencies to achieve success.

In order to reduce as far as possible the dropout rate, all participants who completed all of the MOOC's activities received a university extension course completion certificate, which carries 4 LEC (Libre Elección Curricular; free curricular choice) and 2 ECTS (European Credit Transfer and Accumulation System) credits.

Once three months had passed following the conclusion of the MOOC, the 336 participants were asked (on a voluntary basis) to complete the evaluation instruments, with the goal of testing the continuation and maintenance of the MOOC's effects. This request was made in the form of an email sent to the 336 participants that made up the sample, in which they were told about the importance and usefulness of their opinions and comments in order to improve and optimize the MOOC.

Once the MOOC had been delivered and the follow-up had been completed, the Survey Monkey matrices were downloaded, relevant coding was completed and appropriate statistical analysis was conducted through version 22 of IBM SPSS Statistics.

Results

Firstly, means and standard deviations were calculated to obtain descriptive data on participants. Next, the normality of the sampling distribution through kurtosis and asymmetry tests was verified, observing assumptions of normality in the majority of the measures. After that, the differences in the psychological measures of the pretests of the four approaches using GLM multivariate contrasts were analysed, through which we verified an absence of statistically significant differences between them prior to the beginning of the course.

Following on from this, GLM multivariate analysis was carried out to contrast the 4 x 3 mixed factorial design with repeated factors. The *intersubject factor* was considered as the instructional approach followed (processes vs product vs mixed vs traditional) and the *intrasubject factor* as the moment of evaluation (pretest vs post-test vs follow-up).

In general, statistically significant gains were observed between the pre and post, and from the pre to the follow-up in the four approaches (this will be expanded upon later), but not the interaction between the four approaches by moment (hence they are not indicated). That is, the four instructional approaches (processes, product, mixed and traditional) improved, but none did so to a greater and statistically significant extent than any other. Nevertheless, in the analysis that follows, we briefly describe the trends observed with regard to the instructional approaches based on the factors or components obtained from the factorial analysis carried out.

Results for the self-efficacy measures (Factors I, II, IV, VII and VIII)

The pretest does not reveal statistically significant differences between the four approaches (processes, product, mixed and traditional) in the analysed measures related to self-efficacy, as can be seen in table 5.

However, once the MOOC had been completed—that is, comparing the results obtained in the pretest and those of the post-test—statistically significant increases in the majority of analysed variables were revealed, for example in the *achievement motivation task value component* [$F_{(1,332)} = .844, p \leq .001, \eta^2 = .156$], *achievement motivation* [$F_{(1,332)} = .850, p = .001, \eta^2 = .150$] (with large effect sizes), and in the *sources of proven mastery and vicarious experience*, metacognition, self-esteem and social skills (with medium effect sizes). There was a tendency towards increase in the experimental approaches (principally those of product and mixed) relative to the control (traditional), though this increase was not statistically significant.

Moreover, if we consider the results obtained from the pretest and follow-up of the experimental instructional approaches (process, product and mixed), we can see that in practically the majority of the measures this improvement was maintained. This trend was not observed in certain traditional focus variables such as self-efficacy on attributions and achievement motivation in general (see table 5).

Table 5. Descriptive statistics and results of the 4 x 3 factorial design for the measures for self-efficacy, considering as the intersubject factor the instructional approach followed (processes, product, mixed, traditional) and as the intrasubject factor the moment (pretest vs post-test vs follow-up).

Self-efficacy (Factors I, II, IV, VII and VIII)																
	PROCESSES			PRODUCTS			MIXED			TRADITIONAL			MOMENT (A x D x S*, **)			
	Pre	Post	Fol	Pre	Post	Fol	Pre	Post	Fol	Pre	Post	Fol	$F_{(1, 332)}$	p	η^2	
Self-efficacy on achievement motivation: task value	M	15.64	15.75	15.64	15.60	17.00	15.36	16.83	17.17	16.79	15.09	16.45	15.73	.844	≤.001	.156
Self-efficacy on achievement motivation: task value	σ	2.453	2.744	2.909	2.630	1.958	2.871	1.761	2.014	2.043	2.587	2.296	2.687	.844	≤.001	.156
Self-efficacy on achievement motivation: attributions	M	15.11	16.14	15.64	14.92	16.24	15.24	15.67	15.54	16.21	15.64	16.05	14.82	.926	.041	.074
Self-efficacy on achievement motivation: attributions	σ	2.006	2.155	2.264	3.239	2.241	2.990	2.988	2.484	2.187	2.501	2.207	1.991	.926	.041	.074
Self-efficacy on achievement motivation	M	30.75	31.89	31.29	30.52	33.24	30.60	32.50	32.71	33.00	30.73	32.91	30.55	.850	.001	.150
Self-efficacy on achievement motivation	σ	3.758	3.814	4.520	5.409	3.666	5.620	3.833	4.016	3.879	4.606	3.477	4.321	.850	.001	.150
Self-efficacy on proven mastery and vicarious experience	M	14.51	15.53	16.29	15.29	15.67	15.16	14.51	15.72	16.25	14.44	15.35	16.64	.895	.010	.105
Self-efficacy on proven mastery and vicarious experience	σ	3.108	2.876	2.209	2.630	2.714	3.287	3.108	2.369	2.289	2.817	2.459	1.567	.895	.010	.105
Self-efficacy	M	27.60	28.33	29.36	28.53	29.42	28.96	26.98	29.29	29.17	27.51	28.42	30.27	.913	.023	.087
Self-efficacy	σ	4.186	4.740	4.847	5.023	5.559	5.877	5.636	5.075	4.440	4.951	4.766	4.149	.913	.023	.087

Self-efficacy on metacognition: self-knowledge	M	14.29	15.25	15.07	14.88	16.24	14.96	15.63	15.83	15.83	14.18	14.45	14.45	.923	.037	.077
Self-efficacy on metacognition: self-knowledge	σ	2.840	3.406	2.775	3.370	2.296	3.155	2.651	2.239	2.239	2.272	2.734	2.067	.923	.037	.077
Self-efficacy on metacognition: self-knowledge and self-regulation	M	29.14	30.36	29.64	28.72	31.84	29.96	30.75	31.42	31.17	27.18	28.27	28.82	.913	.022	.087
Self-efficacy on metacognition: self-knowledge and self-regulation	σ	5.469	6.160	6.396	6.687	4.819	6.147	5.900	4.624	4.779	5.115	5.934	4.996	.913	.022	.087
Self-efficacy on self-esteem (interpersonal factors).	M	14.07	14.71	14.39	13.56	15.44	14.36	13.63	14.04	13.58	13.27	14.27	14.00	.930	.049	.070
Self-efficacy on self-esteem (interpersonal factors).	σ	3.231	3.473	3.928	4.691	2.678	2.675	3.831	3.223	3.911	3.927	3.849	2.966	.930	.049	.070
Self-efficacy on empathy	M	16.16	16.44	16.57	16.89	17.08	16.04	15.94	16.39	16.92	15.63	15.97	16.73	.923	.036	.077
Self-efficacy on empathy	σ	2.899	2.356	2.008	2.542	2.253	2.731	2.779	2.677	2.466	3.232	3.036	2.573	.923	.036	.077

Note: * Only statistically significant differences upon comparing approaches' before and after are shown. Moreover, only statistically significant results are included ($p < .05$); η^2 (eta-squared) = Estimations of effect size. Cohen's rule (1988) states that .01-.06 (small effect); > .06 - .14 (medium effect); > .14 (large effect). ** Having not observed statistically significant interactions of the pre and post with the instructional approach measures, these analyses are not shown.

Results for the instruction evaluation measures (Factor III)

In the initial evaluation, there were no statistically significant differences in the analysed measures for the evaluation of the instruction between the instructional approaches (processes, product, mixed and traditional). However, once the instruction had been carried out, there was a statistically significant increase in *learning* [$F_{(1,332)} = .844, p = .001, \eta^2 = .156$], *emotional competencies* [$F_{(1,332)} = .878, p = .005, \eta^2 = .122$], *practical realization*, [$F_{(1,332)} = .849, p = .001, \eta^2 = .151$] and *generalizability* [$F_{(1,332)} = .818, p \leq .001, \eta^2 = .182$], with large effect sizes (see figure 1). This occurred regardless of the instructional approach followed.

Results for the variables of expressiveness and emotional control (Factor V)

In the pretest, there were no statistically significant differences between the instructional approaches (processes, product, mixed and traditional) with regard to the variables of expressiveness and emotional control.

In spite of this, once the instruction had been delivered and upon comparing the pretest and post-test results, we observed an improvement in variables such as *emotional control* [$F_{(1,332)} = .355, p \leq .001, \eta^2 = .045$] and *social expressiveness* [$F_{(1,332)} = .966, p = .001, \eta^2 = .034$] with small effect sizes, and *social control* [$F_{(1,332)} = .922, p = .031, \eta^2 = .078$] with a medium effect size.

Moreover, if we consider the results obtained in the pretest and in the follow-up of the instructional approaches, the improvements remain in the majority of the measures, as can be seen in figure 2.

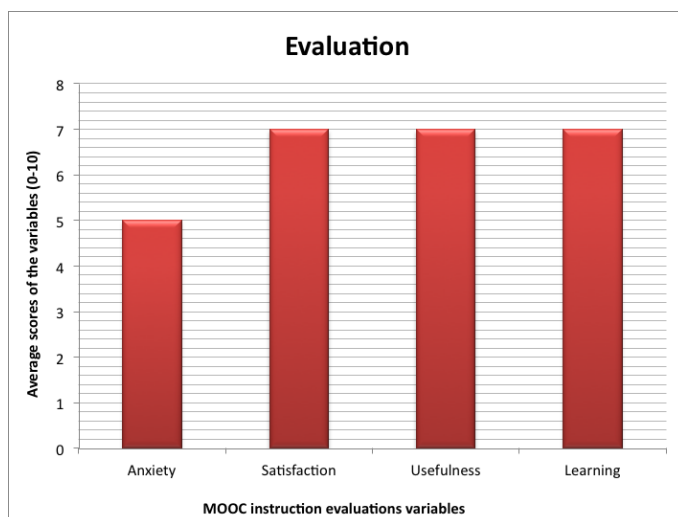


Figure 1. Results of the evaluation of the instruction of the MOOC: anxiety, satisfaction, usefulness and learning

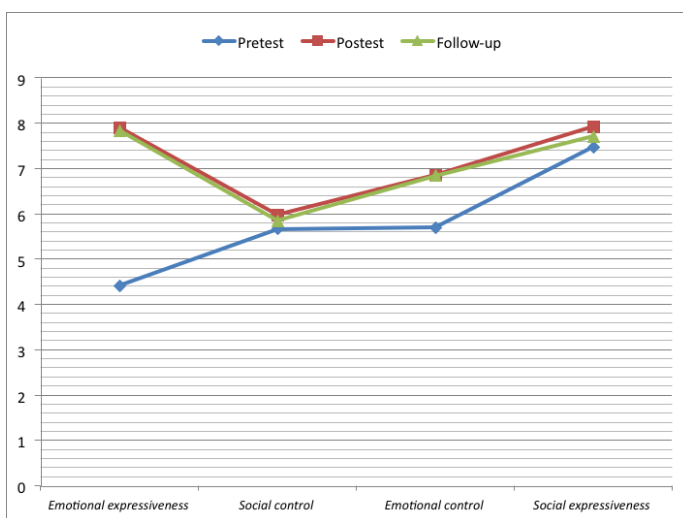


Figure 2. Expressiveness and emotional control (Factor V).*

* Due to the absence of statistically significant differences when considering the interaction between the moment of evaluation (pre, post and follow-up) and the instructional approaches (processes, product, mixed and traditional), the scores obtained from the variables of expressiveness and both emotional and social control are presented, using as an example the mixed instructional approach.

Results for the psychological measures on written composition (Factor VI)

In the initial evaluation (pretest), there were no statistically significant differences in the analysed measures for the written composition between the instructional approaches (processes, product, mixed and traditional).

However, once the MOOC had finished—that is, once the results of the pretest and the post-test were compared—we found statistically significant increases in the variable *attitudes towards written composition* [$F_{(1,332)} = .590, p = \leq .001, \eta^2 = .410$] (with a large effect size) and in variable for analysis of the writing product, *number of textual units* [$F_{(1,332)} = .998, p = .012, \eta^2 = .037$]. Moreover, upon analysing the *writing processes*, we also found a statistically significant improvement in variables for the revision process such as *percentage of time spent on correction of the text* [$F_{(1,332)} = .989, p = .055, \eta^2 = .011$] and on *modification of the text* [$F_{(1,332)} = .987, p = .037, \eta^2 = .013$], with the latter displaying a trend towards increase in the experimental approaches (mixed and processes) relative to the control (traditional) [$F_{(1,332)} = .968, p = .013, \eta^2 = .032$]. Furthermore, in carrying out analysis based on the three moments [planning, editing and revision], we observed a statistically significant increase, during the third moment, in the *percentage of time spent on various categories on revision* in the processes and mixed (experimental) approaches relative to the traditional (control) approach [$F_{(1,332)} = .985, p = .027, \eta^2 = .015$] and an increase in some of the *categories on planning* [$F_{(1,332)} = .973, p = .003, \eta^2 = .027$] and *editing* [$F_{(1,332)} = .988, p = .048, \eta^2 = .012$] for the traditional approach relative to the experimental approaches (processes, product and mixed).

Discussion and conclusion

The results reveal that Moodle is a useful virtual environment for the design and implementation of a MOOC, and in doing so they confirm our first hypothesis. Moreover, the results validate the instructional efficacy of the four approaches (processes, product, mixed and traditional) in terms of both the acquisition of and improvement in different personal competencies such as resilience, self-efficacy, achievement motivation and written communication. These findings are supported by the results obtained in the majority of the analysed measures, which in turn are consistent with those observed in previous interventions on written communication competence (Frydrychova, 2014; Hashemnezhad & Hashemnezhad, 2012; Thulasi, Bin & Bte, 2014), thereby confirming the second hypothesis made.

Moreover, the results obtained indicate an increase in perceived self-efficacy in practically all of the analysed variables. The slight tendency towards increase found in the experimental instructional approaches (processes, production and mixed) relative to the traditional (control) approach would seem to support the third hypothesis, even if it is not statistically significant. As a result, it would be worthwhile for future studies to be carried out on these approaches, increasing the number of instructional sessions and the time commitment, with the goal of confirming or refuting this trend on a statistical basis.

A significant increase in learning following the instruction delivered through the MOOC was also confirmed, regardless of the instructional approach followed. This improvement is supported by the data observed in the majority of the measures examined and in previous review (Hew & Cheung, 2014; Margaryan et al., 2015), exploration (Alraimi et al., 2015; Chang et al., 2015) and intervention (Castaño et al., 2015; Gillani & Eynon, 2014; Muñoz-Merino et al., 2015) studies on MOOCs, thereby confirming the fourth and sixth hypotheses.

Equally, with regards to emotional competencies, the results have confirmed that the approaches developed and applied through the MOOC produced positive effects. This assertion is supported by results obtained through different measures and in previous exploratory (Alraimi et al., 2015; Chang et al., 2015) and intervention (Castaño et al., 2015; Gillani & Eynon, 2014) studies on MOOCs and interactive or e-learning environments (Liaw & Huang, 2013; Lin, 2012), which in turn confirm the fifth and sixth hypotheses.

It must also be kept in mind that this was the first MOOC to be delivered in Spanish that focused on personal competencies such as motivation, self-efficacy, metacognition, self-esteem, written communication and emotional competencies, to be useful for the general population and to draw on a sample made up of children, adolescents, youths and adults.

As a result, we can conclude that the efficacy of this MOOC for the instruction of curricular content and personal and basic competencies can be corroborated, regardless of the instructional approach. This represents an important advance for formal and academic education and for competence-based learning (Hew & Cheung, 2014; Odersky et al., 2014) and gives rise to significant debate on educational and training standards from traditional (in-person) teaching versus online learning, since the latter implies a break with spatial and temporal barriers. That is, any person with an interest in learning can do so where and when he or she wants, materials are made more widely available, and personalized and individualized learning is encouraged (Chang et al., 2015). There is therefore a need for future researchers to analysis the effects of instruction on and acquisition of personal psychological competencies through MOOCs and traditional in-person teaching. We should also point out that although in this MOOC the criteria for methodological rigour that are part of any high-quality instructional intervention were followed (Barlow et al., 1999; Graham & Harris, 2014), it would be advisable for future research studies to increase the sample size and the number of instructional sessions, as this would allow the instruction to be focused and the time spent on the content or competency to be increased, with the objective of obtaining relevant and more nuanced data on the characteristics and indicators of both in-person and online evidence-based instructional interventions.

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CAPÍTULO 6

Estudos sobre a utilização da web 2.0 na educação em Portugal (2008-2012)

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García-Martín, J., Pessoa, M. T. y García-Sánchez, J. N. (2013). Estudos sobre a utilização da web 2.0 na educação em Portugal (2008-2012). *Educação, Formação & Tecnologias*, 6(1), 52-67.

Estudos sobre a utilização da web 2.0 na educação em Portugal (2008-2012)

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Resumo: Neste artigo descrevem-se as principais linhas de investigação que se produziram nos últimos quatro anos, na área da tecnologia educativa em Portugal, em particular, no domínio relacionado com a web 2.0. Assim, foram revistos e analisados cinquenta estudos (artigos e atas de congressos) publicados em diversos repositórios científicos de acesso aberto, com base em oito categorias previamente estabelecidas. Os resultados mostram que as ferramentas da web 2.0 mais estudadas nas publicações analisadas são as redes sociais e as ferramentas do Google, e de forma particular, o Facebook, o Hi5 e o Google Docs, na maioria dos casos utilizando a metodologia quantitativa.

Palavras-chave: Web 2.0, ensino, repositório, Portugal.

1. INTRODUÇÃO

Desde os anos 80 até a este momento, registaram-se mudanças tecnológicas significativas como a evolução da World Wide Web, da web 1.0 à web 2.0; a brecha tecnológica; por outro lado as mudanças de paradigma na educação e nas teorias de ensino-aprendizagem estão fundamentando a forma das pessoas acederem à informação, dando lugar à proliferação da aprendizagem colaborativa suportada nas ferramentas da web 2.0 e em abordagens formativas através das redes sociais. Podemos dizer que ao longo de todos estes anos se passou de uma aprendizagem formal, estruturada, estática e centralizada a uma aprendizagem informal, colaborativa, dinâmica e distribuída em que o estudante passou de um sujeito passivo a ativo (Gunawardena, Hermans, Sanchez, Richmond, Bohley, & Tuttle, 2009). De facto, os alunos encontram hoje um novo cenário para a interação e intercâmbio de ideias no qual as ferramentas da web 2.0 jogam um papel essencial já que despertam o interesse e a

motivação dos estudantes pela aprendizagem, fatores cruciais para determinar os resultados da mesma (Churchill, 2009; Lee & Rha, 2009; Liu & Wang, 2010).

O objetivo deste artigo é descrever linhas de investigação na área da tecnologia educativa que se estão a realizar em Portugal através da revisão e análise de diversas investigações relativas ao tema da web 2.0. De forma particular, exploram-se as tendências das pesquisas desenvolvidas neste âmbito ao longo destes últimos quatro anos, assim como a análise de intervenções educativas otimizadoras relativas à Web 2.0. Este estudo complementar de certo modo o trabalho realizado por Coutinho (2008).

Assim este trabalho está estruturado em quatro seções claramente diferenciadas em que na seção seguinte se descreve a análise que foi realizada explicando os critérios de pesquisa e a seleção de artigos efetuada assim como a metodologia usada na sua revisão. Na terceira seção apresentam-se e analisam-se os principais resultados obtidos. Finalmente na quarta e última parte discutem-se os resultados na sua generalidade e conclui-se o trabalho com a apresentação de linhas futuras de investigação

2. ANÁLISE

2.1 Pesquisa e seleção

A pesquisa dos estudos que focam aspetos relacionados com a web 2.0 foi realizada através do Repositório Científico de Acesso Aberto de Portugal (RCAAP). Este portal de repositórios permite o acesso a uma pesquisa de quarenta e dois repositórios portugueses o que envolve um grande número de revistas científicas de carácter multidisciplinar, atas de conferências, teses, trabalhos de mestrado além de outras fontes de informação adicionais como livros recentemente publicados e outras.

Tendo em conta os objetivos do estudo a pesquisa realizada em 16 de julho de 2012 considerou os seguintes critérios: i) deveria aparecer a expressão web 2.0, ii) deveriam ser artigos e atas de conferência evitando-se assim as teses, livros e outras fontes iii) deveriam ter sido publicados

nos últimos quatro anos, isto é, desde 2008 até 2012 e iv) deveriam ter sido levados a cabo no âmbito educativo, evitando deste modo os que faziam referência ao âmbito científico, clínico, empresarial, laboral, social e bibliotecário. Os resultados obtidos pela pesquisa feita ao nível do título, do resumo e do texto, obteve-se uma amostra de 50 publicações que usaram a palavra “web 2.0” (ver apêndice).

2.2 Metodologia

Uma vez obtidos e lidos os artigos foram submetidos à análise que permitiu validar e preencher as doze categorias de análise delimitadas previamente com a intenção de configurar um quadro síntese: i) *autor/es*, ii) *ano de publicação* para identificação de os artigos; iii) *repositório* em que se encontrava com o objetivo de chegar a alguma conclusão relativamente à utilização das diferentes ferramentas 2.0 consoante os repositórios; iv) *palavras-chave* para conhecer quais são as mais usadas junto à expressão “web 2.0”; v) *ferramentas da web 2.0* com o objetivo de poder analisar as mais utilizadas, vi) *foco (usos e/ou efeitos)* que permite fazer a distinção entre os estudos que descrevem o uso de ferramentas da web 2.0 e os que estudam os efeitos que estas ferramentas produzem em variáveis diversas; vii) *o tipo de publicação (artigo ou conferência)* para poder fazer comparações entre os contributos obtidos; viii) *tipo de artigo* e aqui adotámos uma proposta semelhante à de Coutinho (2008) que inclui *estudos teóricos, relatos de experiências educativas, apresentações de um projeto, e estudos empíricos*.

Para além destes aspetos na análise dos artigos empíricos considerou-se ainda mais quatro categorias: ix) *nível de ensino* no qual se produziu o estudo, isto é básico, secundário e superior; x) *metodologia utilizada* nas investigações analisadas (qualitativa e/ou quantitativa); xi) *ols instrumentais* utilizados na recolha de informação (questionários, entrevistas, grelhas de observação...) e xii) *a amostra* fazendo a distinção entre grupos pequenos (menos de 50), médios (entre 50 e 100) ou grandes (mais de 100 participantes).

Estas categorias foram selecionadas com base na revisão teórica realizada previamente em torno da temática. Por outro lado todas elas foram validadas por investigadores e especialistas no campo da tecnologia educativa.

3. RESULTADOS

Apresentam-se, de seguida, os principais resultados obtidos com a análise, usando as doze categorias, das 50 publicações com um intervalo temporal de 2008 a 2012 (tabela I). Os dados recolhidos integram todo o ano de 2008 embora em 2012 digam respeito só até ao mês de junho.

TABELA I - Frequência dos artigos por ano

Ano	Freq. absoluta
2008	15
2009	12
2010	7
2011	11
2012	5
	50

Por outro lado, a pesquisa realizada só forneceu 50 publicações que cumpriram os critérios de seleção definidos e que por sua vez pertenciam a seis dos quarenta e dois repositórios do RCAAP. De modo que os artigos obtidos na pesquisa pertenciam aos seguintes repositórios: i) *Universidade do Minho*, ii) *Instituto Politécnico de Bragança*, iii) *Universidade Aberta*, iv) *Universidade de Aveiro*, v) *Instituto Politécnico de Viseu* e vi) *a Universidade Católica Portuguesa*. Assim, nos restantes repositórios não se encontraram estudos que tivessem cumprido os critérios estabelecidos. A percentagem destes repositórios na amostra selecionada pode observar-se no gráfico I.

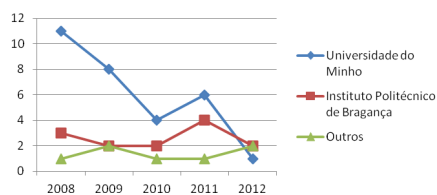
GRÁFICO I - Análise por repositório utilizado



Nota: Outros incluem os resultados obtidos da Universidade Aberta, Universidade de Aveiro, Instituto Politécnico de Viseu, Universidade Católica Portuguesa.

Obtiveram-se assim dados sobre a frequência anual das publicações selecionadas em função do repositório em que foram publicadas como se pode ver no gráfico II, salientando-se deste modo o grande número de investigações que foram publicadas nos últimos quatro anos no repositório da Universidade de Minho. Na leitura deste gráfico observa-se, em 2012, uma acentuada diminuição de estudos que deve ser compreendida considerando que se analisaram só as publicações até ao meio do ano.

GRÁFICO II - Frequência de artigos por ano em função do repositório



Nota: Outros incluem os resultados obtidos da Universidade Aberta, Universidade de Aveiro, Instituto Politécnico de Viseu, Universidade Católica Portuguesa.

Por outro lado, quanto à tipologia das publicações selecionadas podemos referir que 60% são artigos e os restantes 40% são atas de congressos como se pode verificar no gráfico III.

GRÁFICO III - Percentagem do tipo de publicação analisada



Neste sentido, e como se pode observar no gráfico IV, o número de publicações por ano difere em função da tipologia. Como podemos

verificar é no ano 2008 que recolhemos o maior número de atas de congressos enquanto no ano 2009 se produzem com maior frequência artigos.

GRÁFICO IV - Distribuição do tipo de publicação por ano



Além disso, as publicações analisadas, independentemente da sua tipologia (artigos e atas de congressos ou conferências), foram agrupadas em quatro categorias: i) *teórico*, ii) *relato de uma experiência educativa*, iii) *apresentação de um projeto*, e iv) *empírico*. Chegou-se assim à conclusão, como principais resultados, que 56% das publicações selecionadas são estudos empíricos enquanto que 22% são estudos teóricos e 22% das restantes publicações incluem relatos de experiências educativas e apresentações de projetos.

Na análise dos estudos empíricos verificou-se que mais de metade, isto é, 68% são pesquisas realizadas no ensino superior, a que se segue o ensino secundário com 20% e finalmente o ensino básico com 12%.

Por outro lado 30% das publicações seguem uma metodologia quantitativa relativamente a 8% que utilizam a qualitativa. Os restantes 18% utilizam as duas modalidades de pesquisa. Por conseguinte, podemos afirmar que a maioria das publicações empíricas, objeto de revisão nesta

análise, segue uma metodologia quantitativa cujo principal instrumento de recolha de dados foi o *questionário online* em detrimento das entrevistas e da análise de conteúdo mais características da modalidade qualitativa.

Também, nesta revisão, se realizou uma análise sobre as ferramentas da web 2.0 utilizadas. Verificou-se que as *ferramentas do Google* se encontraram como as mais investigadas com uma percentagem de 88% enquanto que outras como o *Flickr* só apareceu em 8% das publicações analisadas (ver tabela II).

TABELA II - Frequência e percentagem das ferramentas da web 2.0 utilizadas nos artigos analisados

Ferramenta da web 2.0	Frequência	Percentagem por ferramenta (máx. 100%)
Blogs	21	42%
Wikis	16	32%
Ferramentas de Google	44	88%
Redes sociais:	33	66%
YouTube	11	22%
LSM: moodle	10	20%
Delicious	10	20%
Mensagem instantânea	9	19%
Flickr	4	8%

4. DISCUSSÃO E CONCLUSÕES

Dos resultados apresentados se depreende que as principais linhas de investigação que se estão levando a cabo em Portugal diferem de uns repositórios para outros.

Neste sentido, parece que o repositório da Universidade de Minho é o mais utilizado para a publicação de artigos ou atas de congressos relacionados com o uso das ferramentas da web 2.0 utilizadas no âmbito educativo como os blogs, as wikis, as ferramentas do Google, os livros digitais, os portefólios... (Bottentuit, & Coutinho, 2008a; Bottentuit, Lisboa

& Coutinho, 2009; Cardoso & Coutinho, 2010; Carvalho, Aguiar, Cabecinhas & Carvalho, 2008; Costa, Ferreira, Domingues, Tavares, Diegues & Coutinho, 2009; Coutinho, 2008a; Coutinho, 2008b; Coutinho & Alves, 2010; Cruz & Carvalho, 2010).

Por outro lado no Instituto Politécnico de Bragança obtém-se um maior número de publicações relacionadas com as redes sociais ainda que também exista um ou outro estudo sobre outras ferramentas 2.0 (Minhoto & Meirinhos, 2011; Miranda, Morais, Alves & Dias, 2010; Morais, Miranda, Alves & Dias, 2011; Páscoa & Gil, 2010; Patricio & Gonçalves, 2010). Relativamente aos restantes repositórios não se verifica nenhuma tendência.

Do mesmo modo, os resultados mostram que as ferramentas do *Google* e as *redes sociais* foram as mais estudadas em Portugal durante o período analisado, com especial incidência no *Google Docs*, *Facebook* e *Hi5* respetivamente (Bottentuit, & Coutinho, 2008a; Cardoso & Coutinho, 2010; Coutinho & Alves, 2010; Minhoto & Meirinhos, 2012; Miranda, Morais, Alves & Dias, 2011; Oliveira, 2012). Das 44 publicações que usam as ferramentas do *Google*, 16 trabalham com *Google Docs*; por outro lado das 33 publicações que se centram em *redes sociais* também 16 o fazem com o *Facebook* e *Hi5*. Esta conclusão difere dos resultados obtidos no estudo realizado em 2008 por Coutinho no qual se observava que a ferramenta mais utilizada era o *blog*. Assim podemos afirmar que as linhas de investigação estão evoluindo na mesma direção em que caminha a popularidade das ferramentas da web 2.0.

Além disso, pode-se afirmar que a maioria das investigações analisadas segue uma metodologia quantitativa suportada principalmente na administração de um questionário online. Volta-se a confirmar o interesse dos investigadores da área da tecnologia educativa em obter dados empíricos, consistentes e mais elaborados numa área de conhecimento desconhecida até 2006. O interesse científico vem aumentando o que está de acordo com os resultados obtidos no estudo anterior de Coutinho (2008a) Mas quais são os principais motivos para que seja selecionada e aplicada esta metodologia? Nestes casos é a mais adequada? Existem ferramentas da web 2.0 que deveriam ser estudadas

mediante uma determinada metodologia? Provavelmente, estudos futuros poderão dar resposta a estas questões.

De qualquer modo há que ter em conta que este estudo apresenta algumas limitações relativas ao tamanho da amostra, em especial no que concerne ao ano 2012, e aos filtros utilizados para a pesquisa e seleção das publicações, o que pode ter levado à exclusão de alguma publicação de interesse.

Em resumo, este estudo demonstra que as ferramentas da web 2.0 estão muito presentes nos diferentes níveis de ensino especialmente no Ensino Superior. A isto acresce a grande quantidade de investigações que se vão realizando desde 2006 em torno do uso destas ferramentas no âmbito educativo português com a intenção de obter informação de interesse acerca dos efeitos que podem produzir em variáveis diversas como o rendimento académico e/ou a motivação dos estudantes pela aprendizagem seja formal e informal (Bottentuit, Lisboa & Coutinho, 2011; Cardoso & Coutinho, 2011; Carvalho, Aguiar, Cabecinhas & Carvalho, 2008; Costa, Ferreira, Domingues, Tavares, Diegues & Coutinho, 2009; Coutinho & Alves, 2010; Coutinho & Bottentuit, 2008c; Cruz & Carvalho, 2010; Jorge & Morgado, 2010; Junior & Coutinho, 2008b; Morais, Miranda, Alves & Dias, 2011).

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Research on the use of Web 2.0 in education in Portugal (2008-2012)

Abstract:

that have been occurring in the last four years in the Portuguese area of educational technology, especially anything related to Web 2.0. To do this, we review and analyze fifty studies (articles and conference proceedings) published in various scientific open access repositories, based on previously established eight categories. The results show that the tools of Web 2.0 most studied in the papers reviewed are social networks and tools from Google, in particular, Facebook, Hi5 and Google Docs, in most cases using a quantitative methodology.

Keywords: Web 2.0, learning, repositories, Portugal

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Author notes: During this research study, we received competitive funds from the Spanish Ministry of Education, Science and Innovation (MICINN) (EDU2010-19250 / EDUC) for 2010-2013, awarded to the Director/Main Researcher (J. N. García). J. García-Martín received funds from the FPI MICINN for the same project.

Apêndice

Autor/Ano	Título	Repositório	Ferramentas utilizadas	Âmbito	Tipo de publicação	Tipo de artigo	Metodologia	Instrumento	Amostra
(Bottentuit, & Coutinho, 2008a)	As ferramentas da web 2.0 no apoio à tutoria na formação em e-learning	Universidade do Minho	Blogs, Wikis, Podcast Google Calendar Google Docs, Google Pages, Delicious	Usos e efeitos	Atas de congressos	Teórico	--	--	--
(Bottentuit, & Coutinho, 2008b)	Wikis em educação: potencialidades e contextos de utilização	Universidade do Minho	Wikis	Usos	Atas de congressos	Teórico	--	--	--
(Bottentuit, Lisboa & Coutinho, 2009)	Livros digitais: novas oportunidades para os educadores na web 2.0	Universidade do Minho	Livro Digital	Usos e efeitos	Artigo	Relato experiência	--	--	--
(Bottentuit, Lisboa & Coutinho, 2011)	Goole educacional: utilizando ferramentas web 2.0 em sala de aula	Universidade do Minho	Ferramentas de Google	Usos e efeitos	Artigo	Teórico	--	--	--
(Cardoso & Coutinho, 2010)	Ambientes de aprendizagem Web 2.0 no ensino profissional: um estudo sobre a utilização de uma ferramenta de colaboração online no módulo Estatística	Universidade do Minho	Google Docs	Usos e efeitos	Atas de congressos	Empírico	Quantitativa	Questionário (pre & post)	N= 20
(Cardoso & Coutinho, 2011)	Web 2.0 learning environments in vocational education: a study on the use of collaborative online tools in the statistics module	Universidade do Minho	Google Docs & Spreadsheets Moodle	Usos e efeitos	Atas de congressos	Empírico	Quantitativa	Questionário (pre & post)	N= 20
(Carvalho, 2009)	Podcasts no ensino: contributos para uma taxonomia	Universidade do Minho	Podcast	Usos e efeitos	Artigo	Relato experiência	--	--	--
(Carvalho, 2011)	Educating Teachers in ICT: from Web 2.0 to Mobile Learning	Universidade do Minho	Blog, Twitter Facebook	Usos e efeitos	Atas de congressos	Empírico	Quantitativa	Questionário	N= 17
(Carvalho, Aguiar, Cabecinhas & Carvalho, 2008)	Integração de podcasts no ensino universitário: reacções dos alunos	Universidade do Minho	Blog Podcast, Wiki hi5, Second Life	Usos e efeitos	Artigo	Empírico	Quantitativa & Qualitativa	Questionário y entrevista	N= 178
(Castro & Andrade, 2012)	O aluno de química como co-autor de Recursos Educativos Digitais: no palco e espectador de si mesmo	Universidade Católica Portuguesa	YouTube, Twitter Movie Maker Flickr, Prezi, Websites	Usos e efeitos	Artigo	Empírico	Quantitativa	Questionário (pre & post)	N= 16
(Costa, Ferreira, Domingues, Tavares, Diegues & Coutinho, 2009)	Conhecer e utilizar a Web 2.0: um estudo com professores do 2º, 3º Ciclos e Secundário.	Universidade do Minho	Delicious, Google Sites Google Docs, Google Calendar, Hi5, MySpace, Blogger, Moodle, YouTube	Usos e efeitos	Atas de congressos	Empírico	Quantitativa	Questionário (pre & post)	N= 51
(Coutinho, 2008a)	Tecnologias Web 2.0 na escola portuguesa: estudos e investigações	Universidade do Minho	Blog, Wiki Podcast, Second Life Google Docs/Pages YouTube, Bookmarking Web 2.0 (em geral)	Usos	Artigo	Teórico	--	--	N= 40

(Coutinho, 2008b)	Web 2.0 tools in pre-service teacher education programs: an example from Portugal	Universidade do Minho	Blogs, Wikis Google Page Creator Google Docs	Usos e efeitos	Artigo	Apresentação de projeto	Quantitativa	Questionário	N= 1811
(Coutinho, 2009a)	Tecnologias Web 2.0 na sala de aula: três propostas de futuros professores de português	Universidade do Minho	Blog, Flickr YouTube Google Wikipedia	Usos e efeitos	Artigo	Relato experiência	--	--	N= 10
(Coutinho, 2009b)	Web 2.0 technologies as cognitive tools : preparing future k-12 teachers	Universidade do Minho	Google Docs, Google Page Creator, Delicious, CmapTools, Blog, Webpage/portfolio	Usos e efeitos	Atas de congressos	Empírico	Quantitativa & Qualitativa	Observação Entrevista Análise de Conteúdo Questionário	N=10
(Coutinho, 2009c)	Using blogs, podcasts and Google sites as educational tools in a teacher education program	Universidade do Minho	Google sites, Blog, Wiki Podcast, Google Docs Delicious, Flickr Hi5, YouTube	Usos e efeitos	Atas de congressos	Empírico	Quantitativa	Questionário	N = 81
(Coutinho & Alves, 2010)	Educação e sociedade da aprendizagem: um olhar sobre o potencial educativo da internet	Universidade do Minho	Blog, Wikis, Skype, Webquest, Podcasts, RSS Ferramentas de Google (Calendar, Reader, Docs, Sites, Talk), Messenger	Usos e efeitos	Artigo	Teórico	--	--	--
(Coutinho & Bottentuit, 2008a)	The use of Web 2.0 tools to develop e-portfolios in a teacher training program: an exploratory survey	Universidade do Minho	Google Pages Google Docs, E-portfolio	Usos e efeitos	Artigo	Empírico	Quantitativa & Qualitativa	Observação Questionário (pre & post)	N= 24
(Coutinho & Bottentuit, 2008b)	The use of GooglePage and GoogleDocs to develop e-portfolios in a post graduate Teacher Education Program: an example from Portugal	Universidade do Minho	Google Sites Google Pages Google Docs E-Portfolios, CmapTools	Usos e efeitos	Atas de congressos	Empírico	Qualitativa	Observación Análise de Conteúdo	N= 24
(Coutinho & Bottentuit, 2008c)	Web 2.0 in Portuguese academic community: an exploratory survey	Universidade do Minho	Google Docs & Spreadsheets, Navigation Delicious, YouTube Skype, eBay, Hi5, Picasa Pictures, Google Maps, MapQuest, iTunes	Usos e efeitos	Atas de congressos	Empírico	Quantitativa	Questionário	N= 1811
(Coutinho, Bottentuit & Batista, 2011)	Creating digital books with Web 2.0 tools : new opportunities for teaching and learning	Universidade do Minho	e-book blog	Usos	Atas de congressos	Apresentação de projeto	--	--	--
(Cruz & Carvalho, 2010)	Modelo TIC: uma possibilidade para a integração curricular das TIC na escolaridade básica	Universidade do Minho	Forum, Movie Maker YouTube	Usos	Atas de congressos	Relato experiência	--	--	N=23
(Diegues & Coutinho, 2010)	WebRádio educativa: produção e utilização de Podcasts em experiências educacionais	Universidade do Minho	Podcast, Blog	Usos e efeitos	Artigo	Apresentação de projeto	Qualitativa & Quantitativa	--	N = 24

(Duarte, Meirinhos & Osório, 2011)	A utilização da aplicação online VoiceThread como complemento à aula de inglês	Instituto Politécnico de Bragança	VoiceThread	Usos e efeitos	Artigo	Empírico	Qualitativa	--	N=28
(Ferreira, Silva & Siman, 2009)	Web 2.0 e o ensino de História: trabalhando com Wiki	Universidade do Minho	Wiki	Usos e efeitos	Atas de congressos	Relato experiência	--	--	--
(Jorge & Morgado, 2008)	Design da utilização da Web 2.0 como aprendizagem em contexto num curso formal de pós-graduação	Universidade Aberta	Blogs, Wikis, Redes sociais LMS (Learning Management System), E-portfolios	Usos e efeitos	Atas de congressos	Teórico	--	--	--
(Jorge & Morgado, 2010)	Contextos de aprendizagem 2.0: a utilização de ferramentas Web 2.0 para uma aprendizagem em contexto	Universidade Aberta	LMS: Moodle Ning	Usos e efeitos	Artigo	Empírico	Quantitativa	Questionário	N=16
(Junior & Coutinho, 2008a)	Do e-learning tradicional para o e-learning 2.0	Universidade do Minho	Wikis, Podcast Google Calendar Google Docs & Spreadsheets, Google Pages, Delicious Messenger, Skype & Google Talk, RSS	--	Artigo	Teórico	--	--	--
(Junior & Coutinho, 2008b)	O uso do Google Pages como portefólio digital	Universidade do Minho	Google Pages	--	Artigo	Empírico	Qualitativa	--	N=27
(Lisboa, Junior & Coutinho, 2009)	Análise das comunidades "Web 2.0" na rede social Orkut	Universidade do Minho	Redes sociais: Orkut & Hi5, Gmail, Flickr Wikipedia YouTube Google Maps Del.icio.us Google Calendar MSN LinkedIn Google Docs Digg Goowy Facebook Blog Scribd Podcast	Uso	Artigo	Teórico	--	--	--
(Magalhães & Carvalho, 2008)	O blogue: uma ferramenta facilitadora de aprendizagem e de comunicação na aula de francês	Universidade do Minho	Blog, Hi5	Usos e efeitos	Atas de congressos	Apresentação de projeto	Quantitativa	Questionário	N=14
(Marques & Carvalho, 2008)	Experiências pedagógicas de utilização de ferramentas da Web 2.0 no ensino superior	Universidade do Minho	Slideshare, SurveyMonkey Wikipedia, Twitter Mashups	Usos e efeitos	Atas de congressos	Empírico	Quantitativa	Questionário	N=52
(Minhoto & Meirinhos, 2011)	O Facebook como plataforma de suporte à aprendizagem da Biologia	Instituto Politécnico de Bragança	Facebook Wikis	Usos e efeitos	Artigo	Empírico	Qualitativa & quantitativa	--	N=15

(Minhoto & Meirinhos, 2012)	Utilização de Wikis como recurso pedagógico	Instituto Politécnico de Bragança	Facebook Wikis	Usos e efeitos	Artigo	Empírico	Qualitativa & cuantitativa	--	N=15
(Miranda, Morais, Alves & Dias, 2008)	Web 2.0: Google docs no processo de ensino e aprendizagem	Instituto Politécnico de Bragança	Google Docs	Usos e efeitos	Artigo	Empírico	Quantitativa	Questionário	N=60
(Miranda, Morais, Alves & Dias, 2010)	Redes sociais: utilização por alunos do Ensino Superior	Instituto Politécnico de Bragança	Redes sociais:	Usos	Artigo	Empírico	Quantitativa	--	N=2910
(Morais, Beça, Santos & Batista, 2009)	Media Participativos na Educação: Ferramentas e Usos Actuais no Ensino Superior Português	Instituto Politécnico de Viseu	LSM Redes sociais Wikis Blogs	Usos	Artigo	Teórico	--	--	--
(Morais, Miranda, Alves & Dias, 2011)	Actividades desenvolvidas nas redes sociais por estudantes do ensino superior	Instituto Politécnico de Bragança	Redes sociais, Facebook Hi5, MySpace, Orkut Twitter, Bebo	Usos	Atas de congressos	Empírico	Quantitativa	Questionário	N=346
(Mota & Coutinho, 2009)	O podcast na educação musical: relato de uma experiência	Instituto Politécnico de Bragança	Podcast	Usos e efeitos	Artigo	Empírico	Quantitativa & qualitativa	Observação Questionário (pre & post) Análise de Conteúdo	N=20
(Oliveira, 2012)	A web 2.0 entre a inteligência colectiva e o elogio do amador	Universidade Aveiro	Web 2.0 Redes sociais	Uso	Artigo	Teórico	--	--	--
(Orvalho, Alonso & Azevedo, 2009)	Estrutura modular nos cursos profissionais das escolas secundárias públicas como trampolim para o sucesso: ...dos princípios de enquadramento curricular e pedagógico... Às práticas na sala de aula e trabalho colaborativo	Universidade Católica Portuguesa	Moodle	Usos e efeitos	Artigo	Empírico	--	--	N=650000
(Páscoas & Gil, 2010)	Redes Sociais como complemento de aprendizagem ao longo da vida: as Universidades seniores e a Web 2.0	Instituto Politécnico de Bragança	Facebook	Usos e efeitos	Artigo	Empírico	Qualitativa & cuantitativa	Questionário Análise de Conteúdo	N=13
(Patrício & Gonçalves, 2009)	Exploração de ferramentas Web 2.0 na formação inicial de professores	Instituto Politécnico de Bragança	Moodle, Wikis WebQuest, Blogs Podcast Social Bookmarking	Usos e efeitos	Artigo	Empírico	Qualitativa	Análise de Conteúdo	N=72
(Patrício & Gonçalves, 2010)	Utilização educativa do facebook no ensino superior	Instituto Politécnico de Bragança	Facebook, Mensagens My delicious, Books iRead Chat, YouTube Twitter, Google Docs Slideshare e Slide Quiz Creator	Usos e efeitos	Artigo	Empírico	--	--	N=62

			Polls Books iRead Book Tag Formspring.me Calendar To-Do List Flashcards						
(Patrício, Gonçalves & Carrapatoso, 2008)	Tecnologias Web 2.0: recursos pedagógicos na formação inicial de professores	Instituto Politécnico de Bragança	Blog Wiki Podcast Delicious Moodle YouTube HE5 Web Syndication, Second Life Forum Chat MSN	Usos e efeitos	Atas de congressos	Empírico	Quantitativa	Questionário	N= 72
(Patrício & Osório, 2011)	Aprendizagem intergeracional com tecnologias de informação e comunicação	Instituto Politécnico de Bragança	TICs	--	Artigo	Teórico	--	--	--
(Pereira & Oliveira, 2012)	TIC na Educação: desafios e conflitos versus potencialidades pedagógicas com a WEB 2.0	Instituto Politécnico de Bragança	Delicious Blogs Wiki YouTube Facebook Podcast Twitter Moodle Google Docs Google+	Usos	Atas de congressos	Teórico	--	--	--
(Rocha & Coutinho, 2011)	Web 2.0 tools in high school in Portugal: creating screencasts and vodcasts for learning	Universidade do Minho	GeomCasts Podcast Blogs	Usos e efeitos	Artigo	Apresentação de projeto	Qualitativa & cuantitativa	--	N=11
(Santo, Pedro & Almeida, 2011)	Sapo Campus: promoção da utilização de serviços da Web social em contexto educativo	Universidade Aveiro	PLE	Usos e efeitos	Artigo	Empírico	Qualitativa & cuantitativa	--	--
(Vieira & Oliveira, 2011)	Web 2.0 e aprendizagem da estatística: um estudo de caso no 7.º ano de escolaridade	Universidade do Minho	Blog	Usos e efeitos	Atas de congressos	Empírico	Investigação	--	--

CAPÍTULO 7

La web 2.0 y el aprendizaje colaborativo en la educación portuguesa

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FACTOR DE IMPACTO

H Index (3)
Latindex. Índice de impacto: 35 características cumplidas.
ICDS (4.4)
Indexada en...
Psicodoc
Ulrich
Redalyc
Miar 2014
ISOC
Dialnet
DICE
Sherpa-Romeo

García-Martín, J. y García, J. N. (2013). La web 2.0 y el aprendizaje colaborativo en la educación portuguesa. *International Journal of Developmental and Educational Psychology*, 25, n°1(2), 711-720.



LA WEB 2.0 Y EL APRENDIZAJE COLABORATIVO EN LA EDUCACIÓN PORTUGUESA

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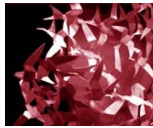
ABSTRACT

The purpose of this article is to review current research studies published in the past four years in the Open Access Scientific Repository of Portugal (RCAAP). This allows searches in 45 Portuguese repositories, most of them in various Portuguese universities and is used in this study to look for applications of collaborative learning at different levels of the Portuguese education system, using web 2.0 tools. First, collaborative learning and Web 2.0 are defined and their main features examined. Secondly, we performed a comprehensive review of 21 publications on the subject, touching various aspects including the author and year, objective, educational level applying methodology used, means of measurement and sample involved. To this are added results classified into two categories, the emotional component and the effects on learning. Finally, it is shown that the application of this innovative model in the educational syllabus of any curriculum area using web 2.0 tools has positive effects on various psychological. During this research study, we received competitive funds from the Spanish Ministry of Education, Science and Innovation (MICINN) (EDU2010-19250 / EDUC) for 2010-2013, awarded to the Director/Main Researcher (J. N. García). J. García-Martín received funds from the FPI MICINN for the same project. This article was realized in stay of Judit in summer 2012 in the University of Coimbra with the collaboration Dr. María Teresa Ribeiro Pessoa.

Keywords: Web 2.0, collaborative learning, Internet, education

RESUMEN

Se revisan estudios de investigación publicados, en los cuatro últimos años, en el Repositorio Científico de Acceso Abierto de Portugal (RCAAP) sobre la aplicación, en los diversos niveles educa-



LA WEB 2.0 Y EL APRENDIZAJE COLABORATIVO EN LA EDUCACIÓN PORTUGUESA

tivos portugueses, del aprendizaje colaborativo mediante herramientas de la web 2.0. Para ello, en un primer momento, se define el aprendizaje colaborativo, la web 2.0 y se examinan sus principales características. En una segunda parte, se realiza una revisión exhaustiva de 21 publicaciones sobre el tema, en torno a diferentes aspectos como autor, año de publicación, objetivo, nivel educativo, metodología utilizada, instrumento de medida y muestra. A los que se añaden, los resultados que son clasificados en torno a dos categorías, el componente emocional y los efectos en el aprendizaje. Estos últimos demuestran que la aplicación de este modelo innovador en el curriculum educativo de cualquier área curricular mediante herramientas de la web 2.0 produce efectos positivos en diversas variables psicológicas y educativas relacionadas con el rendimiento académico y con el éxito educativo. Durante la realización de este estudio se recibieron ayudas competitivas del proyecto del MICINN (EDU2010-19250/EDUC) para el trienio 2010-2013; concedido al IP (J. N. García) así como una beca predoctoral (FPI-MICINN) concedida a J.García-Martín. Este artículo fue realizado durante la estancia realizada en el verano de 2012 por Judit en la Universidad de Coimbra junto a la Dra. María Teresa Ribeiro Pessoa coautora del mismo.

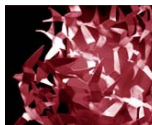
Palabras clave: Web 2.0, aprendizaje colaborativo, internet, educación

INTRODUCCIÓN

Desde la década de los 80, en la que fuimos testigos de los inicios de la era de la información, hasta la actualidad han acontecido sucesos importantes como los cambios de paradigma en la educación, los nuevos enfoques y modelos así como las teorías de enseñanza-aprendizaje que están modificando la forma en la que las personas accedemos, seleccionamos y analizamos la información, dando lugar a la proliferación del *aprendizaje colaborativo*, de las herramientas de la web 2.0 y de los enfoques de redes sociales. Asimismo, a lo largo de todos estos años se ha pasado de un aprendizaje formal, estructurado, estático y centralizado a informal, colaborativo, dinámico y distribuido en el que el alumno ha pasado de ser un sujeto pasivo a activo (Gunawardena, Hermans, Sanchez, Richmond, Bohley, & Tuttle, 2009) lo que conlleva implicaciones pedagógicas importantes. En este sentido, los estudiantes se presentan ante un nuevo escenario para la interacción y el intercambio de ideas en el que el aprendizaje colaborativo y las herramientas de la web 2.0 juegan un papel muy importante ya que despiertan el interés y la motivación de los alumnos por el aprendizaje, factores cruciales para determinar los resultados del mismo (Churchill, 2009; Lee & Rha, 2009; Liu & Wang, 2010).

En esta línea, en la actualidad, en algunas instituciones educativas de Portugal, se está empezando a aplicarse una nueva metodología activa el *trabajo colaborativo* la cual promueve el *aprendizaje colaborativo (AC)* a través de herramientas de la web 2.0 definidas recientemente como aplicaciones de colaboración que facilitan la comunicación entre los individuos, en el ámbito educativo (Sendall, Wendy, & Peslak, 2008), y que son parte integral de la vida cotidiana de los adolescentes, como muy bien sugieren diversos estudios portugueses (Miranda, Morais, Alves & Dias, 2010; Morais, Miranda, Alves & Dias, 2011). Este nuevo modelo se encuentra muy alejado del tradicional, que se centraba en la memorización y reproducción mecánica de contenidos por parte de los estudiantes, dificultando la integración y aplicación de los nuevos conocimientos. Asimismo, son muchas las definiciones que distintos autores han elaborado sobre el *aprendizaje colaborativo*, pero la más amplia y representativa aunque no suficiente es: "una situación en la que dos o más personas aprenden o intentan aprender algo juntas". Sin olvidar que cada elemento de esta definición puede interpretarse de diferente forma (Dillenbourg, Baker, Blaye, & O'malley, 1999, p.1).

Teniendo en cuenta esta aproximación teórica, el objetivo de este estudio se concentra en el análisis de los efectos que produce la aplicación de este nuevo enfoque en el componente emocional y en el propio aprendizaje a través del uso de herramientas de la web 2.0 como blogs, wikis, redes sociales y entornos virtuales de aprendizaje.



ESTABLECIMIENTO DE CATEGORÍAS

Este artículo surge como resultado de la revisión de diversos estudios publicados en varias revistas científicas portuguesas (*Revista de Ciências Tecnologias de Informação e Comunicação*, *Revista Iberoamericana de Informática Educativa EDUSER: revista de educação Educação, Formação & Tecnologias...*) y actas de congresos empíricos sobre la web 2.0. En concreto, del análisis de veintuna publicaciones sobre dicha temática.

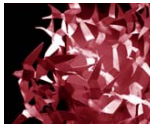
Por un lado, se analizan siete *actas de congreso* (Cardoso & Coutinho, 2010; Cardoso & Coutinho, 2011; Coutinho, 2009; Coutinho & Bottentuit, 2008b; Coutinho & Bottentuit, 2008c; Magalhães & Carvalho, 2008; Marques & Carvalho, 2008). Y por otro lado, catorce *artículos* (Carvalho, Aguiar, Cabecinhas & Carvalho, 2008; Castro & Andrade, 2012; Coutinho & Bottentuit, 2008a; Duarte, Meirinhos & Osório, 2011; Jorge & Morgado, 2010; Minhoto & Meirinhos, 2011; Minhoto & Meirinhos, 2012; Miranda, Morais, Alves & Dias, 2008; Mota & Coutinho, 2009; Orvalho, Alonso & Azevedo, 2009; Páscoa & Gil, 2012; Patricio & Gonçalves, 2009; Patricio & Gonçalves, 2010; Santo Pedro & Almeida, 2011). El Repositorio Científico de Acceso Abierto de Portugal (RCAAP) permitió el acceso a cuarenta y dos repositorios portugueses en el que se utilizó como palabra clave: *web 2.0*, se seleccionaron los artículos y se recogieron, siempre que fue posible diversos datos, con el propósito de configurar una tabla-síntesis: i) autores y año de publicación del estudio (en los últimos cuatro años); ii) el título del artículo o acta de congreso; iii) el repositorio del que forma parte; iv) el objetivo; v) las herramientas de la web 2.0 utilizadas; vi) el nivel educativo; vii) el tipo de publicación (artículo u objeto de conferencia); viii) la metodología (cualitativa y/o cuantitativa); ix) el instrumento (cuestionarios, entrevistas, análisis de contenido, observación...), x) la muestra y los resultados que se explican en torno a dos categorías de las cuatro trabajadas en Fernández, García, de Caso, Fidalgo & Arias, 2006: xi) componente emocional y xii) efectos en diversas variables.

HALLAZGOS

Seguidamente, se exponen los hallazgos obtenidos del análisis de las veintiuna publicaciones que versan sobre la temática seleccionada. En este sentido, en cuanto a la primera de las categorías, la relativa a los autores y al año de publicación, se puede afirmar que la mayoría de los estudios han sido realizados por cinco universidades portuguesas (Minho, Braganza, Católica, Abierta y la de Aveiro), encontrándose gran cantidad de ejemplares sobre las herramientas de la web 2.0 en la Universidad de Minho y de redes sociales en la de Braganza. Asimismo, las 21 publicaciones seleccionadas tienen un rango temporal del 2008 a 2012 ambos inclusive (ver tabla 2). No obstante, hay que tener en cuenta que los datos recogidos del 2012 abarcan sólo hasta el mes de junio. De modo que el 66% de éstas son artículos y el 34% restante actas de conferencia empíricas. Por ello, a continuación se presentan por un lado los hallazgos obtenidos del análisis de las siete actas de congreso sobre la web 2.0 y el aprendizaje colaborativo en la Educación Portuguesa y por el otro, los obtenidos de los catorce artículos empíricos seleccionados del RAAP.

Análisis de las actas de congreso

La mayoría de las actas de congresos analizadas fueron publicadas en 2008 existiendo sólo un ejemplar para tres de los cuatro años restantes 2009, 2010 y 2011 y no existiendo ninguno durante el 2012. Asimismo, todas ellas fueron obtenidas del repositorio de acceso abierto de la Universidad de Minho y en todas se analiza el uso y los efectos que las herramientas de la web 2.0 tienen en el proceso instruccional de la Educación Secundaria (43%) y de la Superior (57%). Además el 57% de éstas cuentan con una muestra relativamente pequeña (menor a 50 personas) y



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en el 86% han utilizado el cuestionario como instrumento de investigación principal al que le siguen otros como el diferencial semántico.

Ahora bien, el análisis de los resultados obtenidos en las actas seleccionadas constituyen la sección más interesante y se han clasificado de acuerdo con las dos categorías seleccionadas previamente: el *componente emocional* que recoge los datos relacionados con la motivación, la satisfacción, las actitudes, la colaboración, la socialización e interacción y la sensibilización y los *efectos en el aprendizaje* que incluyen todo lo relacionado con la responsabilidad, la autonomía, las aptitudes, las competencias adquiridas, la creatividad y los resultados.

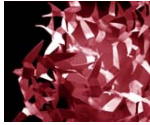
En cuanto al componente emocional, las actas de congreso analizadas demuestran que la motivación, la colaboración, la socialización y la satisfacción aumentan considerablemente al utilizar esta nueva metodología. A lo que hay que añadir una mayor sensibilización entre el grupo de pares y unas actitudes más positivas hacia el aprendizaje. Asimismo, en relación a los efectos, los estudiantes también se muestran más responsables, más autónomos, más creativos y en el 85% de las publicaciones se observa un incremento considerable en los resultados de aprendizaje.

Análisis de los artículos

Los artículos analizados fueron publicados en su mayoría entre 2008, 2009 y 2011 existiendo sólo dos ejemplares en los años 2010 y 2012. Asimismo, la mayoría de ellos (57%) fueron obtenidos del repositorio de acceso abierto del Instituto Politécnico de Braganza y en todas se analiza el uso y los efectos que las herramientas de la web 2.0 en especial de las redes sociales que tienen en el proceso instruccional de la Educación Superior (50%), Secundaria (38%) y Básica (12%). Además el 57% de éstas cuentan con una muestra relativamente pequeña (menor a 50 personas) y en el 79% han utilizado el cuestionario como principal instrumento de investigación como puede observarse en la tabla 1.

Estudio	Muestra			Instrumentos				
	N < 50	50 < N < 100	N > 100	Cuestionario	Diferencial semántico	Observación	Análisis de contenido	Entrevista
(Carvalho, Aguiar, Cabecinhas & Carvalho, 2008)			X	X				X
(Castro & Andrade, 2012)	X			X				
(Coutinho & Bottentuit, 2008a)	X			X		X		
(Duarte, Meirinhos & Osório, 2011)	X			X		X	X	X
(Jorge & Morgado, 2010)	X			X				
(Minhoto & Meirinhos, 2011)	X			X			X	X
(Minhoto & Meirinhos, 2012)	X						X	X
(Miranda, Morais, Alves & Dias, 2008)		X		X				
(Mota & Coutinho, 2009)	X			X		X	X	
(Orvalho, Alonso & Azevedo, 2009)			X				X	X
(Páscoa & Gil, 2012)	X			X			X	
(Patricio & Gonçalves, 2009)		X					X	
(Patricio & Gonçalves, 2010)		X		X			X	
(Santo Pedro & Almeida, 2011)			X	X			X	

Tabla 1. Análisis de los artículos



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El análisis de los hallazgos obtenidos en los artículos analizados compone la sección más importante. Además, se han agrupado de acuerdo con las dos categorías seleccionadas previamente: *el componente emocional* y *los efectos en el aprendizaje*.

En relación al componente emocional, los artículos analizados demuestran que la motivación, la colaboración, la socialización y la satisfacción se incrementan considerablemente al utilizar esta nueva metodología. A lo que hay que añadir una mayor sensibilización entre el grupo de pares y unas actitudes más positivas hacia el aprendizaje. Asimismo, en relación a los efectos, el uso de este nuevo enfoque hace que los estudiantes sean más responsables, más autónomos, más competentes, más creativos y en el 93% de los artículos se observa un aumento en los resultados de aprendizaje (véase tabla 2).

Tabla 2
 Análisis de los resultados obtenidos en los artículos analizados

Estado	Resultados										
	Componente Emocional					Efectos-Aprendizaje					
	Motivación	Satisfacción	Colaboración	Socialización	Sensibilización	Responsabilidad	Autonomía	Efectos-Aprendizaje	Competencia	Creatividad	Resultados
(Cervantes, Aguilar, Cabrerizas & Cervera, 2008)	X	X	X	X		X	X	X	X		X
(García, Rodríguez, & Contreras, 2012)	X	X	X	X	X	X	X			X	X
(Bernal, 2008)	X		X	X		X	X	X	X	X	X
(Darias, Merino & Otero, 2011)		X	X	X	X	X	X	X		X	X
(Arago & Megado, 2010)		X	X	X	X	X	X	X			X
(Molina, & Merino, 2011)	X	X	X	X	X	X	X	X	X		X
(Mishra & Merino, 2012)		X	X	X	X	X	X	X			X
(Miranda, Morán, Alves & Dias, 2008)	X		X	X		X	X	X			X
(Mou & Coutinho, 2009)	X	X	X	X	X	X	X	X			X
(Oviedo, Alonso & Rodríguez, 2011)			X	X	X	X	X	X	X		X
(Pérez, F. Gil, 2012)	X		X	X		X	X	X	X		X
(Paredes & González, 2009)	X	X	X	X	X	X	X	X			X
(Paredes & González, 2010)		X	X	X	X	X	X	X		X	X
(Santander Pardo & Alvarado, 2011)		X	X	X	X	X	X	X		X	X



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DISCUSIÓN Y CONCLUSIONES

En la mayoría de las publicaciones analizadas se expresa que la satisfacción, la motivación y el interés mejoran con respecto a lo que ocurre cuando se sigue el método tradicional. Conclusión que coincide con los resultados obtenidos en estudios internacionales previos. A esto se añade que son las relaciones interpersonales constituidas en el grupo y la necesidad de compartir las mismas metas lo que más impulsa el aprendizaje colaborativo. Asimismo, esta forma de trabajar resulta más entretenida y más atractiva para los estudiantes porque plantea desafíos, haciéndose que se sientan protagonistas de su aprendizaje. Afirmación que concuerda con los resultados de estudios previos. Además, la construcción de conocimiento, el desarrollo de habilidades y competencias así como la participación activa de los alumnos han sido otros de los aspectos mejor valorados. Por consiguiente, en todas las publicaciones analizadas se recogen alusiones positivas sobre este aspecto. Asimismo, en varios, se documenta expresamente que la actitud de los estudiantes hacia el uso de las herramientas de la web 2.0 para aplicar el trabajo colaborativo es positiva o muy positiva, y no se encuentra ningún estudio en el que los participantes muestren mayoritariamente una actitud negativa. Conclusión que coincide con los resultados obtenidos en diversos estudios internacionales pero que difiere en cierta manera de).

En esta línea, de los resultados presentados se desprende que la sociedad actual, *del conocimiento*, es dinámica y globalizada, lo que conlleva la necesidad de buscar modelos innovadores, como el trabajo colaborativo a través de herramientas de la web 2.0 (blogs, wikis, entornos virtuales de aprendizaje, redes sociales) que den respuesta a las nuevas demandas.

No obstante, este estudio presenta una serie de limitaciones en cuanto al número de artículos y actas de congresos revisados, sobre todo los correspondientes al 2012 ya que todos han sido publicados durante el primer semestre, lo que obliga a tomar los resultados con cierta cautela. Por tanto, es necesario seguir investigando en esta línea y proceder al desarrollo y aplicación de instrumentos que permitan evaluar de modo fiable y eficaz los nuevos modelos y enfoques de enseñanza.

Finalmente, el aprendizaje colaborativo surge como un modelo innovador que hunde sus raíces en el enfoque constructivista y que debe llevarse a cabo mediante herramientas de la web 2.0 para acrecentar sus implicaciones educativas y sociales.

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CAPÍTULO 8

Análisis de estudios sobre Facebook en Computer and Human Behavior (2010-2013)

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FACTOR DE IMPACTO

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García-Martín, J. y García, J. N. (2014b). Análisis de estudios sobre Facebook® en Computer and Human Behaviour® (2010-2013). *International Journal of Developmental and Educational Psychology*, 26, n°1(3), 593-598.



**ANÁLISIS DE ESTUDIOS SOBRE FACEBOOK®
EN COMPUTER AND HUMAN BEHAVIOR® (2010-2013)
RESEARCH ABOUT FACEBOOK® IN COMPUTER AND HUMAN BEHAVIOR® (2010-2013)**

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ABSTRACT

The purpose of this study is to describe the main psychological and educational trends of research about a social network, Facebook®, and they are being carried out internationally. For this, we do an empirical analysis of twenty articles on the topic published in the last four years in an international journal of impact, *Computer and Human Behavior*®. In this line, the present study confirms that research on the use and effects of Facebook®, is extensive, meticulous and strict. During this research study, we received competitive funds from the Spanish Ministry of Science and Innovation (MICINN, currently MINECO) (EDU2010-19250 / EDUC) for 2010-2013, awarded to the Director/Main Researcher (J. N. García). J. García-Martín received funds from the (FPI-MICINN) of the same project for four years (2011-2015).

Keywords: social networking sites, web 2.0 technologies, education, psychology, Facebook®

RESUMEN

El propósito del presente estudio es describir las principales líneas de investigación psicoeducativas que se están llevando a cabo a nivel internacional en torno a *Facebook*® en una revista internacional de impacto, *Computer and Human Behavior*®. Para ello, se realiza un análisis de veinte artículos empíricos sobre la temática publicados en los últimos cuatro años en dicha revista. En esta línea, el presente estudio corrobora que la investigación sobre el uso y los efectos de *Facebook*® es extensa, detallada y rigurosa. Durante la realización de este estudio se recibieron ayudas competitivas del proyecto (EDU2010-19250/EDUC) del Ministerio de Ciencia e Innovación (MICINN, en la actualidad MINECO), para el trienio 2010-2013, concedido al Investigador Principal (J. N. García) así como una beca predoctoral de formación de personal investigador (FPI-MICINN) del mismo proyecto concedida a J. García-Martín para el cuatrienio (2011-2015).



Palabras Clave: redes sociales, herramientas 2.0, educación, psicología, Facebook®

INTRODUCCIÓN

En los últimos años, se ha venido observando un interés generalizado por investigar el uso que se hace de diferentes herramientas de la web 2.0 en los diferentes escenarios de la vida diaria (García-Martín & García-Sánchez, 2013) y de los efectos que se producen en variables psicológicas diversas como consecuencia de su uso, siendo especialmente relevantes los relativos al uso de las redes sociales, en concreto el de Facebook®, red social internacional por excelencia. En esta línea, los enfoques y líneas de investigación seguidos en torno a ello, son muy diversos al igual que los propósitos de los principales estudios efectuados en los últimos años, pudiendo ser agrupados en seis grandes grupos: i) los motivos para la creación y el mantenimiento de una cuenta en Facebook®; ii) los patrones de uso diferenciales en función del género, la edad y el nivel educativo; iii) las percepciones que los usuarios tienen acerca del uso y de los efectos de esta herramienta; iv) los efectos que se producen en variables psicoeducativas diversas como consecuencia del uso de esta herramienta durante el proceso de enseñanza-aprendizaje de contenidos curriculares diversos; v) los patrones de uso diferenciales en función de los rasgos y factores de personalidad; y vi) revisiones teóricas tanto sobre el uso de esta red social como de los efectos del uso de ésta en diferentes esferas de la vida cotidiana.

En primer lugar, en relación a los motivos para la creación y el mantenimiento del uso de esta red social, son cuantiosas las investigaciones que se han realizado sobre esta temática a nivel internacional. En la mayoría de éstas, se analizan los motivos al mismo tiempo que se examinan otros aspectos estrechamente relacionados como por ejemplo el tiempo de dedicación, el nivel de satisfacción, los niveles de autorregulación y las configuraciones de la política de privacidad que los usuarios encuestados efectúan en sus redes sociales (Clayton, Osborne, Miller & Oberle 2013; Special & Li-Barber, 2012; Stutzman, Capra, Thompson, 2011).

En segundo lugar, en cuanto a los patrones de uso diferenciales en función del género o la edad, son amplios los estudios empíricos internacionales realizados en torno a este objetivo. De modo que prácticamente en la totalidad de las investigaciones realizadas en torno a dicha temática, se compara el uso de Facebook® en función del género o el nivel académico (Balakrishnan & Shamim, 2013; McAndrew & Jeong, 2012). Sin embargo, son menos las que se realizan a nivel intergeneracional entre jóvenes y adultos o entre adolescentes y personas mayores.

En tercer lugar, es más que sabido que las percepciones que se tienen sobre el uso y los efectos de esta herramienta, es una línea de investigación que se viene desarrollando y optimizando a nivel internacional desde hace mucho tiempo y que tiene una prospectiva futura evidente, ya que los tiempos cambian y surgen nuevos enfoques, teorías, paradigmas que influyen e incluso modifican las percepciones que los usuarios tienen sobre ellas. Por ello, los estudios realizados en torno a dicho propósito han analizado variables y aspectos sustancialmente diferentes. En este sentido, en estos estudios se han investigado aspectos tales como las percepciones que los usuarios tienen acerca del tiempo que dedican a la red social, de las actividades realizadas, de la presencia social y de la satisfacción (Baek, Holton, Harp & Yaschur, 2011; Junco, 2013; McAndrew & Jeong, 2012; Special & Li-Barber, 2012).

Asimismo, en cuarto lugar, en lo que respecta al análisis de los efectos que se producen en variables psicoeducativas diversas como consecuencia del uso de esta herramienta durante el proceso de enseñanza-aprendizaje de contenidos curriculares variados. En los últimos años se han examinado y analizado aspectos tales como el compromiso por el aprendizaje, la motivación, el rendimiento académico, la autoeficacia, la autorregulación... Sobre todo ello, existe gran evidencia empírica, primordialmente en la Educación Superior (Junco, 2013; Kirschner & Karpinski, 2010).

Por otra parte, en relación a los patrones de uso diferenciales en función de rasgos y factores de personalidad, en los últimos años se ha comenzado a indagar sobre este novedoso enfoque, ejerciéndose de este modo, un especial interés por las relaciones de reciprocidad existentes entre los patrones de usos de Facebook con los factores de personalidad recogidos en el *Big Five*® así como con otros aspectos o rasgos de personalidad (Amichai-Hamburger & Vinitzky, 2010; Cheung, Chiu & Lee, 2011; Park, Jin & Jin, 2011; Ryan & Xenos, 2011; Skues et al., 2012).



Y en último lugar, también se observa la realización de revisiones teóricas en torno a dicha temática a nivel internacional (Hew, 2011).

Por todo ello, con la presente investigación se persiguen describir las principales líneas de investigación llevadas a cabo entorno a Facebook®, en una revista internacional, Computers and Human Behavior®, con un índice de impacto de 2.067 según Thomson Citations (2012) a través del análisis de veinte artículos empíricos publicados en ella en los últimos cuatro años.

METODOLOGÍA DE LA REVISIÓN

El pasado día 25 de Julio de 2013, se realizó una búsqueda en la base de datos de ScienceDirect® indexada en la Universidad de León. Para ello, se indicó Facebook como palabra clave, el nombre completo de la revista, Computers and Human Behavior®, así como el período de publicación (2010-2013) que se quería analizar. Dicha búsqueda supuso el acceso de cuarenta y siete artículos de los cuales dieciséis son del año 2013, diecinueve del 2012, ocho del 2011 y cuatro del 2010. De ese conjunto, se excluyeron aquellos en los que se analizaba Facebook junto con otra red social y los que no estaban centrados especialmente en analizar algún aspecto particular de la red social en cuestión, seleccionándose de este modo una muestra final de veinte, cinco del año 2013, cinco del año 2012, seis del año 2011 y cuatro del año 2010 (Amichai-Hamburger & Vinitzky, 2010; Baek et al., 2011; Balakrishnan & Shamim, 2013; Bevan, Pfyl & Barclay, 2012; Chen & Marcus, 2012; Cheung et al., 2011; Clayton et al., 2013; Junco, 2013; Kirschner & Karpinski, 2010; McAndrew & Jeong, 2012; Nosko, Wood & Molema, 2010; Oldmeadow, Quinn & Kowert, 2013; Park et al., 2011; Ryan & Xenos, 2011; Sheldon, 2013; Skues, Williams & Wise, 2012; Smock, Ellison, Lampe & Wohn, 2011; Special & Li-Barber, 2012; Stutzman et al., 2011; Wang, Moon, Kwon, Evans & Stefanone, 2010). Con posterioridad y con el propósito de configurar una tabla-síntesis se leyeron y analizaron cada uno de los veinte artículos seleccionados en base a las siguientes categorías: *i) continente de procedencia de las instituciones educativas de los autores; ii) objetivo; iii) palabras clave; iv) muestra e v) instrumento.*

EVIDENCIAS EMPÍRICAS

A continuación, se exponen las evidencias empíricas obtenidas del análisis de las veinte publicaciones que versan sobre la temática seleccionada. En esta línea, en cuanto a la primera de las categorías, *la relativa al continente de procedencia de las instituciones educativas a las que los distintos autores están adscritos*, se puede afirmar que la mayoría de los estudios han sido realizados por investigadores americanos (N=12). No obstante, una pequeña muestra de las investigaciones realizadas han sido realizadas también por asiáticos (N=2), europeos (N= 2) y australianos (N = 2). Sin embargo, no se observa ninguna publicación llevada a cabo por investigadores del continente africano. A este conjunto, hay que añadir dos publicaciones más (N= 2) que han sido realizadas por las colaboraciones de investigadores de varios continentes. En el primer caso, por investigadores americanos y asiáticos y en el segundo, por investigadores americanos y europeos.

En relación a la segunda, todos los artículos examinados se centran en analizar el uso de Facebook y su relación con variables psicoeducativas diversas. En esta línea, hay estudios que examinan si existe o no relación entre el uso de esta herramienta de la web 2.0 y la *satisfacción* (Special & Li-Barber, 2012), *la privacidad* (Stutzman et al., 2011), el *individualismo* (Cheung et al., 2011; Wang et al., 2010), *la autorrevelación* (Cheung et al., 2011), *las emociones* (Bevan et al., 2012); *los rasgos de personalidad* (Amichai-Hamburger & Vinitzky, 2010; Cheung et al., 2011; Park et al., 2011; Ryan & Xenos, 2011; Skues et al., 2012), *las motivaciones* (Baek et al., 2011; Balakrishnan & Shamim, 2013; Chen & Marcus, 2012; Clayton et al., 2013; Special & Li-Barber, 2012), *las adicciones* (Balakrishnan & Shamim, 2013), *las gratificaciones* (Baek et al., 2011; Balakrishnan & Shamim, 2013), *el rendimiento académico* (Junco, 2013; Kirschner & Karpinski, 2010) etc. y de qué tipo es (véase tabla 1).



Tabla 1. Análisis de la perspectiva seguida

<i>Perspectiva</i>	<i>Estudios</i>
<i>Educativa</i>	(Junco, 2013; Kirschner & Karpinski, 2010)
<i>Psicológica</i>	(Baek et al., 2011; Balakrishnan & Shamim, 2013; Chen & Marcus, 2012; Cheung et al., 2011; Clayton et al., 2013; Junco, 2013; Kirschner & Karpinski, 2010; Special & Li-Barber, 2012)
<i>Personal</i>	(Amichai-Hamburger & Vinitzky, 2010; Baek et al., 2011; Balakrishnan & Shamim, 2013; Cheung et al., 2011; Park et al., 2011; Ryan & Xenos, 2011; Skues et al., 2012; Stutzman et al., 2011; Wang et al., 2010)
<i>Social</i>	(Cheung et al., 2011)
<i>Emocional</i>	(Baek et al., 2011; Balakrishnan & Shamim, 2013; Bevan et al., 2012; Chen & Marcus, 2012; Clayton et al., 2013; Special & Li-Barber, 2012)

En relación a la tercera, las palabras claves van en relación con el objetivo. Por ello, las que se repiten con mayor frecuencia son: motivos o motivación, personalidad, red social, usos y gratificaciones.

En relación a la muestra, el 20% son muestras grandes, con más de seiscientos encuestados (Balakrishnan & Shamim, 2013; McAndrew & Jeong, 2012; Oldmeadow et al., 2013; Ryan & Xenos, 2011), el 30% son muestras pequeñas que cuentan con menos de doscientos participantes (Baek et al., 2011; Cheung et al., 2011; Junco, 2013; Sheldon, 2013; Special & Li-Barber, 2012; Stutzman et al., 2011), y por último el 50% restante son muestras medianas, es decir, más de doscientos encuestados pero menos de seiscientos (Amichai-Hamburger & Vinitzky, 2010; Bevan et al., 2012; Chen & Marcus, 2012; Clayton et al., 2013; Kirschner & Karpinski, 2010; Nosko et al., 2010; Park et al., 2011; Skues et al., 2012; Smock et al., 2011; Wang et al., 2010).

Y finalmente, en relación al instrumento, la integridad de los estudios analizados utilizan cuestionarios, encuestas o escalas online para evaluar los distintos aspectos. Sin embargo, en un estudio también se observa el uso de un software informático con el que se evalúa más objetivamente el uso efectuado en Facebook® (Junco, 2013).

DISCUSIÓN Y CONCLUSIONES

Con la revisión de estudios descrita en el presente artículo se ofrece una visión académica, psicológica e internacional sobre las principales tendencias de investigación que se están llevando a cabo en torno al uso de las redes sociales, especialmente de Facebook®, en la vida diaria, así como de los efectos que dicho uso tiene en diferentes aspectos del comportamiento humano tales como las emociones, las motivaciones, las satisfacciones, los factores o dimensiones de personalidad (extraversión, apertura a nuevas experiencias, responsabilidad, amabilidad, inestabilidad emocional o neuroticismo), las gratificaciones, las adiciones, la autorrevelación, el individualismo, el colectivismo y el rendimiento académico (Amichai-Hamburger & Vinitzky, 2010; Baek et al., 2011; Balakrishnan & Shamim, 2013; Bevan, Pfyl & Barclay, 2012; Chen & Marcus, 2012; Cheung et al., 2011; Clayton et al., 2013; Junco, 2013; Kirschner & Karpinski, 2010; McAndrew & Jeong, 2012; Nosko, Wood & Molema,



2010; Oldmeadow, Quinn & Kowert, 2013; Park et al., 2011; Ryan & Xenos, 2011; Sheldon, 2013; Skues, Williams & Wise, 2012; Smock, Ellison, Lampe & Wohn, 2011; Special & Li-Barber, 2012; Stutzman et al., 2011; Wang, Moon, Kwon, Evans & Stefanone, 2010). En esta línea, el análisis realizado ha permitido corroborar que son numerosas las perspectivas psicológicas y académicas existentes en la actualidad para examinar el comportamiento humano en estos *social media*.

Asimismo, también se ha observado que la totalidad de los estudios examinados se han llevado a cabo a través de cuestionarios, escalas y encuestas online con muestras relativamente amplias, recordar que más de la mitad de las publicaciones examinadas contaban con más de doscientos participantes, confirmándose de este modo, el enorme potencial de determinadas herramientas de la web 2.0, tales como el SurveyMonkey®, para la realización de este tipo de estudios.

Y para terminar, con la presente revisión, se ha corroborado que la mayor parte de la investigación sobre dicha temática está siendo efectuada desde el continente americano, siendo deficitaria en el resto de continentes especialmente en el africano. Por ello, se considera que investigaciones intercontinentales sobre la temática deberían realizarse en vistas a describir las razones de dicha conclusión.

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CAPÍTULO 9

Efectos positivos del uso de blogs y wikis en variables psicoeducativas: revisión de estudios internacionales (2010-2013)

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FACTOR DE IMPACTO	JCR en 2012 (0.133)
	FI-5 años (0.124)
	SJR (0.135)
	H Index (3)
	CIRC (A)
	MIAR-ICDS (9.7)
	CARHUS (B)
	CARHUS Plus + 2014 (grupo C)
	En 2013 el Sello de Calidad de Revistas Científicas Españolas otorgado por FECYT
	ICDS (9.7)

García-Martín, J. y García-Sánchez, J. N. (2015b). Efectos positivos del uso de blogs y wikis en variables psicoeducativas: revisión de estudios internacionales (2010-2013). *Estudios sobre Educación*, 29, 103-122. doi: 10.15581/004.29.103-122

Efectos positivos del uso de blogs y wikis en variables psicoeducativas: revisión de estudios internacionales (2010-2013)¹

Positive Effects of the Use of Blogs and Wikis in Psycho-Educational Variables: A Review of International Studies (2010-2013)

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Resumen: Se presenta una revisión de treinta y dos estudios empíricos internacionales publicados en los últimos cuatro años (2010-2013) en revistas científicas de impacto con la que se persigue dar respuesta a cuáles son las variables psicoeducativas más examinadas y cuáles son los efectos positivos que se producen en ellas como consecuencia del uso continuado de blogs y wikis. Los resultados demuestran que el uso

de estas herramientas: i) promueve la colaboración, la participación, la interacción social y la socialización; ii) aumenta la motivación, la satisfacción, el rendimiento y la retroalimentación; y iii) favorece el desarrollo del pensamiento crítico y creativo.

Palabras clave: Web 2.0; blogs; wiki; e-learning.

¹ Universidad de León. Durante la realización de este estudio se recibieron fondos del Ministerio de Ciencia e Innovación del proyecto (EDU2010-19250/EDUC) concedido al Investigador Principal (J. N. García) para el trienio (2010-2013). Asimismo, J. García-Martín ha recibido fondos del Ministerio de Ciencia e Innovación, Programa Nacional de Formación de Personal Investigador, Subprograma de ayudas predoctorales para la formación de personal investigador (Subprograma FPI-MICINN, BES-2011-045996) del mismo proyecto para el cuatrienio (2011-2015), así como financiación del Subprograma FPI-MICINN para la realización de una estancia breve de tres meses en Purdue University, Estados Unidos (EEBB-I-13-07145).

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ESTUDIOS SOBRE EDUCACIÓN / VOL. 29 / 2015 / 103-122

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Abstract: We describe the positive effects that the using of two Web 2.0 tools (blogs and wikis) produce in several psycho-educational variables through the literature review of thirty and two international empirical studies publish in last four years (2010-2013) in impacts journals. The results evidence that the use of blogs and wikis promotes the collaboration, the par-

icipation, the social interaction and socialization, at the same time these tools increase the motivation, the satisfaction, the performance and the feedback and this tools favour the developing of critical and creative thinking skills.

Keywords: Web 2.0; blogs; wiki; e-learning.

INTRODUCCIÓN

Los tiempos cambian, las personas avanzan y las condiciones educativas e instruccionales se modifican (Sobrino-Morrás, 2011; Torras-Virgili, 2013; Trujillo-Torres, Hinojo-Lucena y Aznar-Díaz, 2011). Cada vez son más las herramientas web, especialmente las 2.0 que se usan para la enseñanza y el aprendizaje de contenidos diversos entre éstas destacan los *blogs* (Arıkan y Bakla, 2011; Arslan y ahin-Kızıl, 2010; Byrkeflot, Lloyd y Lysne, 2010; Goh, Quek y Lee, 2010; Halic, Lee, Paulus y Spence, 2010; Hollenbaugh, 2011; Lai y Chen, 2011), los *wikis* (Deters, Cuthrell y Stapleton, 2010; Ioannou, 2011; Wichadee, 2010), *YouTube* (Lee y Lehto, 2013; Majid, Khine, Oo y Lwin, 2012) y las *redes sociales* (Arteaga-Sánchez, Cortijo y Javed, 2014; Bevan, Pfyl y Barclay, 2012; Bicen y Cavus, 2011; Carpenter, Green y LaFlam, 2011; Chen, 2011; Cheung y Lee, 2010; Cheung, Chiu y Lee, 2011; Doruer, Menevi y Eyyam, 2011; Hew, 2011; Veletsianos y Kimmons, 2013).

En esta línea, en los últimos años se han venido llevando a cabo un gran número de estudios en los que se examina el uso que se hace de estas herramientas (García-Martín y García, 2013; Mazman, 2011; Sheldon, 2008) y de investigaciones en las que se analizan e incluso describen los beneficios que el uso de blogs y wikis como herramientas de aprendizaje produce en diferentes *variables psicoeducativas* diversas (Allwardt, 2011; Arslan y Sahin-Kızıl, 2010; Biasutti y Deghaidy, 2012; Bowman, 2013; Cakir, 2013; Chen et al., 2011; Chong, 2010; Chu et al., 2012; Cowan y Jack, 2011; De Wever et al., 2011; Deng y Yuen, 2011; Goh et al., 2010; Hadjerrouit, 2013; Halic et al., 2010; Huang y Nakazawa, 2010; Jimoyiannis y Angelaina, 2012; Kang et al., 2011; Kimmerle et al., 2011; Kuteeva, 2010; Lai y Ng, 2011; Li et al., 2012; Liu y Chang, 2010; Marsden y Piggot-Irvine, 2012; Morley, 2011; Osman y Koh, 2013; Papastergiou et al., 2011; Prokofieva, 2013; Robertson, 2011; Su y Beaumont, 2010; Vurdien, 2011; Wang et al., 2013; Woo et al., 2011). Éstas variables pueden ser clasificadas en base a dos componentes: *el emocional y el cognitivo*.

Las variables del *componente emocional* examinadas con mayor frecuencia son: *i) la motivación*, definida como el proceso que activa a una persona y la dirige hacia la realización de una determinada tarea o actividad (Arslan y Sahin-Kızıl, 2010;

Biasutti y Deghaidy, 2012; Cakir, 2013; Chen et al., 2011; Chong, 2010; Marsden y Piggot-Irvine, 2012), ii) *la participación* entendida como el efecto que tiene en el estudiante, el grado de actividad llevado a cabo (Cakir, 2013; Biasutti y Deghaidy, 2012; Huang y Nakazawa, 2010; Kuteeva, 2010; Woo et al., 2011); iii) *la satisfacción* concebida como un estado de placer y de gusto que se produce como consecuencia del uso intencional y continuado de estas herramientas (Biasutti y Deghaidy, 2012; Cowan y Jack, 2011; Chu et al., 2012; Liu y Chang, 2010; Papastergiou et al., 2011), iv) *las emociones* definidas como reacciones psicofisiológicas que surgen como consecuencia de las percepciones que los usuarios de herramientas 2.0 hacen de ellas así como de su uso (Deng y Yuen, 2011; Jimoyiannis y Angelaina, 2012; Robertson, 2011; Su y Beaumont, 2010), v) *la colaboración* entendida como el proceso que facilita al estudiante llevar a cabo una determinada tarea o actividad en conjunto (Biasutti y Deghaidy, 2012; Cakir, 2013; Huang y Nakazawa, 2010; Kuteeva, 2010; Lai y Ng, 2011; Morley, 2011; Prokofieva, 2013; Woo et al., 2011), vi) *las habilidades sociales* concebidas como el conjunto de actitudes interpersonales necesarias para llevar a cabo una *interacción social* efectiva y satisfactoria (Allwardt, 2011; Biasutti y Deghaidy, 2012; Chu et al., 2012), y vii) *la socialización* definida como el proceso mediante el cual el estudiante aprende a partir del grupo de pares o iguales (Halic et al., 2010).

Y las variables del *componente cognitivo* más analizadas son: i) *el rendimiento* definido como la capacidad técnica que posibilita la realización de una determinada tarea (Arslan y Sahin-Kizil, 2010; Bowman, 2013; Cowan y Jack, 2011; Chong, 2010; Cakir, 2013; Chu et al., 2012; Halic et al., 2010; Kuteeva, 2010; Li et al., 2012; Morley, 2011), ii) *la retroalimentación* entendida como el conjunto de comentarios, observaciones y sugerencias realizados tras el uso de herramientas 2.0 con el fin de mejorar la funcionalidad futura (Chen et al., 2011; Chong, 2010; Lai y Ng, 2011; Osman y Koh, 2013; Su y Beaumont, 2010; Wang et al., 2013; Vurdien, 2011), iii) *la autoeficacia* definida como el conjunto de creencias que el usuario tiene en torno a la utilidad de las herramientas (De Wever et al., 2011; Huang y Nakazawa, 2010; Kimmerle et al., 2011; Liu y Chang, 2010; Papastergiou et al., 2011), iv) *el pensamiento y la reflexión crítica* entendido como el análisis estructural y consistente que realiza el usuario de herramientas 2.0 sobre cualquier tema con el que se pretende obtener un razonamiento más preciso, razonado y justificado posible (Biasutti y Deghaidy, 2012; Deng y Yuen, 2011; Halic et al., 2010; Kang et al., 2011; Marsden y Piggot-Irvine, 2012; Osman y Koh, 2013; Robertson, 2011; Woo et al., 2011), v) *la autonomía* concebida como la capacidad de la persona para actuar de manera independiente (De Wever et al., 2011), vi) *la escritura* conceptualizada como el acto gráfico de componer un texto de calidad (Allwardt, 2011; Chen et

al., 2011; Hadjerrouit, 2013; Kuteeva, 2010; Marsden y Piggot-Irvine, 2012; Robertson, 2011; Vurdien, 2011; Woo et al., 2011) así como la vi) *creatividad* definida como la generación de ideas inéditas (Deng y Yuen, 2011) y la *resolución de problemas* entendida como el proceso seguido por el estudiante desde el establecimiento del reto hasta la solución del mismo (Woo et al., 2011).

En esta línea y atendiendo a Creswell (1994), el presente estudio tiene como objetivo principal describir las características principales de las investigaciones realizadas sobre la temática atendiendo a ocho categorías previamente establecidas y resumir el conocimiento existente sobre los efectos positivos que se producen en variables psicoeducativas diversas, como consecuencia del uso de blogs y wikis como herramientas de aprendizaje, así como esclarecer las cuestiones que la investigación no ha resuelto aún. Todo ello, a través del análisis de treinta y dos publicaciones sobre la temática (Allwardt, 2011; Arslan y Sahin-Kizil, 2010; Biasutti y Deghaidy, 2012; Bowman, 2013; Cakir, 2013; Chen et al., 2011; Chong, 2010; Chu et al., 2012; Cowan y Jack, 2011; De Wever et al., 2011; Deng y Yuen, 2011; Goh et al., 2010; Hadjerrouit, 2013; Halic et al., 2010; Huang y Nakazawa, 2010; Jimoyiannis y Angelaina, 2012; Kang et al., 2011; Kimmerle et al., 2011; Kuteeva, 2010; Lai y Ng, 2011; Li et al., 2012; Liu y Chang, 2010; Marsden y Piggot-Irvine, 2012; Morley, 2011; Osman y Koh, 2013; Papastergiou et al., 2011; Prokofieva, 2013; Robertson, 2011; Su y Beaumont, 2010; Vurdien, 2011; Wang et al., 2013; Woo et al., 2011).

DISEÑO DE LA INVESTIGACIÓN

Se ha llevado a cabo una revisión teórica sobre los efectos positivos que se producen en variables psicoeducativas diversas como consecuencia del uso de *blogs* y *wikis* como herramientas de aprendizaje.

Elección de las herramientas de la web 2.0

La elección de estas dos herramientas de la web 2.0 fue debida a seis razones. En primer lugar, ambas son aplicaciones de reconocida utilidad en el ámbito de la Educación 2.0. En segundo lugar, las dos se caracterizan por ser sistemas de creación y publicación de contenidos en red tanto escritos como visuales. En tercer lugar, ambas cuentan con servidores gratuitos. En cuarto lugar, las dos pueden ser indexadas o diseñadas en un entorno virtual de aprendizaje como el moodle o la blackboard. En quinto lugar, ninguna necesita instalar un software específico en el ordenador para funcionar. Y en sexto lugar, ambas son herramientas de la web útiles para llevar a cabo el proceso de lecto-escritura.

Búsqueda y selección de artículos

Teniendo en cuenta todo lo anterior, el pasado 15 de septiembre se realizó una búsqueda bibliográfica a través de la página web de *Purdue Libraries* y de las palabras clave: *e-learning*, *blogs* y *wikis*. Este buscador supuso el acceso a cuatrocientas cincuenta y dos bases de datos de las cuales ciento noventa y ocho pertenecían al ámbito de actuación de este estudio, las ciencias sociales y la educación. De entre todas ellas, se seleccionaron las relacionadas directamente con la educación tales como *Academic Search Premier*, *Education Full Text*, *Education Sources*, *Educational Administration Abstracts*, *Educational Testing Service Research Library*, *ERIC (EBSCO Software)*, *PsycINFO*, *ScienceDirect*, etc., lo que conllevaba el acceso a un gran número de revistas científicas de carácter multidisciplinar, actas de conferencias, tesis, trabajos fin de máster así como otras fuentes de información adicionales como capítulos, libros recientemente publicados u otras tales como informes. Sin embargo, para este estudio se seleccionaron sólo los artículos sobre los que se tenía acceso completo, que habían sido sometidos a revisión por pares y que habían sido publicados entre el 2010 y el 2013 en revistas de impacto recogidas en el 2012 Journal Citations Reports (JCR) de Thomson Reuters tales como *Computers & Education*, *Computer Assisted Language Learning*, *British Journal of Educational Technology*, *Educational Technology & Society*, *Internet and Higher Education*, *Australasian Journal of Educational Technology*, *Journal of Social Work Education*, *Educational Technology Research Development*, *Interacting with Computers*, *Computers in Human Behaviour*, *Interactive Learning Environments*, *English for specific purposes*, *Innovations in Education and Teaching International*, *System...* Obviándose de este modo los capítulos de libros, las actas de congresos, las publicaciones de revistas nacionales o internacionales que estaban indexadas en dicha base y las que no. También, se excluyeron de este estudio las que estaban indexadas pero que no se llevaban a cabo en el ambiente educativo y las que se desarrollaban en el escenario educativo pero sobre las que no se tenía un acceso completo desde *Purdue Libraries*.

Método de análisis de artículos

La revisión realizada se ajusta a la directriz general establecida por Creswell en 1994, quien afirmó que el objetivo general de una revisión es resumir el conocimiento existente sobre el tema de interés y esclarecer las cuestiones que la investigación todavía no ha resuelto. Para ello, en este estudio se llevaron a cabo dos fases. La primera se materializó en una lectura minuciosa y en la elaboración de un resumen sobre cada publicación teniendo en cuenta el objetivo de la investigación como guía y la segunda

que se fundamentó en la lectura y en el análisis pormenorizado de cada artículo, con el propósito de configurar una tabla síntesis, en base a ocho categorías previamente establecidas a partir de García-Martín, Pessoa y García (2013):

- i) *El autor/es y año de publicación* para facilitar la identificación del documento.
- ii) *La revista indexada en JCR de Thomson Reuters 2012* para establecer comparativas entre las revistas en cuanto a número de artículos, herramientas analizadas, etc.
- iii) *El objetivo del estudio* pues todos los artículos seleccionados debían mostrar los efectos positivos que se habían obtenido como consecuencia del uso de los blogs o de los wikis como herramientas de aprendizaje.
- iv) *La muestra* distinguiéndose entre *pequeñas* aquellas que contaban con menos de 50 alumnos, *medianas* que tenían entre 50 y 100 participantes y las *grandes* que se caracterizaban por tener más de 100 participantes.
- v) *El nivel educativo* para establecer comparativas sobre el uso y los efectos positivos de estas herramientas por niveles.
- vi) *La herramienta de la web 2.0 utilizada* diferenciándose entre blogs o wikis cuya elección se debe a las seis razones explicadas con anterioridad.
- vii) *El instrumento* utilizado para la recopilación de datos distinguiéndose entre cuestionarios, entrevistas, análisis del contenido, observación y rúbricas.
Estos cuatro últimos permiten analizar en qué niveles educativos se han utilizado estas herramientas y con qué intensidad así como la fiabilidad de los resultados en base al porcentaje de población y de los instrumentos utilizados.
- viii) *Y, los efectos positivos* distinguiéndose entre los que se producen en variables psicoeducativas directamente relacionadas con el *componente emocional* y *ii)* los efectuados en aquellas vinculadas con el *componente cognitivo*. En este sentido, el primer grupo incluye los que se producen en variables tales como la motivación, la participación, la socialización, las emociones, la colaboración entre pares, la interacción social, la satisfacción y el sentimiento de comunidad. Y, en el segundo se examinan los producidos en el rendimiento, la creatividad, la escritura (habilidades, competencias y calidad de las composiciones), la retroalimentación, el pensamiento o reflexión crítica, la eficiencia, la autoeficacia, la autonomía e independencia.

RESULTADOS

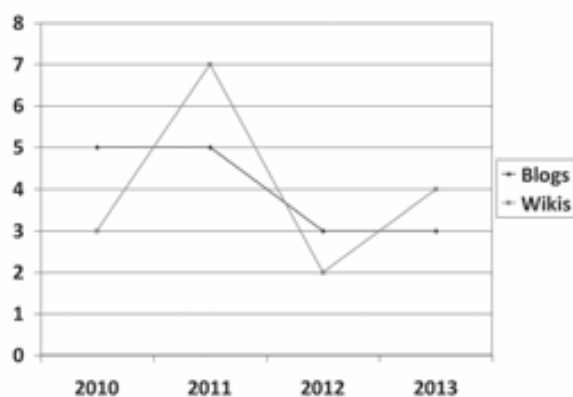
A continuación, se describen los resultados obtenidos del análisis de las treinta y dos publicaciones sobre los efectos positivos que el uso de los blogs y los wikis como herramientas de aprendizaje produce en variables psicoeducativas diversas (ver Tabla 1).

Tabla 1. Frecuencia de los artículos por año en función de la herramienta

AÑO	HERRAMIENTA	FRECUENCIA
2010	Blogs	5
	Wikis	3
2011	Blogs	5
	Wikis	7
2012	Blogs	3
	Wikis	2
2013	Blogs	3
	Wikis	4
TOTAL		32

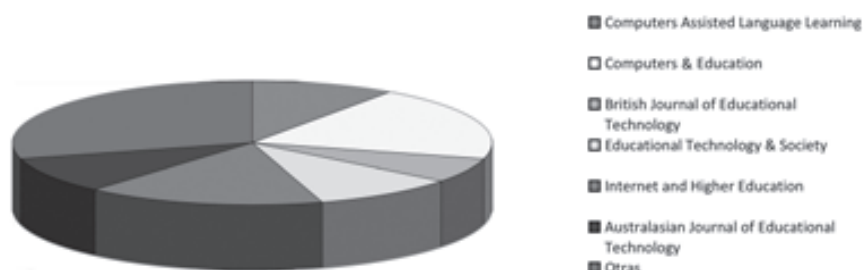
Como se puede comprobar en la figura 1, la búsqueda bibliográfica supuso el acceso a un gran número de artículos empíricos en torno a la temática que habían sido publicados durante el 2011, al mismo tiempo que se percibe un ligero descenso de este tipo de publicaciones durante el año 2012 pero que se está remontando durante el presente año. Asimismo, hay que tener en cuenta que la búsqueda se realizó en septiembre por lo que puede que el número de publicaciones de este año se incremente aún más.

Figura 1. Evolución de publicaciones sobre los efectos de blogs y wikis (2010-2013)



Además, todas ellas han sido publicadas en revistas de impacto indexadas en el Journal Citations Reports (JCR) de Thomson Reuters 2012 como se puede observar en la figura 2.

Figura 2. Porcentaje de las publicaciones analizadas por revista.



Nota X. La categoría *otras* incluye los artículos publicados en *Journal of Social Work Education*, *Educational Technology Research Development*, *Interacting with Computers*, *Computers in Human Behaviour*, *Interactive Learning Environments*, *English for specific purposes*, *Nurse Education Today*, *Innovations in Education and Teaching International System*.

También, se examinó el tamaño de la muestra de las publicaciones seleccionadas (ver Tabla 2).

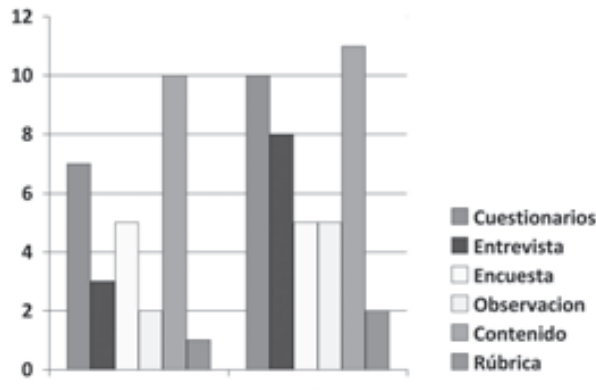
Tabla 2. Agrupación de los artículos en función de la muestra

PEQUEÑAS (N < 50)		MEDIANAS (50 < N < 100)		GRANDES (N > 100)							
BLOGS	WIKIS	BLOGS	WIKIS	BLOGS	WIKIS						
Chen et al., (2011)	33	Allwardt (2011)	36	Arslan y Sahin-Kizil (2010)	50	Biasutti y Deghaidy (2012)	63	Robertson (2011)	117	De Wever et al., (2011)	659
Chong (2010)	3	Hadje-rrouit (2013)	16	Cakir (2013)	88	Bowman (2013)	70				
Deng y Yuen (2011)	32	Huang y Nakazawa (2010)	16	Chu et al., (2012)	81	Cowan y Jack (2011)	77				
Jimoyiannis y Angelaina (2012)	21	Kuteeva (2010)	14	Goh et al., (2010)	94	Kimmerle et al., (2011)	72				
Kang et al., (2011)	24	Lai y Ng (2011)	18	Halic et al., (2010)	67	Li et al., (2012)	59				
Liu y Chang (2010)	17	Su y Beaumont (2010)	47	Osman y Koh (2013)	65	Morley (2011)	69				
Marsden y Piggot-Irvine (2012)	15	Wang et al., (2013)	48	Papastergiou et al., (2011)	70	Prokofieva (2013)	83				
Vurdien (2011)	11	Woo et al., (2011)	38								

En este línea y tal y como se puede observar en la Tabla 2 la mitad de los estudios realizados contaban con muestras pequeñas, el 43,75% con muestras medianas y sólo un 6,25% con muestras grandes.

Del mismo modo, también se analizó el instrumento utilizado en las distintas investigaciones analizadas para la recopilación de la información. En este sentido y tal y como se puede apreciar en la figura 3, la mayoría de los estudios utilizan varios instrumentos para recabar los datos.

Figura 3. Instrumentos usados para la recopilación de datos



Además, se revisaron minuciosamente los resultados obtenidos en todos los artículos analizados lo que permitió analizar los efectos positivos que se produjeron en las distintas variables psicoeducativas y que fueron clasificados atendiendo a dos componentes: *i) el emocional y ii) el cognitivo* (ver Tabla 3 y 4).

Tabla 3. Efectos positivos producidos en variables psicoeducativas como consecuencia del uso de los blogs

AUMENTO EN VARIABLES DEL COMPONENTE EMOCIONAL						
MOTIVACIÓN	PARTICIPACIÓN	SATISFACCIÓN	EMOCIONES	COLABORACIÓN ENTRE PARES	HABILIDADES SOCIALES E INTERACCIÓN SOCIAL	SOCIALIZACIÓN
Arslan y Sahin-Kizil (2010); Cakir (2013); Chen et al., (2011); Chong (2010); Halic et al., (2010); Marsden y Piggot-Irvine (2012); Papastergiou et al., (2011); Vurdien (2011)	Cakir (2013)	Chu et al., (2012); Liu y Chang (2010); Papastergiou et al., (2011)	Deng y Yuen (2011); Jimoyiannis y Angelaina (2012); Robertson (2011)	Goh et al., (2010); Kang et al., (2011); Vurdien (2011)	Chu et al., (2012); Kang et al., (2011); Liu y Chang (2010); Papastergiou et al., (2011); Robertson (2011)	Halic et al., (2010)

EFFECTOS POSITIVOS DEL USO DE BLOGS Y WIKIS EN VARIABLES PSICOEDUCATIVAS

AUMENTO EN VARIABLES DEL COMPONENTE COGNITIVO

RENDIMIENTO	RETROALIMENTACIÓN	AUTOEFICACIA	PENSAMIENTO CRÍTICO Y REFLEXIÓN	AUTONOMÍA E INDEPENDENCIA	ESCRITURA	CREATIVIDAD
Arslan y Sahin-Kizil (2010); Chong (2010); Cakir (2013); Chu et al., (2012); Halic et al., (2010)	Chen et al., (2011); Chong (2010); Marsden y Piggot-Irvine (2012); Vurdien (2011)	Jimoyiannis y Angelaina (2012); Liu y Chang (2010); Papastergiou et al., (2011); Robertson (2011)	Deng y Yuen (2011); Goh et al., (2010); Vurdien (2011); Halic et al., (2010); Kang et al., (2011); Marsden y Piggot-Irvine (2012); Osman y Koh (2013)	Goh et al., (2010); Jimoyiannis y Angelaina (2012); Robertson (2011)	Arslan y Sahin-Kizil (2010); Chen et al., (2011); Marsden y Piggot-Irvine (2012); Robertson (2011); Vurdien (2011)	Deng y Yuen (2011)

En esta línea como se puede observar en la Tabla 3 los *efectos ligados al componente emocional* que se han analizado en mayor medida en los últimos cuatro años en las investigaciones educativas sobre blogs examinadas en esta revisión han sido principalmente dos, *la motivación y la interacción social*, a la que le siguen *la satisfacción y la colaboración entre pares y las emociones*, siendo de este modo *la participación y la socialización* las variables menos analizadas. Asimismo, en relación al *componente cognitivo* la mayoría de las publicaciones analizadas en esta revisión, han examinado los efectos que se producen en la *escritura* especialmente lo que tiene que ver con las habilidades de escritura de los participantes y en la calidad de los textos. A la que le siguen el *pensamiento o reflexión crítica, el rendimiento, la autoeficacia, la autonomía e independencia* y en menor medida *la creatividad*.

Tabla 4. Efectos positivos en variables psicoeducativas como consecuencia del uso de los wikis

AUMENTO EN VARIABLES DEL COMPONENTE EMOCIONAL						
MOTIVACIÓN	PARTICIPACIÓN	SATISFACCIÓN	EMOCIONES	COLABORACIÓN	INTERACCIÓN SOCIAL Y HABILIDADES SOCIALES	SOCIALIZACIÓN
Biasutti y Deghaidy (2012); Li et al., (2012)	Biasutti y Deghaidy (2012); Huang y Nakazawa (2010); Kuteeva (2010); Woo et al., (2011)	Cowan y Jack (2011)	Su y Beaumont (2010)	Biasutti y Deghaidy (2012); Huang y Nakazawa (2010); Kuteeva (2010); Lai y Ng., (2011); Morley (2011); Prokofieva, (2013); Woo et al., (2011)	Biasutti y Deghaidy (2012); Huang y Nakazawa (2010); Kimmerle et al., (2011); Li et al., (2012); Prokofieva, (2013); Wang et al., (2013); Woo et al., (2011)	Allwardt (2011); Biasutti y Deghaidy (2012); Kuteeva (2010); Lai y Ng (2011)
AUMENTO EN VARIABLES DEL COMPONENTE COGNITIVO						
RENDIMIENTO	RETROALIMENTACIÓN	AUTOEFICACIA	PENSAMIENTO CRÍTICO Y REFLEXIÓN	AUTONOMÍA E INDEPENDENCIA	ESCRITURA	RESOLUCIÓN DE PROBLEMAS
Bowman (2013); Cowan y Jack (2011); Kuteeva (2010); Li et al., (2012); Morley (2011)	De Wever et al., (2011); Lai y Ng (2011); Morley (2011); Prokofieva (2013); Su y Beaumont (2010); Wang et al., (2013)	De Wever et al., (2011); Huang y Nakazawa (2010); Kimmerle et al., (2011); Su y Beaumont (2010)	Biasutti y Deghaidy (2012); Huang y Nakazawa (2010); Woo et al., (2011)	Biasutti y Deghaidy (2012); Huang y Nakazawa (2010); Kuteeva (2010)	Allwardt (2011); Hadjerrouit (2013); Kuteeva (2010); Li et al., (2012); Su y Beaumont (2010); Woo et al., (2011)	Woo et al., (2011)

Ahora bien, como se puede apreciar en la Tabla 4 los *efectos del componente emocional* que se han analizado en estos últimos cuatro años en las investigaciones educativas sobre wikis que constituyen esta revisión, han sido principalmente dos, *la*

colaboración y la interacción social, a la que le siguen *la participación, la socialización y la motivación*, siendo de este modo *las emociones y la satisfacción* las variables menos examinadas. Asimismo, en relación a los *efectos del componente cognitivo*, la mayoría de los estudios examinados en esta revisión, han explorado los efectos que se producen en la *escritura* especialmente en lo que se refiere a las habilidades del escritor y a la calidad de los textos. A esta le siguen *el rendimiento, la retroalimentación, la reflexión y el pensamiento crítico* y en menor medida en la *resolución de problemas*.

CONCLUSIONES

Con esta revisión se ha demostrado que la mayoría de los estudios empíricos analizados han examinado los efectos positivos que estas herramientas producen en la Educación Superior obviándose de este modo otros niveles educativos esenciales como la Educación Infantil, la Educación Primaria, la Educación Secundaria Obligatoria y la Educación no Obligatoria (Allwardt, 2011; Arslan y Sahin-Kizil, 2010; Bowman, 2013; Cakir, 2013; Chong, 2010; Chu et al., 2012; De Wever et al., 2011; Hadjerrouit, 2013; Kang et al., 2011; Kuteeva, 2010; Osman y Koh, 2013; Prokofieva, 2013). Es comprensible que los estudios realizados en el ambiente infantil sean reducidos pues las características de los estudiantes en ese momento hacen que la recopilación de los datos y la validez de los mismos sea más difícil de conseguir pero que ocurre con la Educación Primaria y especialmente con la Educación Secundaria Obligatoria, en esta última los alumnos ya cuenta con las habilidades, destrezas y competencias necesarias. Además, otro aspecto a favor de este nivel educativo es que la ratio de estudiantes es mucho mayor y más compensada por género que la universitaria debido en gran medida a la obligatoriedad de la misma, lo que permitiría llevar a cabo estudios con muestras más numerosas y reduciría en gran medida los problemas de generalización de los resultados que se han observado prácticamente en la totalidad de los estudios examinados en esta revisión teórica (Allwardt, 2011; Arslan y Sahin-Kizil, 2010; Biasutti y Deghaidy, 2012; Bowman, 2013; Cakir, 2013; Chen et al., 2011; Chong, 2010; Chu et al., 2012; Cowan y Jack, 2011; Deng y Yuen, 2011; Goh et al., 2010; Hadjerrouit, 2013; Halic et al., 2010; Huang y Nakazawa, 2010; Jimoyiannis y Angelaina, 2012; Kang et al., 2011; Kimmerle et al., 2011; Kuteeva, 2010; Lai y Ng, 2011; Li et al., 2012; Liu y Chang, 2010; Marsden y Piggot-Irvine, 2012; Morley, 2011; Osman y Koh, 2013; Pappas-tergiou et al., 2011; Prokofieva, 2013; Su y Beaumont, 2010; Vurdien, 2011; Wang et al., 2013; Woo et al., 2011).

También, se observa que en la mayoría de ellas se tiene en cuenta la validez de los datos recopilados a través de la triangulación de los datos materializada en

el uso de diferentes instrumentos de recopilación. En esta línea, llama la atención que los instrumentos más utilizados en los estudios examinados sean el análisis del contenido y los cuestionarios con independencia de la herramienta de la web 2.0 examinada a los que les siguen las entrevistas, las encuestas, la observación y en menor medida las rúbricas. Éstas últimas especialmente vinculadas a las investigaciones sobre wikis (De Wever et al., 2011; Lai y Ng, 2011).

En relación a los efectos positivos propiamente dichos, se ha demostrado que los estudios sobre blogs y los de wikis difieren a acerca de las variables psicoeducativas del *componente emocional* que analizan. En este sentido, parece ser que las investigaciones sobre blogs se han centrado, en mayor medida, en examinar *la motivación y el pensamiento o reflexión crítica* y por el contrario las de wikis en *la colaboración y la interacción social o habilidades sociales*. No obstante, coinciden en explorar los efectos positivos que se producen en otras variables vinculadas con el *componente cognitivo* tales como *la escritura, el rendimiento académico o la autoeficacia*.

DISCUSIÓN Y PROSPECTIVA FUTURA

De esta revisión se desprende la existencia de una gran disparidad en torno al número de estudios cuando se tiene en cuenta la perspectiva seguida en las distintas investigaciones realizadas en los últimos cuatro años y publicadas en revistas de impacto indexadas en las bases de datos en análisis sobre los efectos positivos que el uso de blogs y wikis como herramientas de aprendizaje produce en variables psicoeducativas diversas. En esta línea, se ha observado que la mayoría de los estudios han sido realizados desde una perspectiva educativa, instruccional o psicológica, siendo de este modo muy escasos los efectuados desde una perspectiva intercultural. Afirmación que coincide con los estudios previos (Carr et al., 2007; Cole, 2009; Lundin, 2008; Wheeler et al., 2008). Por otra parte e independientemente de la perspectiva utilizada llama la atención que la mayoría de ellos carezcan de la distinción entre grupo control y grupo experimental. Aspecto que afecta a la objetividad de los efectos obtenidos pues limita la posibilidad de afirmar que dicho impacto sea debido específicamente a la inclusión de estas herramientas, blogs y wikis, en el proceso de aprendizaje pues podrían deberse a otros factores moduladores o ambientales.

Teniendo en cuenta todo lo comentado con anterioridad, en el futuro podrían llevarse a cabo otros estudios de revisión en los que se recojan las variables psicoeducativas que han sido examinadas en los últimos años en relación con el uso de estas herramientas en el proceso instruccional. Asimismo, investigaciones futuras podrían realizarse en torno a los efectos que herramientas de la web 2.0

diversas no sólo blogs y wikis si no también quizzes o redes sociales producen en variables psicoeducativas diversas. Del mismo modo, sería especialmente interesante la línea de investigación centrada en el análisis de los efectos positivos y negativos, que la inclusión de estas herramientas en el proceso instruccional, produce en competencias diversas. Además, sería recomendable que estos estudios se realizasen en la Educación Secundaria Obligatoria con muestras grandes y con distinción entre grupo control y de intervención o experimental, teniendo siempre en cuenta las guías y directrices acordadas en la última reunión científica de la European Research Network Learning to Write Effectively (ERN-LWE IS0703). Igualmente, otra posible línea de investigación futura podría materializarse en la realización de estudios comparativos con los que poder comprobar si los resultados obtenidos en niveles inferiores se asemejan o por el contrario difieren de los obtenidos en los niveles educativos universitarios y de este modo poder establecer algún patrón.

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Discusión y conclusiones

En los últimos años, las herramientas de la web 2.0 han adquirido gran importancia y repercusión en el ámbito educativo y social, es decir, el nuevo modelo 2.0 favorece el afianzamiento de un espacio práctico adecuado para la socialización y formación de los jóvenes. En este sentido, las herramientas 2.0 ponen a disposición de los estudiantes gran cantidad de información actualizada; favorecen la flexibilización e interactividad de la enseñanza, facilitan la autonomía del alumno; propician una instrucción personalizada y posibilitan una formación grupal y colaborativa (Asselin y Moayeri, 2011; Bennett y colaboradores, 2012; Laru, Näykki, y Järvelä, 2012; Liawa y Huang, 2013; Timmers, Broek y Berg, 2013; Top, 2012).

En esta línea, los resultados obtenidos en los estudios descriptivos realizados en esta tesis doctoral, sugieren que en el último lustro, el uso de las *herramientas de la web 2.0* ha aumentado en las instituciones educativas. No obstante, sigue existiendo una tendencia clara a utilizarlas fuera del contexto educativo y la investigación al respecto es todavía limitada (García-Martín y García-Sánchez, 2013; García-Martín y García-Sánchez, 2015a, García-Martín, Merchant y García, 2016).

En primer lugar, se corrobora que los jóvenes poseen un conocimiento mayor sobre las redes sociales que sobre los sistemas de gestión de contenido como el moodle. Aspecto que coincide con lo obtenido en diversos estudios (Beresford y Cobham, 2011; Cluett y Skene, 2011; Moran, Seaman, Tinti-Kane y Tinti-Kane, 2011; Weyant y Gardner, 2010). Asimismo, llama la atención que de todos los cursos académicos analizados, sea el 3º de la Educación Secundaria Obligatoria en el que se observe el menor nivel de información acerca de las herramientas de la web 2.0, que sean las mujeres jóvenes las que tengan un conocimiento mayor de las redes sociales que de cualquier otra herramienta de la web 2.0, ocurriendo lo contrario, en el caso de los hombres. Conclusión que concuerda con los resultados de un estudio previo (Glynn, Huge y Hoffman, 2012). Por tanto, se puede afirmar que las mujeres tienen una

mayor predisposición por lo social y emocional frente a los hombres que se decantan más por lo instrumental.

En segundo, no se debe olvidar que YouTube y las redes sociales son las herramientas de la web 2.0 mejor valoradas por los jóvenes encuestados y las que afirman usar diariamente. Aseveración que coincide con los hallazgos de otros estudios realizados recientemente (Badge, Johnson, Moseley y Cann, 2011; Burhanna, Seeholzer y Salem, 2009; Clark, Logan, Luckin, Mee y Oliver, 2009; Lenhart y Madden, 2007; Mazman y Usluel, 2010; Pempek, Yermolayeva y Calvert, 2009; Wodzicki, Schwämmlein y Moskaliuk, 2012). Además, en ellas, los estudiantes presentan un nivel de satisfacción personal mayor y un grado de dificultad menor (Corrocher, 2011; Lenhart, Purcell, Smith y Zickuhr, 2010; Luckin y colaboradores, 2009).

En tercero, más de la mitad de los estudiantes exponen que el motivo por el que empezaron a utilizar las herramientas de la web 2.0, fue la diversión, a la que le siguió la recomendación de amigos, familiares o conocidos (Corrocher, 2011).

De todo lo dicho sobre los estudios descriptivos realizados, cabe concluir que se corrobora que las herramientas de la web 2.0 definidas como aplicaciones de colaboración que facilitan la comunicación entre los individuos, en el ámbito educativo (Sendall, Wendy y Peslak, 2008), forman parte de la vida diaria de jóvenes y adolescentes, como muy bien sugiere el estudio Demos (Green & Hannon, 2007). Por ello, parece pertinente afirmar la necesidad de realizar estudios que comparen los efectos que diferentes herramientas de la web 2.0, analizadas en este estudio, tienen en diversas variables psicológicas y educativas relacionadas con el rendimiento académico, motivo por el cual se llevó a cabo el segundo estudio de la presente tesis doctoral y que constituye el capítulo cuarto y quinto de la misma.

En el último lustro y como consecuencia de los avances en la educación en línea y a distancia (Gunawardena, 2015), el e-learning (Venkataraman y Sivakumar, 2015), el blend-learning (Mirriahi y colaboradores, 2015), los entornos de aprendizaje en línea (García-Martín, García, Álvarez y Díez, 2014) y el uso de herramientas de la web 2.0 diversas (García-Martín y García-Sánchez, 2013; García-Martín y García-Sánchez, 2015a; García-Martín y García-Sánchez, 2015b; García-Martín, Pessoa y García-Sánchez, 2013), surgen y se desarrollan cursos en línea masivos y abiertos (CEAMs, del inglés MOOCs), que se convierten en piezas angulares de un gran número de programas formativos que provocan el interés de investigadores (López-Meneses, Vázquez-Cano y Román-Graván, 2015) y profesionales del ámbito educativo y psicológico (García-Martín y García-Sánchez, en revisión). Si bien es cierto, no se debe olvidar que la investigación en torno a ellos sigue siendo fragmentaria en cuanto al enfoque y metodología seguidos (Raffaghelli, Cucchiara y Persico, 2015), pues está centrada en investigaciones con muestras relativamente pequeñas, en su mayoría estudios de caso que tienen lugar en la Educación Superior (Kovanovic y colaboradores, 2015). A esto,

se añade la escasez de conocimiento disponible sobre los motivos por los que las personas deciden participar (Terras y Ramsay, 2015); la complejidad de los MOOCs (elevado número de participantes y gran cantidad de datos); las nuevas formas de aprendizaje y la libertad de elección.

En esta línea, los resultados obtenidos en la intervención instruccional realizada, demuestran, en primer lugar, que el moodle es un entorno virtual útil para el diseño y ejecución de un MOOC. Además, ratifican la eficacia instruccional de los cuatro enfoques (procesos, producto, mixto y tradicional) tanto para la adquisición como para la mejora de diferentes competencias personales tales como resiliencia, autoeficacia, motivación de logro, escrita... evidencia respaldada por los hallazgos observados en la mayoría de las medidas analizadas y que a su vez son compatibles con los descritos en intervenciones previas sobre la competencia comunicativa escrita (Frydrychova, 2014; Hashemnezhad y Hashemnezhad, 2012; Thulasi, Bin y Bte, 2014).

En segundo, indican un aumento de la autoeficacia en prácticamente la totalidad de las variables analizadas, observándose una ligera tendencia de incremento, no estadísticamente significativa, en los enfoques instruccionales experimentales (procesos, producto y mixto) frente al tradicional (control) y una mejora significativa en el aprendizaje tras la instrucción realizada en el MOOC con independencia del enfoque instruccional seguido. Mejoría que es apoyada por los datos observados en la mayoría de las medidas examinadas y en investigaciones previas sobre MOOCs de revisión (Hew y Cheung, 2014; Margaryan, Bianco y Littlejohn, 2015), exploratorias (Alraimi, Zo y Ciganek, 2015; Chang, Hung y Lin, 2015) y de intervención (Castaño, Maiz y Garay, 2015; Gillani y Eynon, 2014; Muñoz-Merino y colaboradores, 2015).

Y, en tercero, en relación con las competencias emocionales, los resultados confirman que los enfoques desarrollados y aplicados a través del MOOC producen efectos positivos (Alraimi, Zo y Ciganek, 2015; Castaño y colaboradores, 2015; Chang y colaboradores 2015; Gillani y Eynon, 2014; Liaw y Huang, 2013; Lin, 2012).

Por todo ello, se puede concluir que se corrobora la eficacia del MOOC para la instrucción de contenidos curriculares, competencias..., con independencia del enfoque instruccional, lo que conlleva un gran avance tanto para la educación académica y formal como para la basada en competencias (Hew y Cheung, 2014; Odersky y colaboradores, 2014), lo que origina un gran debate en torno a los estándares educativos y formativos de la enseñanza tradicional (presencial) frente a la en línea, ya que esta última conlleva la ruptura de las barreras espacio-temporales, es decir, cualquier persona con interés por aprender puede hacerlo dónde quiera y cuándo quiera, aumentándose la disponibilidad del material de trabajo, favoreciendo el aprendizaje personalizado e individualizado (Chang y colaboradores, 2015),

y confirmándose pues la necesidad de que investigaciones futuras analicen los efectos de la instrucción y adquisición de competencias psicológicas personales a través de un MOOC y de la enseñanza tradicional presencial. También, indicar, que aunque en este MOOC se hayan seguido los criterios de rigor metodológico de toda intervención instruccional de alta calidad (Barlow, Levitt y Bufka, 1999; Graham y Harris, 2014) es conveniente que estudios futuros aumenten el tamaño de la muestra y el número de sesiones instruccionales, lo que permitirá focalizar la instrucción y ampliar el tiempo de dedicación por competencia o contenido, con el objetivo de obtener datos relevantes y más matizados sobre las características e indicadores tanto de las intervenciones instruccionales presenciales y en línea basadas empíricamente (IBE).

Abstract

Background

Currently, Web 2.0 technologies are ubiquitous in the lives of young people today (Bennett, Bishop, Dalgarno, Waycott y Kennedy, 2012; Green y Hannon, 2007; Lenhart, Purcell, Smith y Zickuhr, 2010). These tools include wikis, blogs, social networks, social bookmarking services, instant messaging and audio and video media (YouTube) that allow users to create, collaborate, contribute, connect, share photos (Flickr) and participate in a learning community (García-Martín y García-Sánchez, 2013). In other words, these are collaborative applications that facilitate communication between individuals in an educational context (Sendall, Ceccuci & Peslak, 2008). According to those aspects, this doctoral thesis is divided into nine distinct chapters.

Contributions

In the first chapter, we describe a Spanish research study. The aim was to identify differential patterns, according to sex, educational level and age, in Spain, as regards the use that students make of the ten Web 2.0 tools most frequently mentioned in the review conducted of the international literature and in the teaching projects and/or analyses published in Spanish journals (García-Martín y García-Sánchez, 2013).

In chapter 2, we explain another research study. The objectives of this study were to analyse the variables related to the use made by young people of four social networks: Tuenti, Facebook, Twitter and Myspace, and how these affect their social and personal development (García-Martín y García-Sánchez, 2015).

The third chapter presents the preliminary results of a research study that explores the use, perceptions and expectations of 919 new undergraduate and postgraduate students at Sheffield Hallam University about digital technologies. We designed and distributed the Digital Technologies Survey using the Bristol Online Surveys (BOS) application (García-Martín, Merchant y García, 2016).

In chapter 4, we described a proposal of instructional program designed with Web 2.0 tools (García-Martín y García, 2014).

In fifth chapter, we examine the efficacy of a MOOC-format instructional program through Moodle as learning management system, improvement of personal competencies for success, which entailed the use of four clearly differentiated instructional approaches (three experimental approaches and one control approach): i) *product*, with an emphasis on the final result and the overall quality; ii) *processes*, with an emphasis on recursion and constant self-assessment of the processes; (iii) *mixed*, oriented on the result and overall quality as well as to recursion, self-reflection and self-assessment; and iv) *traditional (control)* focused on online instruction of the subjects and on the accomplishment of tasks (García-Martín y García-Sánchez, en revisión).

The sixth chapter, we describe the principles research focus about educational technology specially web 2.0 tools, during the last four years, in Portugal. In this sense, we analyses fifty publications according to eight aspects (García-Martín, Pessoa y García, 2013).

The purpose of chapter 7 is to review current research studies published in the past four years in the Open Access Scientific Repository of Portugal (RCAAP). This allows searches in 45 Portuguese repositories, most of them in various Portuguese universities and is used in this study to look for application of collaborative learning at different levels of the Portuguese education system, using web 2.0 tools (García-Martín y García, 2013).

The eighth chapter, we describe the main psychological and educational trends of research about a social network, Facebook, and they are being carried out internationally. For this, we do an empirical analysis of twenty articles on the topic published in the last four years in an international journal of impact, Computer in Human Behavior (García-Martín y García, 2014).

And, in the last chapter, we explain the positive effects that the using of two Web 2.0 tools (blogs and wikis) produce in several psycho-educational variables through the literature review of thirty and two international empirical studies publish in last four years (2010-2013) in impacts journals (García-Martín y García, 2015).

Conclusions

In conclusion, this doctoral thesis provides empirical evidence on the use of these tools and redresses the lack of information encountered in Spanish research on the subject under study in several respects. Firstly, most publications in Spanish have concerned proposals or reflections which lacked solid and consolidated empirical analyses that confirmed or contradicted the assertions and conclusions presented. Secondly, the small number of studies that do provide empirical evidence is directly related to market research and consumer studies, and indirectly to advertising and mass. Thirdly, this research has revealed that Moodle is a useful virtual environment for the design and implementation of a MOOC. In addition, it must also be kept in mind that this was the first MOOC to be delivered in Spanish that focused on personal competencies such as motivation, self-efficacy, metacognition, self-esteem, written communication and emotional competencies, to be useful for the general population and to draw on a sample made up of children, adolescents, youths and adults. And, fifthly, this represents an important advance for formal and academic education and for competence-based learning (Hew & Cheung, 2014; Odersky et al., 2014) and gives rise to significant debate on educational and training standards from traditional (in-person) teaching versus online learning, since the latter implies a break with spatial and temporal barriers. That is, any person with an interest in learning can do so where and when he or she wants, materials are made more widely available and personalized and individualized learning is encouraged.

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Anexos

Certificados de las estancias en centros de I+D

Estancia en Universidad de Coímbra



CERTIFICADO

Professora Doutora Luísa Morgado, Diretora da Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra.

CERTIFICA QUE

PRIMEIRO: A doutoranda JUDIT GARCÍA MARTÍN, do Programa de Doutoramento em Psicologia e Ciências da Educação da Universidade de Leon, realizou uma estadia de investigação, durante três meses e de 09 julho a 9 outubro de 2012, no âmbito do doutoramento europeu, na Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra.

SEGUNDO: A doutoranda realizou todas as tarefas e atividades que os responsáveis do centro recetor consideraram oportunas para a sua formação. Estas atividades estão descritas na memória final elaborada por ela e foram importantes.

TERCEIRO: A doutoranda permaneceu no centro recetor, Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra, situado na Rua do Colégio Novo, Apartado 6153. 3001-802 Coimbra, Portugal desde o dia 9 de julho até ao dia 9 de outubro de 2012.

A doutoranda fez um trabalho de investigação adequado que lhe permitiu avançar a sua dissertação.

Coimbra, 03 de Outubro de 2012

FACULDADE DE PSICOLOGIA E
DE CIÊNCIAS DA EDUCAÇÃO
Universidade de Coimbra
RUA DO COLÉGIO NOVO
TELEF. 239851455 - FAX. 239851462
3000 - COIMBRA

Professora Doutora Luísa Morgado,
Directora da Faculdade de Psicologia e de Ciências
da Educação da Universidade de Coimbra.



CERTIFICADO

Professora Doutora Luísa Morgado, Diretora da Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra.

CERTIFICA QUE

A doutoranda JUDIT GARCÍA MARTÍN, do Programa de Doutoramento em Psicologia e Ciências da Educação da Universidade de Leon, realizou a sua investigação, durante três meses e de 09 julho a 09 outubro de 2012, no âmbito do doutoramento europeu, na Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra.

Durante este período realizou diversas atividades:

1. Ouvinte e assistente na sessão de trabalho 10 de Julho, o Projeto de E-learning, *Ensino a Distância da Universidade de Coimbra* [UC_D]. 8 horas.
2. Pesquisa bibliográfica em Web 2.0 em Repositório Científico de Acesso Aberto de Portugal e outros.
3. Pesquisa bibliográfica em ferramentas Web 2.0 em Biblioteca Geral.
4. Análise de 50 artigos e actas de congressos sobre web 2.0.
5. Redação de um artigo em Português sobre o uso da web 2.0 na educação em Portugal, intitulado “Estudos sobre a utilização da web 2.0 na educação em Portugal (2008-2012)” para a revista *Educação, Formação & Tecnologias* (Novembro, 2012).
6. Redação de artigo de revisão sobre “aprendizaje colaborativo y las herramientas de la web 2.0” na Educação em Portugal para a revista *Comunicar*. (a enviar)
7. Redação de apresentação power-point sobre “web 2.0”.
8. Reunião para Apresentação dos resultados do trabalho feito durante a estadia. 1 hora.
9. Palestra numa aula da licenciatura em Ciências da Educação em Setembro de 2012

A doutoranda fez um trabalho de investigação adequado que lhe permitiu avançar a sua dissertação.

Coimbra, 1 de outubro de 2012

A Diretora da Faculdade

FACULDADE DE PSICOLOGIA E
DE CIÊNCIAS DA EDUCAÇÃO
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Luísa Morgado
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(Professora Catedrática)

Estancia en Purdue University



MINISTERIO
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COMPETITIVIDAD

SECRETARÍA DE ESTADO DE INVESTIGACIÓN
DESARROLLO E INNOVACIÓN
SECRETARÍA GENERAL DE CIENCIA,
TECNOLOGÍA
E INNOVACIÓN
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HUMANOS PARA LA INVESTIGACIÓN

CERTIFICADO DE REALIZACIÓN DE ESTANCIA BREVE

Apellidos, nombre: García Martín, Judit	NIF/NIE: 45688622L
Referencia de la ayuda: EEBB-I-13-07145	Referencia del proyecto: EDU2010-19250

ORGANISMO: Purdue University
CENTRO: College of Education
DEPARTAMENTO: Curriculum and Instruction
PAÍS: United States

El abajo firmante certifica que la investigadora en formación a quien se refiere el presente documento ha permanecido en el centro de trabajo desde el día 19 de August de 2013 hasta el día 19 de November 2013 (*)

Nombre y apellidos del firmante: Jennifer C. Richardson
Cargo: Associate Professor, Learning Design & Technology (Department of Curriculum and Instruction)
Fecha: 19 de November de 2013

Firma y sello

(*) TO BE COMPLETED BY THE HOST RESEARCH DIRECTOR
The undersigned certifies that the scholar has remained in this centre from (day) of (month) of 201-
until (day) of (month) of 201-

becasfpi@mineco.es

Subprograma de Formación de Personal Investigador
C/ Albacete, 5, Planta 6ª Sur
28027 Madrid

Certificate of short stay

It is my understanding that an official stamp is required for this document, however, Purdue university no longer utilizes an official stamp in practice. The letterhead and signature are "official" but should you have queries please contact me at jennrich@purdue.edu or (765)494-5669.

Jennifer C. Richardson, Associate Professor, Learning Design & Technology Program, Department of Curriculum and Instruction, College of Education, Purdue University (West Lafayette, IN, USA)

CERTIFIES THAT:

- The scholar **Judit García Martín**, DNI **45688622-L**, grant's reference (**EEBB-I-13-07145**) and project's reference (**EDU2010-19250**) of the Spanish Ministry of Science and Innovation, National Programme for Training Human Resources, Predoctoral Research Grants subprogram (FPI-MICINN) has remained in this centre (**93 days, 3 months**) from **19 of August of 2013 until 19 of November of 2013**.
- During this short stay, the scholar **has realized several tasks** including attending training courses of different tools for design of online tasks, faculty workshops, courses, English conversation class, reading and reviewing of literature of the field. In each case the scholar was active, involved, and participated at the level of other participants.

And, I consider that this stay has had **a satisfactory impact on the development of her thesis**.

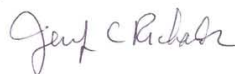
Name and surname: **Jennifer C. Richardson**

Occupation: **Associate Professor, Learning Design & Technology Program, Department of Curriculum and Instruction**

Date: **19 de November de 2013**

Place: **West Lafayette, IN, USA**

Signature



Estancia en Sheffield Hallam University



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CIENTÍFICA Y TÉCNICA
SUBDIRECCIÓN GENERAL DE RECURSOS
HUMANOS PARA LA INVESTIGACIÓN

AYUDAS A LA MOVILIDAD PREDOCTORAL PARA LA REALIZACIÓN DE ESTANCIAS BREVES EN
CENTROS DE I+D ESPAÑOLES Y EXTRANJEROS 2013
CERTIFICADO DE REALIZACIÓN DE ESTANCIA BREVE

Apellidos, nombre: García Martín, Judit	NIF/NIE: 45688622L
Referencia de la ayuda: EEBB-I-14-08082	Referencia del proyecto: EDU2010-19250
Centro de I+D de la ayuda FPI: Universidad de León	
ORGANISMO DE I+D RECEPTOR: Sheffield Hallam University	
CENTRO: Faculty of Development and Society	
DEPARTAMENTO: Centre for Education and Inclusion Research	
PAÍS: United Kingdom (Reino Unido)	

El abajo firmante certifica que la investigadora en formación a quien se refiere el presente documento ha permanecido en el centro de trabajo desde el día 1 de September de 2014 hasta el día 1 de December de 2014
(*).

Nombre y apellidos del firmante: Guy Merchant

Cargo: Profesor

Fecha: 1st December de 2014

01 DEC 2014

Firma y sello



(*). TO BE COMPLETED BY THE HOST RESEARCH DIRECTOR

The undersigned certifies that the scholar has remained in this centre from (day) of (month) of 2014 until (day) of (month) of 2014.

Este informe, junto con la memoria de la estancia, deberá presentarse en el plazo de 10 días hábiles a contar desde el siguiente a su regreso, en su Centro de I+D de adscripción, quien deberá conservar la documentación justificativa a los efectos de auditoría o comprobación.

predoctoral@mineco.es

Certificados mención internacional

Maria Piedade Vaz-Rebelo



• U C • FPCEUC FACULDADE DE PSICOLOGIA
E DE CIÊNCIAS DA EDUCAÇÃO
UNIVERSIDADE DE COIMBRA

MPy

RELATÓRIO PARA ADMISSÃO A CANDIDATURA A DOUTORAMENTO COM MENÇÃO EUROPEIA

DADOS DO PROFESSOR RELATOR	
Nome e apelidos	Maria da Piedade Simões Santana Pessoa Vaz-Rebelo
Categoria profissional	Professora Doutora
Instituição	Faculdade de Psicologia e de Ciências da Educação.
Universidade	Universidade de Coimbra
Direção postal	Rua do Colégio Novo 3000-115 Coimbra Portugal
BI	4404841
Experiencia investigadora acreditada	

DADOS DA TESE DE DOUTORAMENTO	
Doutoranda	Judit García Martín
Título da tese	La web 2.0 en la enseñanza-aprendizaje de los procesos psicológicos implicados en la escritura: usos, efectos e intervención instruccional
Direção	Jesús N García
Faculdade	Department of Psychology, Sociology and Philosophy
Universidade	Universidad de León
País	Espanha



10/8

AVALIAÇÃO DA TESE				
	Insuficiente	Suficiente	Boa	Muito boa
Originalidade				X
Definição				X
Objetivos				X
Metodologia				X
Relevância dos resultados				X
Conclusões e implicações				X



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Parecer

A presente tese tem por título *LA WEB 2.0 EN LA ENSEÑANZA-APRENDIZAJE DE LOS PROCESOS PSICOLÓGICOS IMPLICADOS EN LA ESCRITURA: USOS, EFECTOS E INTERVENCIÓN INSTRUCCIONAL* e é constituída por dois estudos: um estudo descritivo e outro de intervenção. Os estudos realizados foram alvo de um conjunto de publicações, que constituem a tese.

O estudo descritivo engloba um conjunto de sete artigos e um capítulo de livro. Os artigos que estão associados ao referido estudo descritivo são o artigo *Patterns of Web 2.0 tool use among young Spanish people*, publicado na revista *Computers & Education*; o artigo *Use of Facebook, Tuenti, Twitter and Myspace among young Spanish people*, publicado na revista *Behaviour and Information Technology*; o artigo *Conocimiento diferencial que tienen los jóvenes españoles sobre la web 2.0*, publicado no *International Journal of Educational and Developmental Psychology*; o artigo *Estudos sobre a utilização da web 2.0 na educação em Portugal (2008-2012)*, publicado na revista *Educação, Formação e Tecnologias*; o artigo *Análisis de estudios sobre Facebook en Computer and Human Behavior (2010-2013)*, publicado na revista *International Journal of Educational and Developmental Psychology*; *Análisis de estudios sobre Facebook en Computer and Human Behavior (2010-2013)*, publicado na revista *International Journal of Educational and Developmental Psychology*; o artigo *La web 2.0 y el aprendizaje colaborativo en la educación portuguesa*, publicado na revista *International Journal of Educational and Developmental Psychology*; o artigo *Efectos positivos del uso de blogs y wikis en variables psicoeducativas: revisión de estudios internacionales (2010-2013)*, publicado na revista *International Journal of Educational and Developmental Psychology*;

O capítulo de livro intitula-se *Preparing to teach 21st Century Literacies* e está publicado em *Building Bridges: Rethinking Literacy Teacher Education in a Digital Era* coordenado por Clare Kosnik, Simone White, Clive Beck, Bethan Marshall, A. Lin Goodwin e Jean Murray.

A segunda parte da tese incide na planificação, implementação e avaliação de um MOOC visando o desenvolvimento psicológico e educativo de jovens. Um dos artigos associados ao estudo *Asesoramiento psicopedagógico virtual* está publico na revista *International Journal of Educational and Developmental Psychology*, estando outro artigo submetido para publicação.



A tese incide e cruza temáticas de muito interesse e atualidade. As características da sociedade atual, marcada pelas rápidas mudanças e predomínio das tecnologias da informação e da comunicação, justificam o interesse no desenvolvimento de competências a este nível, sendo, no entanto, também fundamentais as competências pessoais, sociais, de literacia.

Concretizada através de um conjunto de artigos publicados em revistas da especialidade, com revisão por pares, a tese constitui um importante contributo, tanto a nível concetual como empírico, para o ensino de processos psicológicos subjacente à escrita através da Web 2.0.

Face ao exposto, RECOMENDO QUE A TESE *LA WEB 2.0 EN LA ENSEÑANZA-APRENDIZAJE DE LOS PROCESOS PSICOLÓGICOS IMPLICADOS EN LA ESCRITURA: USOS, EFECTOS E INTERVENCIÓN INSTRUCCIONAL* SEJA ACEITE PARA ADMISSÃO A CANDIDATURA A DOUTORAMENTO COM MENÇÃO EUROPEIA.

Coimbra, 20 de Julho de 2016

Professora Doutora Maria da Piedade Simões Santana Pessoa Vaz Rebelo
Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra

William R. Watson



DEPARTMENT OF CURRICULUM AND INSTRUCTION

Letter in support of Judit García Martín international doctorate certification

Dr. William R. Watson
Associate Professor of Learning Design and Technology
Purdue University
100 N. University St.
West Lafayette, IN, USA
1-765-494-9735
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June 23, 2016

To Whom It May Concern:

I have reviewed the Judit García Martín's thesis, which contains several studies in it.

The first study is a descriptive examination of the application of various digital technologies to instruction and their impact. For example, the use of different Web 2.0 tools by Spanish students is analyzed. Students completed a questionnaire that examined their use of these tools and their level of comfort with them. Additional examinations look at the use of popular social media platforms by Spanish youth. By examining both the theoretical basis for social media use by current students as well as the application of Web 2.0 tools to instructional contexts, this study lays the groundwork for understanding both how social media impacts student interaction and communication within modern society as well as how and why the application of Web 2.0 tools can impact instructional environments. The utilization of surveys to contribute new data to the research around social media and Web 2.0 tools and their place in education is bolstered by a thorough review of the current research in these areas.

Much of my research examines the use of technology for supporting more personalized educational processes for students. Given the lack of course or learning management systems that fully support a personalized approach to learning, some researchers have examined the use of personal learning environments (PLEs), which are often cobbled

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together utilizing various social media platforms and Web 2.0 tools. This study makes an important contribution to better understanding the theory and application of this sort of technology within a specific instructional context.

The second study in her thesis involves an examination of a Massive Open Online Course (MOOC), using MOODLE and examining the efficacy of different instructional approaches within that context. By demonstrating the efficacy of varied instructional approaches within a MOOC platform, this study was able to support the utilization of MOOCs for effective instruction, while also contributing insights into the instructional design of MOOCs.

While the popularity of MOOCs as an instructional solution with broad outreach and availability has waxed and waned, there are numerous researchers who advocate for the potential this novel instructional platform offers. My own research has sought to address the dearth of studies examining the instructional design of MOOCs as well as the efficacy of different instructional approaches. Therefore, this study addresses a glaring need in the literature and makes a contribution to our understanding of both how MOOCs can be effective instruction and how we can design them to be more effective.

Taken together, it is my belief that these studies demonstrate quality research design and execution and make contributions to the field. I therefore recommend that Judit García Martín be recognized with the international doctorate certification.

Sincerely,

A handwritten signature in black ink that reads "William R. Watson". The signature is written in a cursive style with a large, prominent initial 'W'.

Dr. William R. Watson, Purdue University

Nathaniel Taebo Yu



Department of Strategic Technologies and New Initiatives
School of Continuing and Professional Studies
University of Virginia

**External Review in Support of Judit García Martín's Pursuit
of a Ph.D. Degree with International Mention**

To whom it may concern,

It is with great pleasure that I write to a review in support of Judit García Martín's pursuit for a Ph.D. degree with International Mention. Since Judit's thesis is made as a compendium of publications, I have reviewed her several articles on the effective use of Web 2.0 tools (i.e. wikis, blogs, Moodle, Google Docs, Google Reader, Google Maps, Skype, Flickr, YouTube, and general or personal social networks) for personal, psychological, social, and educational benefits.

First of all, after I have done for all my reviews, I really wanted to express my thank to her for her times and efforts to conduct those research continually because I think her research provided the meaningful contributions to both academic and practice areas. In fact, a lot of research have been conducted on Web 2.0 tools since it was introduced to the world. Some scholars tried to find a way how to use Web 2.0 tools for the educational purpose, whereas others looked for the technical/psychological benefits of using Web 2.0 tools. However, there was no comprehensive and detailed research like Judit's. Through her series of research, Judit has found that differential patterns existed, according to sex, educational level, and age, in the use of Web 2.0 tools and pointed out some difficulties on the use of Web 2.0 tools by exploring five questions, such as: a) what information, knowledge and training the subjects had, b) how they used the tools: difficulty, preference and satisfaction, c) when and where they used them, d) why they had begun to use them, and e) what they used them for.

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In addition, Judit confirmed the positive effects of Web 2.0 tools on producing in several psycho-educational variables through the review of literature with the international empirical studies. It was a significant finding because her research verified that the use of Web 2.0 tools may increase collaboration, social interaction, motivation, satisfaction, performance, and critical and creative thinking skills which have a substantial effect on students' learning experience. Moreover, Judit investigated the efficacy of a MOOC-format instructional program and the improvement of personal competencies for success by differentiating instructional approaches and found that there were different degrees of resilience, achievement, motivation, self-esteem, and self-efficacy.

Last but not least, Judit has contributed to examining the effects of Web 2.0 tools on generating various psychological and educational constructs in the process of teaching and learning as well as on increasing students' motivation, self-efficacy, academic performance, and writing quality improvement. Overall, all the findings and implications from Judit's research provides educators, scholars, and practitioners what we need to consider to use Web 2.0 tools appropriately and effectively and how we can use Web 2.0 for the purpose of personal, psychological, social, and educational improvement and enhancement.

While I was reviewing her research, it was a valuable time even for me to learn about the benefits of Web 2.0 in a various way. Therefore, I strongly would like to suggest the committee to approve an international mention on Judit García Martín's Ph.D. degree. Please feel free to contact me for more information. I would be happy to speak to you about Judit's research at any time.

Sincerely,



Taeho Yu, Ph.D.
Faculty, Instructional Design and Support Specialist

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George Veletsianos



Royal Roads
UNIVERSITY

August 2, 2016

Re: External Review in Support of Judit García Martín's pursuit of a Doctoral Degree

To Whom It May Concern:

I have read two articles by Judit García Martín that represent the cornerstone of her doctoral studies. These articles are:

- Use of Facebook, Tuenti, Twitter and Myspace among young Spanish people
- Patterns of Web 2.0 tool use among young Spanish people

The first article examines the use of social media tools by Spanish youth. Results suggest that youth are familiar with social media and use them on a daily basis. Results also show gender effects and home use of these technologies. The second article seeks to examine what variables determine social media use for particular tools. Both studies improve our understanding of youth's use of contemporary technologies. It is commendable that the second study was published in *Computers & Education*, a prestigious tier 1 journal.

In these articles, Judit García Martín and her co-authors demonstrate the need for this research and identify significant knowledge gaps in the literature. The theoretical frameworks used to examine the issues identified were appropriate, and I was pleased to see their presence, especially because educational technology research is often presented in atheoretical terms. The research methods are appropriate and well-executed. The congruency between the identified problem, theory, methods, and analysis is also commendable.

Overall, I find that this work makes a worthwhile contribution to the literature and improves our scholarly and practical understanding of how Spanish youth use social technologies. I am in favor of granting Judit García Martín the international doctorate certification and advise the committee to approve an international mention for this PhD degree.

If I may be of any further assistance, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink that reads "Veletsianos".

George Veletsianos, Ph.D.
Canada Research Chair

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LIFE.CHANGING

18 August 2016

Dear Colleague,

External review of PhD candidate: Judit García Martín

This letter provides an external review of the above candidate in preparation for her PhD candidature.

In 2014 Judit García Martín contacted Sheffield Hallam University to arrange a position as a Visiting Scholar, undertaking a research project during her stay in the University. With support from myself and Professor Guy Merchant, Ms García Martín undertook a project focussing on the multiple dimensions of students' use of new technologies in their learning. The project provided an invaluable insight into the characteristics of student learning practice in our institution, and was widely disseminated internally. The project enabled Ms García Martín to evidence and develop her research skills, in which she defined the project aims and objectives with the University, gained ethical approval, wrote a research tool to produce student-response data, and analysed the data. During this period of time, my colleagues and I had the opportunity to discuss with Ms García Martín the broad areas of her research field and her own research-based knowledge, which proved invaluable in developing our understanding of new technologies and learning in Higher Education.

The professional qualities which Ms García Martín brought to Sheffield Hallam University are, of course, reflected in her research publications. Her research work at Sheffield Hallam has informed her published chapter *Preparing to teach 21st Century literacies which is a published chapter* in the edited collection by Kosnik et al, *Building Bridges: Rethinking literary teacher education in a digital era*. The book includes international contributions which reflect the richness of this field, and Ms García Martín's achievement deserves recognition in producing an account of her research which is equal to her peers across the globe who are investigating this subject area.

The two other publications, *Patterns of Web 2.0 use among young Spanish people* which is published in *Computers in Education*, and *Use of Facebook, Tuenti, Twitter and MySpace among young Spanish* published in *Behaviour and Information Technology*, both represent research contributions which are worthy of their position in peer-reviewed journals. The first paper makes an original contribution to research-based knowledge by presenting data which has been generated via a newly designed survey tool, which gives us new data that leads the authors to interesting conclusions

about differences amongst the student population in their use of Web 2.0. The second publication moves the focus towards school level education, and provides an insight into the development of the survey tool. Again the results provide us with a novel insight into the current practices of young people in their use of social media. As a reader from the UK, it is useful to understand how spatial variances in the use of social media are an important factor.

On the basis of the publications written by Ms García Martín, which provide us with an original contribution to knowledge in her field, I would have no hesitation in recommending her candidature for PhD.

Yours sincerely,

Dr Luke Desforges

Faculty Head of Learning, Teaching and Assessment

Guy Merchant

**Sheffield
Hallam
University**

Ref: GM/EB

Date: 15 June 2016
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Dear Colleague

External review of PhD candidate: Judit Garcia-Martin

In response to the request to report on chapters written by Judit Garcia-Martin submitted for the award of PhD, I offer my professional assessment of four published sources. My overall impression is that her work, which makes an important contribution to international scholarship on new media technologies, is characterized by its rigour and originality.

Firstly, *Patterns of Web 2.0 use among young Spanish people* which is published in *Computers in Education* a peer-reviewed international journal with a good reputation. This introduces the HEWE2.0 online questionnaire to map the use of Web 2.0 tools in a student population of 11-28 year-olds in Castile and Leon. The paper provides a thorough overview of international research on patterns of uptake and describes the design of a purpose-built online survey to investigate the use of Web 2.0 tools. This output contributes to knowledge both through the design of the survey tool and analysis of the descriptive statistics generated. In particular, it highlights variations within this student population, whilst drawing attention to the role of Web 2.0 technologies in their daily lives.

Secondly, *Preparing to teach 21st Century literacies* which is a published chapter in a book entitled 'Building Bridges: Rethinking literacy teacher education in a digital era.' The book itself is the outcome of an international collaboration between researchers in Australia, Canada, UK, USA and Spain. The chapter includes results from an adapted version of the HEWE2.0 survey tool which was

undertaken by over 900 students enrolled at a UK university. This output contributes to our knowledge about university students' uses of and attitudes to Web 2.0 tools, and shows that whilst they have varying degrees of experience, they are not always convinced about the educational benefits of new media technologies.

Thirdly, *Use of Facebook, Tuenti, Twitter and MySpace among young Spanish people* returns to the Spanish context. This paper is also published in a high status peer-reviewed international journal. Focusing on online social networking, this is based on a survey study of young people in seven education centres in Spain. The paper reviews studies undertaken in other settings and describes the development of the survey tool. Results provide useful insights into the uptake of social networking in this population, and draws attention to the regional significance of Tuenti. This is a helpful counter to the dominant discourse on social networking which presents it as a homogeneous, global phenomenon. The output is well-argued and provides a particular useful exploration of the need for further research in this field.

Fourthly, *The efficacy of four instructional approaches used in a MOOC* looks at learning design in Moodle, the first of its kind in the Spanish language. It compares four different instructional approaches and adopts a mixed method design. The paper is significant in showing the learning potential of MOOCs regardless of the instructional approaches incorporated. This is a strong and topical output.

In sum, these four outputs represent a significant contribution to knowledge, and the scholarship that they are based upon is commensurate with doctoral level work internationally. I have no hesitation in supporting the work produced by Judit Garcia-Martin for consideration for the award of PhD.

Yours sincerely

Professor Guy Merchant

Certificados coautores



Certificado de CO-AUTOR

D^ª. **María Teresa Ribeiro Pessoa**, Professora Titular da Faculdade de Psicologia e de Ciências da Educação da Universidade de Coimbra

DECLARA: Que,

A publicação "**Estudos sobre a utilização da web 2.0 na educação em Portugal (2008-2012)**", apresentada por D^ª. **Judit García Martín**, como parte da sua tese doutoral na modalidade de compendio de publicações e intitulada "**La web 2.0 en la enseñanza-aprendizaje de los procesos psicológicos implicados en la escritura: usos, efectos e intervención instruccional**", não foi apresentada em tese doutoral própria e que renuncia à possibilidade de o fazer dado que a coautora é já Doutora.

O contributo da doutoranda nesta publicação foi íntegro e original. Ela levou a cabo a pesquisa, seleção e análise dos artigos incluídos na revisão assim como a posterior organização da informação e elaboração do corpo do artigo.

Coimbra, 09 junho de 2016

Fdo.: **María Teresa Ribeiro Pessoa**





INFORME DEL COAUTOR

D. **Guy Merchant**, Professor of Literacy Education de la Universidad Sheffield Hallam,

DECLARA: Que,

La publicación "*Preparing to Teach 21st Century Literacies*", presentada por D^a. **Judit García Martín**, como parte de su tesis doctoral en la modalidad de compendio de publicaciones y titulada "*La web 2.0 en la enseñanza-aprendizaje de los procesos psicológicos implicados en la escritura: usos, efectos e intervención instruccional*", no ha sido presentada en tesis doctoral propia y que renuncia a la posibilidad de hacerlo dado que el coautor es Doctor.

La aportación de la doctoranda en esta publicación ha sido todo lo referente al diseño, desarrollo, aplicación de la encuesta, Digital Technologies, que versaba sobre el uso que los estudiantes universitarios hacen de ellas, así como el posterior análisis de los datos y la argumentación de los resultados.

Sheffield, 30 de Mayo de 2016

Fdo.: Guy Merchant

Sheffield
Hallam University
Centre for Education
and Inclusion Research