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SOCIAL NETWORKS AS TOOLS TO ENRICH LEARNING ENVIRONMENTS IN HIGHER EDUCATION

Redes sociales como herramientas para enriquecer ambientes de aprendizaje en la educación superior

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INTRODUCTION. Digital technologies offer new educational opportunities in a connected society, where learning to work with others and self-regulated learning processes have become important elements that are enriched through interactions, improve learner engagement, and increase the sense of community. **METHOD.** The purpose of this case study was to analyse the perception of students, who use social networks as learning environments. To this end, reflective notes were gathered from students and analysed by Nvivo Pro Version 11. The final sample consisted of 15 students (cases), who successfully accomplished all the assignments. The students came from Nesna University College (Norway), the University of Szczecin (Poland) and the University of Extremadura (Spain). **RESULTS.** The results provide some clues about the students' engagement in the process of creating knowledge through social networks considering the pedagogical, technological and social factors analysed. Norwegian and Polish students are more autonomous learners; they reflected more on the process through which they learnt with technology, and they self-regulated their learning process. In all three countries, most of them spent a lot of time learning how to use the social networks selected in the study and posting information. The students consider very important the role that connectivity and interaction play when they use any social network. **DISCUSSION.** Technology is a powerful tool for extending and creating opportunities to innovate in higher education, and social networks offer new ways for learning in an increasingly connected society, in which learning to work with others and collaborate has become extremely important skills to take into consideration. Promoting student-centred learning approaches to encourage and engage learners in decision-making and in the learning process is an effective strategy to exploit learning opportunities in online courses. Students value the importance of self-regulating their own learning to achieve goals, gain knowledge and acquire skills. Collaborative learning is key to empower students as the main protagonists of their own learning processes.

Keywords: *Technology-enhanced learning, Higher Education, Student-centred learning; Social network, NVivo, Qualitative analysis.*

Introduction

Over the past decade, pedagogical practices in higher education (HE) have undergone a significant change towards student-centred and community-based modes of learning (Rovai & Jordan, 2004). Simultaneously, Educational Technology (ET) has become an appropriate tool for creating flexible learning environments for students who have personal learning needs to access the Internet. The quality education given to students is gaining importance day by day and educational technology could make learning more accessible to a wider group of students (Heemskerck, Volman, ten Dam & Admiraal, 2011).

The development of social networking tools has enabled students to intensify their collaboration when they learn in the most social constructivist approaches. Also, the learning process in the network-community involves complex dynamics when students produce resources through learning activities. This leads to think that technology is a powerful tool at extending and creating opportunities to innovate in higher education. That is why, in this paper, the main idea is to determine how to benefit from innovations, create knowledge and acquire skills to succeed in Higher Education (HE) through technology. Creating knowledge in academia through social networks can give Internet users the ability to be active participants in new relational and virtual environments and encourage them to learn with technology.

Therefore, having the opportunity to participate and interact at dialogic spaces through Internet or any other Web 2.0 tools such as blogs, wikis, social networking sites, media sharing applications and social bookmarking, which are also pedagogical tools with the affordances of sharing, creating, communicating and information discovering, is a fruitful experience. In other words, digital users have the possibility to create their own networks and promote relationships related to their hobbies, job,

interests and concerns, and probably have a positive impact on their own learning outcomes. To this end, Web 2.0 tools open up spaces for students to freely articulate and share their experiences, concerns and knowledge with the possibility of enriching themselves and creating new learning styles. These are some of the reasons that motivated this research.

Social networks as an environment to learn within a community

Social networks have become pervasively used for educational purposes in diverse academic areas such as education, humanities, business, engineering, etc. One of the reasons why people use social networks in life is because they enrich interactions among learners, colleagues, researchers, academics, etc., and increase the sense of belonging to a formal and non-formal community. Moreover, social networks have the ability to provide valuable resources, support and sources.

A social network is a structure made up of a set of actors and connections between them (De-Marcos, García-López, García-Cabot, Medina-Merodio, Domínguez, Martínez-Herráiz & Díez-Folledo, 2016). In a knowledge-based society, social networking sites like Twitter, Pearltrees, Facebook, Blogger, among others, offer the opportunity to explore new ways of learning and interacting. Internet-based information systems make the connections of social networks explicit and allow participants to create, share and exchange content.

According to Deng & Tavares (2013), there is a small body of literature on students' participation in and motivation for online discussions or learning, which point to a range of factors that can be grouped into four dimensions: individual, social, pedagogical and technological.

According to Lee & Hannafin (2016), in order to understand the student-centred learning

framework, autonomy is an important element that ensures the learning processes. Students mediate learning processes when they determine and accomplish learning goals. Teachers should support student autonomy because it promotes students' engagement, concentration, better time management, self-regulation, and higher performance (Jang, Reeve & Deci, 2010; Reeve, 2006).

Although the term autonomous learner is still under debate, there is an agreement. Generally, autonomous learners understand the purpose of their learning programme, explicitly accept responsibility for their learning, share the setting of learning goals, take initiatives in planning and executing learning activities, and regularly review their learning and evaluate its effectiveness (Holec, 1981).

However, learner autonomy does not mean independence. It is a holistic view of the learner that requires them to engage with the cognitive, metacognitive, affective and social dimensions of learning. In other words, there is a consensus establishing that the practice of learner autonomy requires insight, a positive attitude, the capacity to reflect, and a readiness to be proactive in self-management and in interacting with others.

Therefore, autonomous learning and effective self-regulatory strategies are very important in learning; without these, students might not be able to exploit learning opportunities outside the classrooms. An important way of supporting learning autonomy is promoting student-centred learning approaches to encourage and engage learners in decision-making and learning processes during and between lessons.

Lee & Hannafin (2016) designed a framework for enhancing engagement in student-centred learning and pointed out that:

... students maintain personal responsibility for learning as they utilize external resources.

Autonomy supports two roles in student-centred learning: sovereignty and responsibility. In terms of sovereignty, students assume the power and control to determine learning goals, decisions, and actions required to achieve those goals. When encouraged to make decisions, students perceive it as taking control of their learning and develop personal ownership. In term of responsibility, students become accountable for the consequences of their goals, decisions, and actions. They assume responsibility for managing their learning processes and project completion (2016: 715).

Some studies investigated the influence of motivational factors and self-regulatory strategies on autonomous learning behaviour (Kormos & Csizér, 2014). According to Dörnyei (2001), motivation could explain why people select a particular activity, how long they are willing to persist in it, and what amount of effort they invest in it. Successful learning performance goes hand in hand with this due to internal and/or external motivation.

Another concept to consider is the collaborative learning based on the role that students play as the main protagonists of their learning process. Deng & Tavares (2013) consider that learning within a community should be understood as some form of participation in that community. It is vital to explore students' engagement in online communities, particularly the factors that affect -facilitate and hinder- their participation. Some benefits of using social networks in HE are related to the sense of belonging to a community, emotional connections, seeking support, and digital trust. All of them can be factors involved in promoting the interactivity and fostering deeper and richer experiences.

Obviously, interactivity is regarded as a critical element to succeed in social network systems. Khoo, Forret & Cowie (2010) identify three forms of interactions as critical elements for the success: intellectual, social and emotional. Some social networks refer to this phenomenon

(interactivity) as a personal online publishing system for content development and management. Read-write-web, in contrast to the read-only-web, where users were merely passive consumer of information mainly, enhances the power of individuals and fosters a participatory culture of building, tinkering, learning, and sharing (Lee & Bonk, 2016). In both cases, interactivity occurs, although it can be weak or strong depending on the case.

From a pedagogical point of view, web-based discussions can contribute to develop students' reflective ability and critical thinking skills. People usually take time to reflect on what others read, watch, write or share. Also, it can bridge the communication gap among peers and between students from different contexts. When this occurs, the outcomes are better at performance, attitudes, teamwork, and communication skills.

Several studies (e.g. Ferdig & Trammell, 2004; Lu & Yeh, 2008) suggest that students are more engaged and find their learning more effective when they have the chance to actively participate in the process of knowledge construction, either using group social interaction or collaboration. This collaborative learning activates learning and encourages students to work together to achieve common goals (Duarte, 2015).

Collaboration and social interactions are also mainly a couple of functions that increase and empower the use of these spaces when students want to be connected with the world in the sense that they can reduce the geographic distance. Whether local or global, social networks enable collaborative content creation, individual and group reflection and up-to-date information regarding changes in collaborative spaces (Duffy & Bruns, 2006).

Object of the study

This study was focused on analysing reflective notes about the use of social networks (Blogs,

Twitter and Pearltrees) for learning, from a group of students from three different universities: Nesna University College (Norway), the University of Szczecin (Poland) and the University of Extremadura (Spain). All students enrolled in the course want to acquire more specific knowledge of the practical uses of technology in society. Thus, the main aim of this paper was to analyse students' perceptions of the use of these social networks to explore motivating and inhibiting factors that impact their engagement in web-based discussions, considering three aspects: technological, social and educational factors.

Methodology design

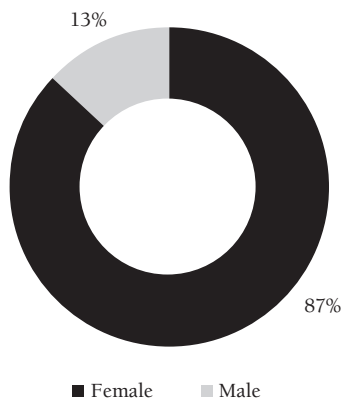
A case study is a research approach that was used in this research to generate an in-depth, multi-faceted understanding of a complex issue in its real-life context. A case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident (Yin, 2009: 18).

Context

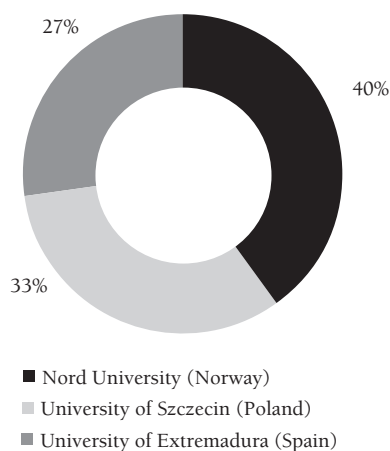
This study focused on an online course titled *ICT in Society*, which was taught in the second term of the academic year 2014/15. Students were required to accomplish two assignments that involved the active use of social media. Apart from practical work, each assignment required a metacognitive element in the form of reflective notes where students were asked to analyse the process of their work and of their learning through the assignments.

The first requirement was to create an account on a *blog*, *twitter* and *pearltrees* and explore their functionalities, i.e., how to upload comments and content, search information and

GRAPH 1. Sample of Genre



GRAPH 2. Sample of Country



collect, share and organize resources (texts, images, videos, websites). This knowledge was prerequisite to developing content-related work with the assignments. The following step was to initiate interactions and link resources with peer students, learn from others and become involved in professional communities and networks. Students were free to choose how they organize their communication and collaboration.

Participants

The sample consisted of 15 international students who enrolled in the course *ICT in Society*, from Nesna University College (Norway) (6 cases), the University of Szczecin (Poland) (5 cases) and the University of Extremadura (Spain) (4 cases). All of them enrolled in the course because of their interest in socio-cultural and educational aspects of new technologies and the flexibility of learning environments.

Graphs 1 and 2 show the demographic information of the sample expressed in percentages.

Data analysis

The qualitative data were analyzed using Nvivo Pro Version 11. The data were managed by importing the documents directly into the software. The qualitative analysis software was used to assist in the coding of the data into themes and subcategories. A provisional list of codes was determined beforehand as part of the research design. Then, a query was run to visualize the most frequently occurring words in the analyzed documents.

Graph 3 presents a word cloud, built by the most frequently occurring words or concepts listed in the reflective notes. The nodes and sub-nodes are visualized in Graph 4.

After the initial coding of the data, the codes were organized into a number of themes reflecting technological, social and educational factors, mostly. These are based on the literature revised during the framework of the article. The coding was reviewed by other researchers who had been involved in the work with students, and recoded iteratively until inter-observers' agreement was achieved.

GRAPH 3. Word cloud from reflective notes



GRAPH 4. Development of Tree Nodes and Sub-Nodes

Nodes

Look for Search In Nodes Find N

Nodes

- Nodes
- Cases
- Sentiment
- Relationships
- Node Matrices

Nodes

Name

- Technology_factors
 - Time consuming
 - Share information (photos, videos, websites,...)
 - Seek information
 - Reduce geographic distant
 - Post information
 - Manage information
 - Learn to use social networks
 - Dependence
- Social_Factors
 - Participation
 - Interactivity
 - Connectivity
- Pedagogical_factors
 - Student-centered learning
 - Self-regulated learning process_flexibility
 - Seek support from colleagues
 - Reflective thinking about the process to learn with technology
 - Reflective thinking about the content
 - Feedback from instructor
 - Emotional connection
 - Create resources, discusion,...
 - Collaborative Learning
 - Autonomous learning

Sources

Nodes

Classifications

Collections

Queries

Reports

Maps

Results

In this part of the paper, the data were explored based on pedagogical, technological and social themes through analysing the reflective notes elaborated by the students. To systematize the results, firstly, data queries using matrix coding were run. Then, the codes that had the greatest impact on the analysis of the reflective notes were selected.

Nvivo allows flexibility for researchers to identify the nodes in different forms. To this end, the user can visualize the data considering two aspects: the gender and the universities that participated in the study. The impact that gender had in all the topics was very significant, since 13% of the participants were men and 87% were women.

Matrix coding analysis: pedagogical factors

The data show a significant difference in some pedagogical factors between women and men, and universities. *Reflective thinking about*

the process of learning with technology is an important element because it has been codified 118 times, where 115 codes are from women and 68 from students from Nesna University College. It is very interesting how Norwegian students reflect on their *process of learning with technology* and *self-regulated learning process*.

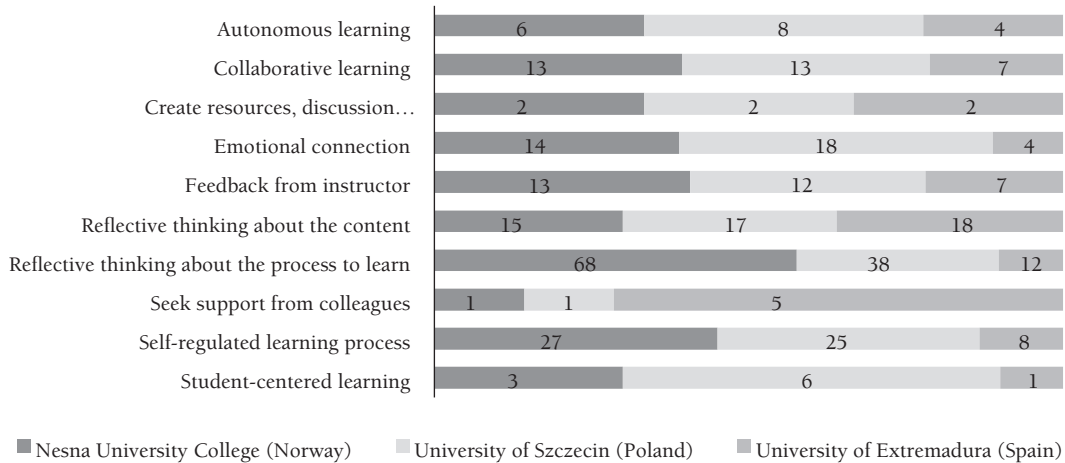
According to the results, the factors that have more impact in pedagogy are *reflective thinking about the process of learning with technology*, *self-regulated learning process*, *reflective thinking about the content*, *emotional connection*, *collaborative learning*, and *feedback from the instructor*. However, other aspects like *autonomous learning*, *student-centred learning*, *seek support from colleagues*, and *create resources and discussion*, are more difficult to extract from the reflective notes.

Graph 5 shows a visual interpretation of code-frequencies among universities. Predominantly, the students from Nesna University College and from the University of Szczecin are more explicit when they reflect and communicate their thoughts.

TABLE 1. Example of Matrix Coding Result-Pedagogical factors

Pedagogical Factors	Gender		Universities - Countries		
	Female	Male	Nesna University College (Norway)	University of Szczecin (Poland)	University of Extremadura (Spain)
Student-centred learning	10	0	3	6	1
Self-regulated learning process	60	0	27	25	8
Seek support from colleagues	7	0	1	1	5
Reflective thinking about the process of learning with technology	115	3	68	38	12
Reflective thinking about the content	44	6	15	17	18
Feedback from the instructor	30	2	13	12	7
Emotional connection	36	0	14	18	4
Create resources, discussion...	6	0	2	2	2
Collaborative learning	33	0	13	13	7
Autonomous learning	18	0	6	8	4

GRAPH 5. Pedagogical factors



In most of the cases, students have a positive experience using a modality of online courses to enhance learning experiences through social networks. They consider it is a way to learn positively in the sense of learning to use technically these technologies and in the way that they can learn with them. For example:

I have learned and [...] tried to generate in the best way possible more informative texts. (Case 1: Spanish student)

Before I would not even think that services like Pearltrees can be used for educational purposes. It showed me whole new possibilities of using the Internet. (Case 4: Poland student)

I think the most important thing about the process is that I now enjoy using the computer, and I think it is interesting to read blogs and create discussions online. (Case 6: Norwegian student)

Network learning is changing traditional learning. However, it is important not to replace offline relationships with online relationships, because direct contact in interpersonal relationships brings many benefits. (Case 9: Polish student)

However, some of them feel frustration and despair, and most of them recognize that the support given by the teachers to move forward is very necessary.

The learning process has not always been fun. I have been extremely angry, confused, irritated and near to give up sometimes. I still don't like twitter that much, and I still feel stressed if I have too many pages open. (Case 6: Norwegian student)

I really appreciate the commitment of the teacher at the beginning of the e-learning course. As a future teacher, I admire her kindness and willingness to help. (Case 10: Polish student)

It's uplifting when I can be sure I will get the help if I ask for it. And if I have trouble with some of the tools in our work (Twitter, Wiki, etc.) there are people who really want to help me. (Case 10: Polish student)

They also value the importance of self-regulating their own learning to achieve goals, gain knowledge and acquire skills. Collaborative learning is key to empower students as the main protagonists of the learning process.

Students can get away from traditional learning and self-manage their own knowledge; this makes them feel more motivated when learning. [...] I believe that if we make an appropriate use of the Internet, the disadvantages can be converted into advantages. (Case 2: Spanish student)

You need a lot of self-discipline, which I personally appreciate. I think this type of learning has great potential. [...] Also, I am still thinking about motivating other students (and myself) to communicate more with each other. [...] It increases the amount of materials you can find or read. I had probably never found some of the materials if it wasn't for the rest of the group. I've begun to have access more materials with much less effort. Plus, network learning experience allows a quick, easy and comfortable way of sharing each other's opinions on a subject. That helps to see the problem from different perspectives, which is very valuable. (Case 4: Polish student)

Matrix coding analysis: technological factors

The data show a significant difference in some technological factors between women and men, and universities. The students remarked that they

used social networks to post information, share information and resources, and learn to use social networks, mainly. Post information was codified 50 times, where 47 codes are from women and 29 from Norwegian students. Students from different universities also remarked these issues. Other less important issues related to technical factors are time-consuming, seek information and resources, manage information, reduce geographic gap and dependence. Again, Norwegian students stand out regarding reflective notes and the numbers of codes extracted from them.

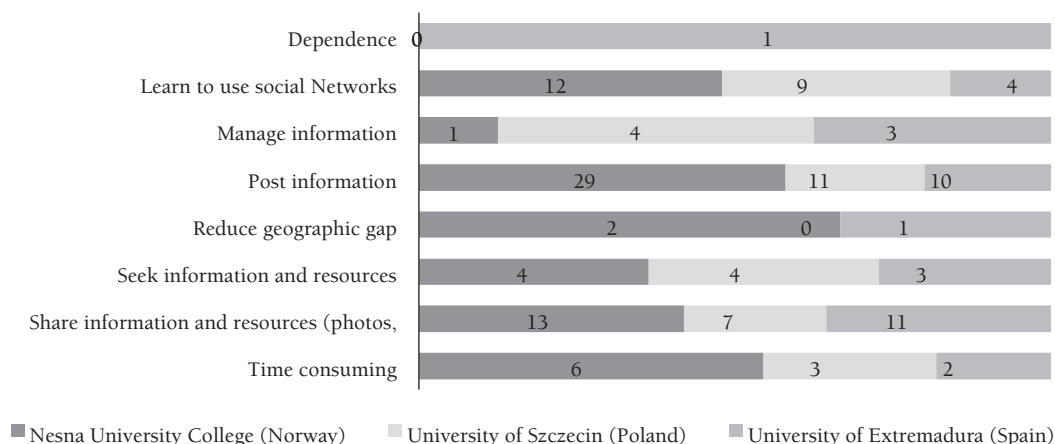
Graph 6 shows a visual interpretation of code-frequencies among universities. Predominantly, the students from Nesna University College are more explicit when they reflect and communicate their thoughts.

Basically, the first step of this course was to create a profile in different social networks and learn how to use them. After analysing the reflective notes, it was observed that not all the students had the same degree of expertise. Some of them had never imagined themselves doing that because they had a negative concept about technology and they had never thought about the potentialities that social networks may have in learning environments.

TABLE 2. Example of Matrix Coding Result– Technological factors

Technological Factors	Gender		Universities - Countries		
	Female	Male	Nesna University College (Norway)	University of Szczecin (Poland)	University of Extremadura (Spain)
Time consuming	11	0	6	3	2
Share information and resources (photos, videos, websites)	31	0	13	7	11
Seek information and resources	11	0	4	4	3
Reduce geographic gap	3	0	2	0	1
Post information	47	3	29	11	10
Manage information	8	0	1	4	3
Learn how to use social networks	24	1	12	9	4
Dependence	1	0	0	0	1

GRAPH 6. Technological factors



The students wrote their posts about topics suggested during the course, their personal life-experiences and sometimes participated in some event offers from their universities to inspire themselves.

This meeting gave me inspiration to write my first blog-post and it gave me ideas for next ones. (Case 4: Poland student)

I have learned a lot about how to use the blog and some techniques. Techniques like how to embed a YouTube-movie, make a hyperlink and different settings around these functions. [...] I have replied on twitters that engaged me. I have also retweeted some twitters I liked, and I think it would be interesting to read again, or just "save". And I have started following many sites which give me a lot of valuable information and tips. [...] I have written a post about cyberbullying because it happened to me. (Case 5: Norwegian student)

Creating a twitter account was not a problem, and I was surprised how easy it is to tweet, and retweet. At the same time, I'm forgetting to tweet something when I read for example the newsletters. I guess I'll get used to it after a while. (Case 6: Norwegian student)

I think Twitter has several useful things there, which not everybody notice. To notice, you have to dig a bit, and you have to set your mind in an educational-mode. Twitter might not have been intended for educational use, but that does not mean that you can't use the site for that purpose. [...] The blog post went fine. I love writing, and it was easy finding a way to write what I wanted to. I tried to write it with some facts, but in a personal way. I didn't want to be too professional and serious, but in the way that I could help people interested in what I was writing. (Case 7: Norwegian student)

I found the work with the blog post quite easy; so, linking to other web pages on the Internet and using visual elements went well. [...] I had some problems when I wrote a comment to one of the students. [...] Maybe it was something related to the language. After that I tried not to post comments on her blog. (Case 11: Norwegian student)

At the beginning the most important thing for me was following people and having a look at what they post and talk about. Then I started writing my own tweets, retweeting others, videos, and links with different articles. (Case 12: Norwegian student)

I collected, shared and exchanged information. I finally got involved in discussions and tried to trigger them. (Case 13: Polish student)

Students express some advantages and disadvantages about other issues related to technical factors, for example: *seek information and resources, manage information, and reduce the geographic gap.*

I am convinced that twitter in the field of education has a great utility. This social network makes it possible to move a lot of people and also share information with others. This becomes an innovative way to learn, search and gather information. Students can get away from traditional learning and self-manage their own knowledge; this makes them feel more motivated when learning. (Case 2: Spanish student)

However, to get good learning results by using Twitter you have to choose carefully who to follow. That's why I think I have managed to build Personal Learning Networks. [...] Mine is mainly Pearltrees. But that is the basics of PLN — making an environment for studying that suits you best and can bring you the best outcome — and that is possible only when you find a platform that will allow you to collect materials and communicate with your group of interest easily. That is why I think that Pearltrees is a much better service to use for studying. (Case 4: Polish student)

While in some reports from the UNESCO (Carlsen, Holmberg, Neghina, & Owusu-Boampong, 2016) remote education is considered a big potential to make learning and education more accessible and inclusive, students from Norway and Spain do not put a strong emphasis on it. In these contexts, there is an important geographic dispersion of the population because, at least in the University of Extremadura, many students came from rural areas, far from the cities, and in some cases not well communicated.

When you study on the Internet much of the cooperation is lost because of the distance and the ability to work when you want, and when you have time. (Case 5: Norwegian student)

Other concerns about *time-consuming and dependence* are reported by students in the following sense: some social networks are less motivating than others, and they consider that they spend quite a lot of time posting and seeking information.

I will use it very little because my studies do not allow so, since I have examinations and a lot of assignments. (Case 1: Spanish student)

I have spent too much time on the making of the blog, and I'm still not happy with the way it looks. (Case 6: Norwegian student)

I used a lot of time getting to know different tools for the last task, and struggled a bit to figure out what I was supposed to do. (Case 7: Norwegian student)

No time limit — students can work on their course whenever they want to, not when they have to. It's really comfortable. [...] Time-consuming work — social networking websites are usually very addictive, students can spend much more time in the Internet than in reality. (Case 12: Norwegian student)

I simply expected another platform that required minimum effort, like Twitter. [...] I spent some significant time chatting. (Case 13: Polish student)

Matrix coding analysis: social factors

The data show a significant difference in some social factors between women and men, and universities. It is worth mentioning that students use social networks as a platform to *interact* and *connect* with each other. It is important to include in the theme *connectivity*

some other categories related it, in order to obtain more information from students, such as, *create a personal network and be part of the community*. *Connectivity* has been codified 101 times, where 97 codes are from women and 47 from Norwegian students. *Interactivity* also has a good position in the number of codes obtained during the process.

Graph 7 shows a visual interpretation of code-frequencies among universities. Predominantly, the students from Nesna University College and from the University of Szczecin are more explicit when they reflect and communicate their thoughts.

Students consider very important the role that connectivity plays when they use any social network. All of them followed their colleagues, interacted with them with more or less intensity, and some of them paid attention to other institutions that are close to their professional interests. Some advantages are the possibility of instant communication and the possibility to create a network. However, some of the

disadvantages are sometimes the difficulty to communicate with each other due to the fact that no one had English as their mother tongue.

Possibility of instant communication. (Case 2: Spanish student)

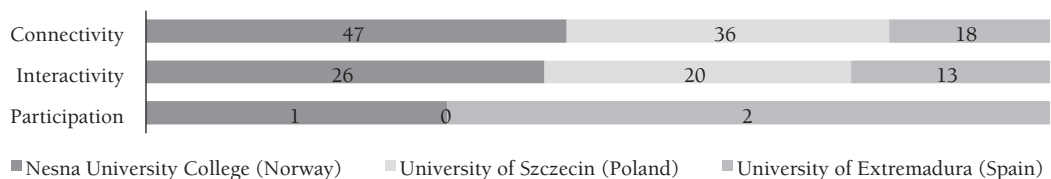
The networking process is crucial to find people who are ambitious and committed to the society built in eLearning/networking group. [...] Also, I am still thinking about motivating other students (and myself) to communicate with them. [...] I believe that we all had more time to develop our connections and know each other a bit. It would be easier to build a quality network learning community. (Case 4: Polish student)

Network learning can be challenging in many ways, but also more efficient. Let's use language as an example of how it's more difficult and challenging. Most of the students taking this subject do not have Norwegian as their first language, neither do they speak English as their first language. The different levels can

TABLE 3. Example of Matrix Coding Result - Social factors

Social Factors	Gender		Universities - Countries		
	Female	Male	Nesna University College (Norway)	University of Szczecin (Poland)	University of Extremadura (Spain)
Participation	3	0	1	0	2
Interactivity	57	2	26	20	13
Connectivity	97	4	47	36	18

GRAPH 7. Social factors



make it harder to understand one another. We also know that body language says more than 75% of the language. It's harder to understand a joke, irony and sarcasm over the internet. It's also easier to cheat on papers or tasks. (Case 6: Norwegian student)

I felt it would be a bit weird for me to post a lot of things in English in front of all my Norwegian friends. [...] If you and others in your network are active learners on these pages, you can learn a lot from each other. It's all about discovering and sharing. (Case 7: Norwegian student)

Once again, I had problems with the language. Therefore, I wrote the lyrics in Norwegian, and then translated them using "Google translate" afterwards. (Case 11: Norwegian student)

I think the discussion forums online were rather inactive, so it's been a bit hard to participate. (Case 6: Norwegian student)

Getting involved in discussions with other students helped me to work on my blog. (Case 13: Polish student)

Discussion

In the present technological landscape, it is important to know the impact of the increasing demand of learning through technology to understand new educational approaches and pedagogies that foster remote education. Deng & Tavares (2013) agree that learning within a community must be understood as something concerned with participation in the community-based activities of creating, sharing and co-construction. It is vital to explore the students' engagement in online communities, particularly facilitating and hindering factors that affect their participation. In some of the students' reflections it is possible to visualize the importance of it to learn with others and make

a bigger network not only with colleagues but also with other professionals and institutions.

Therefore, instructors in this course attempt to develop a method to incorporate critical competences for higher education as digital skills, critical thinking, and collaborative learning to promote students' active participation in a learning process focused on concepts, such as, experiential, cooperative and interactive learning (Kaplan, Piskin & Bol, 2010).

Students perceive autonomy in their learning when the teacher supports their interests, preferences, values, and psychological needs, even in an online context. It helps students to self-regulate their own learning in order to achieve goals, gain knowledge and acquire skills. Also, collaborative learning has become a tool to empower students as the main protagonists during their learning process. Supportive learning environments provide more confidence for students to express their own needs and integrate them into online activities. With 87% women and 13% men, gender has a very significant impact on all the pedagogical, technological and social factors studied and how they influence the use of social networks to learn online.

However, there are several limitations in this study that suggest the need for future research. The analysis of pedagogical, technological and social factors involved in the process of building knowledge using social networks are not determinant for several reasons. Firstly, the frequency of the codes from the reflective notes from students are not enough data. Therefore, this research could be reinforced using other quantitative or qualitative techniques to obtain data that complement this first study. Secondly, the number of men that participated in this course was low. Thus, men appeared less expressive in their way to verbalize their thoughts in the reflective notes. Therefore, it could be interesting to take a bigger sample and consider gender differences. Thirdly, sometimes

it was difficult to understand the point of view of the students because some of them have poor arguments and problems to write English. In fact, English is not the mother tongue of any of the students who participated in the study. However, it is very important to emphasize the effort that the students made to understand each other. Finally, the sample chosen slightly represents the larger group of interest from each of the countries studied. Therefore, it is hard to extrapolate these findings at the local and national levels.

On the other hand, some strengths are that the students had the possibility to contact other students from different cultures,

and interchange impressions about some technological issues. This was a motivating and positive aspect to consider and explore deeply in future studies.

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Resumen

Redes sociales como herramientas para enriquecer ambientes de aprendizaje en la educación superior

INTRODUCCIÓN. Las tecnologías digitales ofrecen nuevas oportunidades para el aprendizaje en una sociedad conectada, donde aprender a trabajar con otros y autorregular el propio aprendizaje, son elementos importantes para enriquecerse interaccionando, mejorar el compromiso por aprender e incrementar el sentido de comunidad. **MÉTODO.** El propósito de este artículo es analizar, a través de estudios de caso, la percepción de los estudiantes que usan las redes sociales como entorno de aprendizaje. Para ello, se requirieron notas reflexivas a los estudiantes y se analizaron con Nvivo Pro versión 11. La muestra final se configuró con 15 estudiantes (casos) que lograron culminar con éxito todas las tareas. Los estudiantes eran de Nesna University College (Noruega), de la Universidad de Szczecin (Polonia) y de la Universidad de Extremadura (España). **RESULTADOS.** Los resultados dan algunas pistas sobre la participación de los estudiantes en el proceso de creación de conocimiento a través de las redes sociales, teniendo en cuenta los factores pedagógicos, tecnológicos y sociales analizados. Los estudiantes noruegos y polacos son estudiantes más autónomos, reflexionan más sobre el proceso de cómo aprenden con la tecnología y autorregulan su proceso de aprendizaje. En todos los países, la mayoría de ellos pasó mucho tiempo aprendiendo a usar las redes sociales seleccionadas para el estudio e invirtieron mucho tiempo publicando entradas. Además, los estudiantes consideran muy importante el rol que juega la conectividad y la interactividad cuando usan cualquier red social. **DISCUSIÓN.** La tecnología es una poderosa herramienta para ampliar y crear oportunidades para innovar en la educación superior, y las redes sociales ofrecen nuevas formas de aprendizaje en una sociedad cada vez más conectada, donde aprender a trabajar con otros y colaborar se han convertido en habilidades importantes a considerar. La promoción de enfoques de aprendizaje centrados en el estudiante para alentar e involucrar a los estudiantes en la toma de decisiones y en el proceso de aprendizaje es una estrategia efectiva para explotar las oportunidades de aprender en línea. Los estudiantes valoran la importancia de la autorregulación de su propio aprendizaje para conseguir objetivos, conocimientos y habilidades. El aprendizaje colaborativo es una pieza clave para empoderar a los estudiantes como protagonistas de su propio proceso de aprender.

Palabras clave: *Aprendizaje potenciado por la tecnología, Educación superior, Aprendizaje centrado en el estudiante, Redes sociales, Nvivo, Análisis cualitativo.*

Résumé

Les réseaux sociaux comme un outil pour enrichir les environnements d'apprentissage dans l'enseignement supérieur

INTRODUCTION. Les technologies numériques offrent des nouvelles opportunités d'apprentissage dans une société connectée, où apprendre à travailler avec les autres et à s'autoréguler permettent d'enrichir l'interaction, réaffirment l'engagement vis-à-vis de l'apprentissage et renforcent le sens de communauté. **MÉTHODE.** Le but de cet article est d'analyser, à travers des études de cas, la perception des étudiants qui utilisent les réseaux sociaux comme environnement d'apprentissage. Pour cela, des notes réflexives ont été demandées aux étudiants

et analysées avec Nvivo Pro version 11. L'échantillon final a été mis en place avec 15 étudiants (cas) qui ont réussi à accomplir toutes les tâches. Les étudiants participants provenaient du Nesna University College (Norvège), de l'Université de Szczecin (Pologne) et de l'Université d'Estrémadure (Espagne). **RÉSULTATS.** Les résultats fournissent des informations qui montrent la participation des étudiants au processus de création de connaissances à travers les réseaux sociaux en tenant compte des facteurs pédagogiques, technologiques et sociaux. Les étudiants norvégiens et polonais sont des étudiants plus autonomes, réfléchissent plus que les autres sur leur processus d'apprentissage au moyen de la technologie et tendent à l'autorégulation de leur processus d'apprentissage. Dans tous les pays, la plupart d'entre eux ont passé beaucoup de temps à apprendre à utiliser les réseaux sociaux sélectionnés pour l'étude et ont investi beaucoup de temps à publier des posts. En outre, les étudiants considèrent que le rôle de la connectivité et de l'interactivité est très important lors de l'utilisation de tout réseau social. **DISCUSSION.** La technologie est un outil puissant pour élargir et créer des opportunités d'innovation dans l'enseignement supérieur et les réseaux sociaux offrent de nouvelles formes d'apprentissage dans une société de plus en plus connectée, où apprendre à travailler et à collaborer avec d'autres est devenu une compétence qui mérite d'être considérée. La promotion d'approches d'apprentissage centrés sur l'apprenant pour encourager et impliquer les étudiants dans la prise de décision et dans le processus d'apprentissage est jugé une stratégie efficace pour exploiter les opportunités d'apprentissage en ligne. Les étudiants apprécient l'importance de l'autorégulation de leur propre apprentissage pour atteindre les objectifs, les connaissances et les compétences établies. L'apprentissage collaboratif est un élément clé pour donner aux étudiants les moyens d'agir en tant que protagonistes de leur propre processus d'apprentissage.

Mots-clés: *Apprentissage amélioré par la technologie, Enseignement supérieur, Apprentissage centré sur l'apprenant, réseaux sociaux, Nvivo; analyse qualitative.*

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