# Involvement, Collaboration and Engagement:

# Social Networks through a Pedagogical Lens

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**Abstract**

*Social networks facilitate activities that promote involvement, collaboration and engagement. Modelling of best practices using social networks enhances its usage by participants, increases participants confidence as to its implementation and creates a paradigm shift to a more personalized, participatory and collaborative learning and a more positive attitude towards its implementation. The contribution of the study described in this paper resides in the enhancement of teaching and learning methods that make use of the social network environment and shifts the focus of learning from the teacher to the learner. This breaks down the boundaries of time and place for teaching and learning. Another contribution is the strengthening of teachers' personal and professional capabilities and the promotion of teaching-learning processes transpiring beyond the classroom boundaries by sharing contents, current communication, active learning and collaborative work.*

**Keywords**

*social networks, collaboration, engagement, social media*

## Introduction

The Web 2.0 world has promoted cloud-based technologies that have made information available and accessible at any place and any time. These technologies have changed the way people process information and allowed environments of social media [hereafter – "SM"] to thrive (Johnson, Adams & Cummins, 2012; Siemens, 2005). Initially, SM applications were not designed for the field of education. However, educators maintain they encompass an extensive potential for the promotion and implementation of constructivist learning theories that enhance collective intelligence, wide-range data accessibility, sharing processes and "surfers'" content (O'Reilly, 2005). King (1993) related to lectures as a tutor rather than a "sage on the stage and the teacher-oriented teaching paradigm was converted to a learning process-oriented teaching paradigm (Barr & Tagg, 1995). According to the latter, learners are involved in knowledge construction in a considerable and remembering-enhancing way, turning what they have learnt into a part of

themselves (Chickering & Gamson, 1987). The network is characterised as a meeting place where collective knowledge is created by the users in a collective, equalitarian manner, aiming to distribute knowledge. The possibility of establishing new contact as well as maintaining and tightening existing relations create a dynamic reality of collaborative learning among different people who mutually interact through the network.

Recent experience has shown that the social network [hereafter – "SN"] is considered a tool with potential in the field of education for expanding learning beyond the classroom (Sorrentino, 2007). The relevant characteristics of SN which influence learning include: participation, collaboration, interactivity, communication, community building, sharing, networking, creativity, distribution and personal suitability (Poore, 2012). These afford a teaching model characterised by: collaboration; interaction between the participants as independent learners; and, a variety of communication and collaboration options (Rogers, Liddle, Chan, Doxey & Isom, 2007; Sheely, 2006). Digital media tools can be classified as: (1) tools for experiential writing and sharing of sources (blog, Twitter); (2) tools for sharing media and tagging (Flickr, Instagram and YouTube); (3) SN applications which facilitate setting up a semantic network (Facebook, LinkedIn); (4) synchronous and asynchronous communication tools (electronic mail, Skype, WhatApp) (Dabbagh & Reo, 2011).

According to McLoughlin and Lee (2011), a paradigm shift in pedagogy, which they labelled Pedagogy 2.0, has also occurred where Web 2.0 Technologies emphasise participation, personalisation, and productivity. McLoughlin and Lee explained that Pedagogy 2.0 highlights the affordances of Web 2.0 and proposes a learner-centred and self-directed learning model that focuses on higher levels of engagement, user-generated content, and personalised learning.

The *Horizon 2014 Report* described the technological trends that are predicted to have the strongest impact on education, teaching and research in the future. The report writers observed that a change has transpired in the way people communicate between themselves (Johnson, Adams, Becker, Estrada & Freeman, 2014). They identified that: more than 1.2 billion people currently use Facebook; 2.7 billion people (almost 40% of the world's population) use SN; and the 25 SM platforms that are leading in the world comprise 6.3 billion accounts (educators, participants, students, scientists and others). The writers maintained that understanding the role of SM/SN in social learning processes constitutes an essential competence for teachers. Moreover, they argue that teacher education programs should include competences of using SN in teaching.

### Promoting interactivity by means of social technological tools

Prensky (2001) deemed it important for teachers to become familiar with the language and the thinking of their students and participants – "the digital natives" – and to use technology for teaching. There is some apprehension that current research will not be relevant or sufficient for them in order to be integrated in the work circle (Windham, 2005). Contemporary labour markets require learners with knowledge, competencies and skills and who are capable of making important and complex decisions, are personally oriented to life-long learning and versed in the use of networks both as a creator and participant (Richardson, 2006). The individual learning process is perceived as a wider collaborative process nurtured by interaction with potentially world-wide network communities (Scardamalia & Bereiter, 2006). Higher education practitioners should thoroughly explore the potential these networks have for education and to make a directed and planned use of them in order to provide a better response to their participants' needs and increase their chances of success. Siemens (2005) proposed Connectivism, a learning theory that supports the use of SM and emphasises the skills needed in order to locate information and to make connections between the information.

Kennelly (2009) argued that the decision to use an SN should be based on feeling comfortable with the learning environment and functionality of the environment, namely, participants' capacity to communicate to ensure optimal communication and collaboration to support learning. The existing wide variety of learning environments requires sound acquaintance with each of them,

including knowing their advantages and disadvantages, challenges and limitations so that one can choose in a mindful way which one to use for a specific objective.

### *Learning taxonomies and the educational use of social media*

As with the integration of any technology, integrating SNs in teaching raises concerns regarding the exploitation of technology capabilities and effective ways of integrating education technology. Teachers are supported in the process of development of activities to promote higher-order thinking skills and to effectively leverage technology for learning through two key theories. The first is Bloom's Taxonomy of Cognitive Domains (1956) which encompasses knowledge, understanding, implementation, analysis, synthesis and assessment. The second is Anderson and Krathwohl's (2001) renewed Taxonomy for the digital era comprising of: remembering, understanding, implementing, analysing, assessing and creating.

Educators need to think about adapting teaching methods to the changing world, that is, whereby ICT activities are currently integrated into teaching. Puentedura (2010, 2014) suggested a SAMR framework to describe the levels of technology-integrated teaching (see also Romrell, Kidder, & Wood, 2014). This model consists of four levels:

1. **S**ubstitution – at this level, technology is used for replacing older tools;
2. **A**ugmentation – this level is close to the first level of use with additional functions;
3. **M**odification – at this level, technology is used more effectively in that parts of the task are re-designed, thus modifying student learning;
4. **R**edefinition – this level is parallel to the higher levels of thinking, namely, synthesis and assessment, leading to teaching and learning models which are different from those not using the technology.

The SAMR model illustrates the development experienced by those who embrace technologies in their teaching and learning processes. Bower, Hedberg and Kuswara (2010) contended that the design of learning activities and the selection of SM are interdependent and that there is relation between technology and cognition. The notion is that what is most important is the use made of the technology and how it is integrated in the curriculum.

Churches (2009) took the revised Bloom's Taxonomy a step further to embrace Web 2.0 specific cognitive processes that learners engage in when using Web 2.0 technologies. He added technology cognitive processes to Anderson and Krathwohl's (2001) version of Bloom's Taxonomy. Another major contribution that Churches (2009) made was the addition of a communication or collaboration spectrum, which he argued is central to learning with emerging Web 2.0 technologies disregarding the level of cognitive processes that participants engage in.

The study described in this paper aimed to investigate features of learning activities which make use of Web 2.0 technologies, their contribution to teaching, and the attitudes of teachers who have integrated them in teaching. It also sought to make recommendations to education practitioners in regard to the effective application of Web 2.0 technologies in teaching.

## Methodology

Through investigating the attitudes and experiences of a group of teachers (enrolled in a higher degree program), the study sought to investigate the: characteristics of the SN; the contribution of the SN to the teaching and learning process; and, teachers' attitudes to the use of SNs for education.

### Research questions

The research questions relate to the three key topics of investigation. These are summarised in Table 1.

Table 1. *Research questions*

| Aim | Specific questions |
| --- | --- |
| Characteristics of the SN | What are the characteristics of a learning activity in the "SNs in Educational Contexts" course? |
| | How do teachers harness the personal definitions in the network using them while sharing information on the network? |
| The contribution of the SN to the teaching and learning process | • How can teachers harness the SN for the promotion of students' learning at school? |
| | • What are the tutor and participants' patterns of action in the different SN environments that contribute to a successful activity in them? |
| Teachers' attitudes to the use of SNs for education | What are teachers' attitudes towards the integration of SNs in teaching following attendance in the course? |

### Research setting and participants

The research population consisted of two groups of teachers enrolled in a Masters program who were already licensed to teach in various ages and disciplines. There were 17 participants in each group ($N=34$, 26 females and 8 males, average age ~34 years). Most were active in various SNs (91%) but very few had experience with the implementation of SN in their teaching (6%). All participants, however, were willing to learn ways of implementing SN in teaching. Each group was enrolled in two consecutive years in the course "SNs in Educational Contexts" as part of their Master of Education (M.Ed.) in Technology and Education in a college of education. The course deals with the recognition of the complex characteristics of the SN as well as relevant practices in teaching and learning process. The first part of the course comprised 13 key SN-related activities presented through Moodle LMS. In the second part, the participants implemented SN-based activities which they developed and applied in peer teaching in and beyond the class. The researcher teaches the course.

### Data Collection

Data presented in this study regarding the 34 participants was collected at the beginning of the course and at the end of it through pre- and post-questionnaires. The questionnaire consisted of items related to personal information, habits of using the network and attitudes towards the use of the network for teaching. Data was also collected during the course through various activities using differing SM and SNs. In addition, throughout their course, participants reflected on their work, thoughts and their experience with their peer-teaching through the SNs.

Furthermore, in-depth and semi-structured interviews were conducted with four participants at the end of the course. The interviews related to the experience of using the network, SN features, SN contribution to teaching, personal attitudes about implementation of the SN in teaching, insights and suggestions for implementing the environments chosen in the course. A three-point Likert Scale with disagree (1), moderately agree (2), agree (3) was used.

### Data analysis

This study employed a mixed method approach which combines quantitative and qualitative research methods (Johnson & Onwuegbuzie, 2004; Keeves, 1998). The collected quantitative data was analysed in a quantitative method using an SPSS software. Moreover, statistical analyses were performed, e.g. means, frequencies and t-tests. The interviews and contents written with the

various media and SNs integrated in the course were analysed in a qualitative approach which offers an interpretive-subjective reference (Creswell, 1998), based on the researcher's personality and theoretical knowledge. To augment the trustworthiness of the findings (Lincoln & Guba, 1985), we attempted to enhance credibility by triangulating the data collection from both questionnaires, interviews, final works, through various SN implemented through the course. The design proved to be effective as it enabled to further analyse unpredicted quantitative results and provided an expanded understanding of the results.

## Results

Results are presented according to the three topics of the research questions: Characteristics of the SN, the contribution of the SN to the teaching and learning process and teachers' attitudes to the use of SNs for education (see Table 1).

### SN characteristics

This section attempts to characterise the patterns of successful learning activity in the SN. In order to do this, the activities undertaken during the semester were mapped. The mapping comprised the 13 main activities and experiences of the course under the guidance of the lecturer/researcher. For the purpose of convenient reference, the activities are numbered from A to M and are specified below.

A. Acquaintance – getting to know each other in the physical learning space.
B. Where do we live? Sharing on *Google Maps* our place of residence.
C. Personal presentation on the forum with a metaphorical picture – personal attitude towards SNs.
D. The SN at school (jigsaw) *Roojoom*- issues for reflection and discussion (Padlet).
E. Technology and society – building a collaborative document of the digerati who affected the technological space.
F. Network-oriented reading and mapping of studies of SNs in a conceptual map.
G. Preparing a mapping of SNs characteristics collaboratively.
H. Educational ventures in the SN (information curation by means of *Pearltrees*).
I. Invitation to develop activities in SNs.
J. Mapping individual learning environments and learning networks in a concept map (PLE, PLN).
K. Preparing a collaborative presentation which includes issues of SNs for discussion in the staff council.
L. Performing a place-oriented activity throughout the college with the participation of the TEC (technology, education and cultural diversity) project students and the participants while using a designated TEC SN.
M. Discussions and sharing in Facebook group during the course as an additional layer following the learning management (LMS).

The activities implemented were mostly based on constructivist and connectivist approaches. In addition, the activities implemented in the course were analysed according to Anderson and Krathwohl (2001), the SAMR model (Puentedura, 2010, 2014) and the communication spectrum (Churches, 2009). Participants were required to design activities based on the various taxonomies and models they became familiar with during the course. Table 2 presents the analysis of the activities through the cognitive processes involved and through the SAMR model.

Table 2. *Teacher managed SM activities mapped through Anderson and Krathwohl taxonomy (2001) and SAMR (Puentedura, 2010, 2014)*

| Cognitive Processes (Anderson & Krathwohl, 2001) | Social Media Activities | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | L | M |
| • Remembering | | X | | X | | | | X | | | | | X |
| • Understanding | | | | | X | | | X | | X | X | | X |
| • Implementing | X | | X | | | | | | X | | | X | |
| • Analysing | | | X | X | | X | X | | X | X | | | |
| • Assessing | | | | | | | X | | X | | | | |
| • Creating | | | | | | | | | X | | X | X | |
| SAMR Model (Puentedura, 2010, 2014) | M | A | M | A | R | A | A | M | M R | M | M | R | A |

Table 2 illustrates that the activities in the course were varied and included all the cognitive processes underpinning the taxonomy of Anderson & Krathwohl (2001). Figure 1 presents mapping of the activities by cognitive characteristics: creating, assessing, analysing, implementing, understanding and remembering.
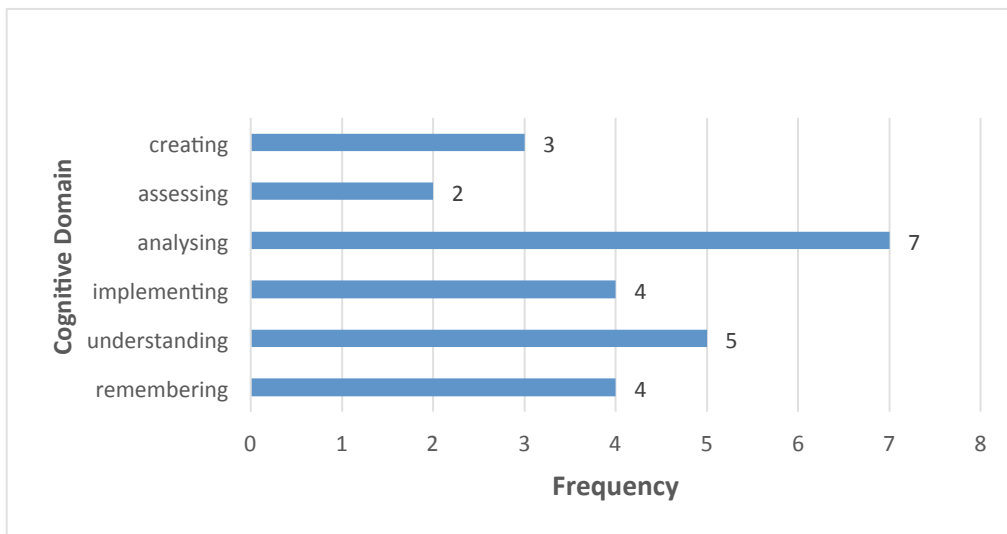


*Figure 1.* Teacher managed social media activities analysed through Anderson and Krathwohl Taxonomy (2001)

Figure 1 indicates that the activities comprised thinking levels of all types and the participants were required among others to perform an analysis, assessment and creation. Moreover, the activities were analysed according to the SAMR model (Puentedura, 2010, 2014). Figure 2 shows the distribution of the activities as: Substitution; Augmentation; Modification; and, Redefinition.
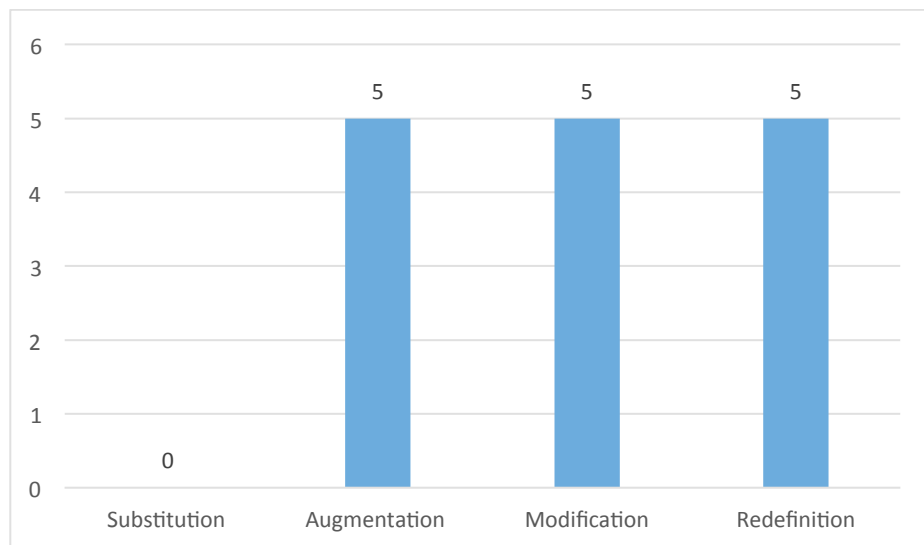
Figure 2. *Teacher managed social media activities analysed through SAMR (Puentendura, 2010, 2014)*

Figure 2 illustrates that the activities included the high level of the SAMR model (augmentation, modification, redefinitions) but did not include the substitution level.

In addition, the activities implemented were analysed by the participants and the lecturer/researcher through Churches' (2009) communication spectrum. The curating item was added to the list. The cognitive processes that the participants did not use were omitted from the list. This analysis is presented in Table 3.

Table 3. *Teacher managed social media activities analysed through Churches' (2009) communication spectrum*

| Communication Spectrum (Churches, 2009) | Social Media Activities | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | L |
| Texting | | | | | | | | | | X | | |
| Instant messaging | | | | | | | | | | X | | |
| Contributing | | | | X | X | | | | | X | | X |
| Networking | X | | | | | X | | | | X | | X |
| Posting and Blogging | X | X | | | X | | X | | X | | | X |
| Replying | X | | | | | | | | | X | | |
| Questioning | X | | | | | | | | | | | |
| Commenting | | | | | | X | | | | | | X |
| Collaborating | | | | X | | | X | X | X | X | X | |
| Curating | | | | | | | | X | | | | |

Table 3 shows that the activities performed in the Web 2.0 environment engaged the participants in a wide variety of communication means: writing in an asynchronous way (1), real time writing (1), contribution to the group (4), communication (4), responses (2), questions (1), references (2), collaborative work (6), and curating of information (1).

During the course, the participants implemented activities through the SN. Some of the activities were implemented asynchronously, some were implemented in class and some during the lesson outside the classroom. The environments applied were: WatsApp, "Nipagesh" (we will meet) – an SN for primary school, Instagram, Twitter, Google plus and two Facebook activities. For the purpose of convenience, the activities are numbered from *a* to *g* and are specified below.

   a. Creating a profile of WatsApp usage for each participant and learn how much information is out there about each user.
   b. Activities in "Nipagesh" – an SN dedicated for elementary school students.
   c. Instagram – upload meaningful pictures or short video describing its meaning.
   d. Twitter – share knowledge and use its characteristics wisely.
   e. Google+ – share vis the SN applications attitudes towards its implementation.
   f. Facebook – discuss the topic of safe surfing in the internet.
   g. Facebook – create a collaborative timeline.

The analysis of the participants' activities was conducted similarly to the instructor's activities' analysis through the cognitive processes and through the SAMR model.

The participants' activities required formulation of questions and reference to peers, search for clips and activating the learners in an assignment, representation of processes by means of pictures, issues of safe surfing of the network, awareness of privacy in the network and so on. The activities mapping is presented in Table 4.

Table 4. *Participants' managed Activities' analysed through Anderson and Krathwohl taxonomy (2001) and SAMR (Puentedura, 2010, 2014)*

| Cognitive Processes (Anderson & Krathwohl, 2001) | SNs Learning Activities | | | | | | |
|---|---|---|---|---|---|---|---|
| | *A* | *b* | *c* | *d* | *e* | *f* | *G* |
| • Remembering | | X | | X | | | |
| • understanding | | | | | X | | |
| • implementing | X | | X | | | | |
| • analysing | | | X | X | | X | X |
| • assessing | | | | | | | X |
| • creating | | | | | | | |
| SAMR Model (Puentedura, 2010, 2014) | R | R | A | A | A | M | M |

Table 4 shows that the participants mainly used the high thinking levels (starting from implementation and up to analysis, assessment and creation). As far as the SAMR model is concerned, the table indicates that similarly to the activities directed by the lecturer, the activities included the high levels of the SAMR model (augmentation, modification, redefinition) but not the substitution level.

In addition, the activities implemented by the participants were analysed through the communication spectrum suggested by Churches (2009). This analysis is presented in Table 5.

Table 5. *Participants' managed social media activities analysed through Churches' Communication Spectrum*

| Communication Spectrum (Churches, 2009) | SNs Learning Activities | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| Texting | | | | X | | X | |
| Instant messaging | X | | X | X | X | | X |
| Contributing | X | X | | X | | X | X |
| Networking | X | X | | | | X | X |
| Posting and Blogging | | X | X | | X | X | X |
| Replying | X | X | | | X | X | |
| Questioning | | X | | | | X | |
| Commenting | X | X | X | X | X | X | X |
| Collaborating | X | X | | | | X | X |

Table 5 illustrates that the activities the participants implemented in the SN included a wide variety of communication means. For example: asynchronous writing (2), real time writing (5), posts writing (5), responses (4), questions (2), references (7), collaborative work (4).

Moreover, the participants were asked about using the SN in order to enhance their teaching of their students at school. The participants' answers are displayed in Figure 3.
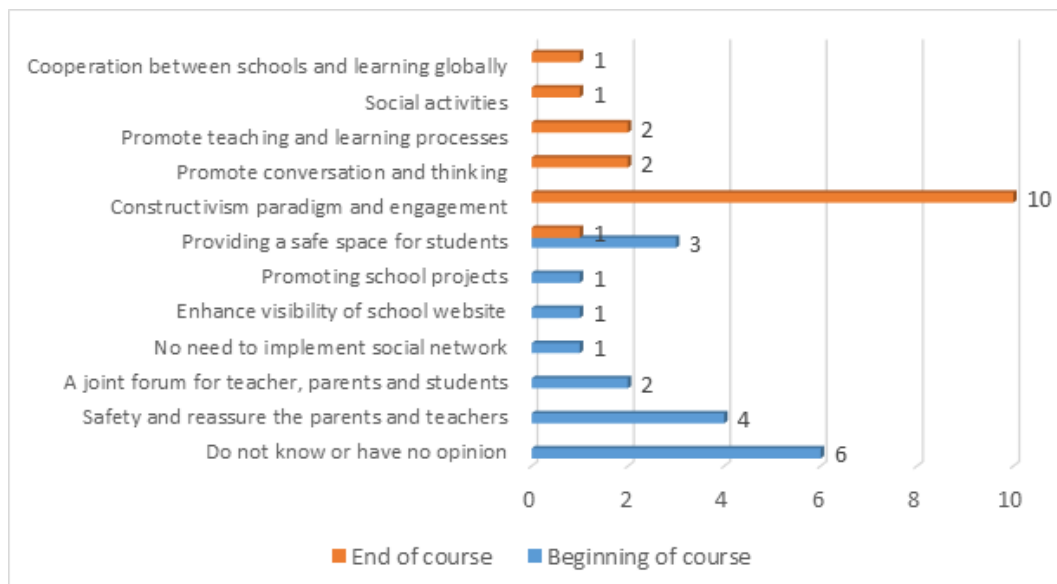


*Figure 3*.        Harnessing the SN for promoting participants' teaching at school

Figure 3 shows that, at the beginning of the course, a considerable number of the participants (*n*=6, 17.65%) did not know how to integrate social networks into teaching or did not form an opinion. As one of the participants explained: "*I don't know, I have not yet formed an opinion about it. This*

*is what I want to learn in the course.*" Some of the participants were aware of the need to make parents and teachers less concerned about the issue of the students' safety. One participant noted that: "*Calming down the parents and teachers, ensuring full security and closed groups.*" Another participant added that: "*Writing a secure network policy, maintain a secure space for the students, maintaining a virtual class space in an active SN at school which is closed to the wider public and is secure.*"

Upon completion of the course, it became apparent that all participants had developed attitudes towards this topic. Further, all participants had become aware of a wide variety of networks and options for implementation. One participant expressed this awareness by saying that: "*Every network responds to another need. Twitter enables by means of the hashtag to converge to a certain topic without exaggerated commitment of membership or registration. Consequently it can be effective for a specific point.*" According to another participant, in order that teachers develop attitudes and know if and how to apply social media/social networks in teaching: "*they should be involved as much as possible both on the personal level and group level, either by sending messages, materials, assignments and so on. Thus they get acquainted with the advantages and disadvantages.*"

Moreover, the participants' questionnaire comments revealed experiential and constructive strategies designed to stimulate the learning process. One offered that: "*I am not sure that the advantages of harnessing an SN for promoting teaching at school exceed the disadvantages. Among the advantages, one can specify an experience and pleasure which will stimulate the learning process.*" Another participant said: "*I intend preparing inquiry activities which integrate involvement, interest and interaction between the learne*rs." Yet another participant referred to how the focus shifts from the teacher to the students: "*the use of an SN [at school] as an accompaniment to the lesson shifts the centre of gravity from the teacher to the learners, leading learners to become active, collaborative, ... improves social competencies and turns pedagogy into what it should be in my opinion, that is, constructivist building of learning and collaborative information.*" For that purpose, a participant deems it important, "*to create closed groups with the participants and encourage an atmosphere of trust and cooperation.*" Furthermore, there is an advantage for pupils who tend less to participate in the course of the lessons by the observation that "*collaborative work can help participants to learn from each other as well as assist more timid pupils to open up.*"

According to one participant: "*The SN allows teachers to conduct a discourse with the pupils and introduce a deep approach to learning in class – the pupils are connected to the materials and the learning become more relevant.*" However, and echoing a previously cited contention: "*we should involve teachers and teach them the basics of the SN, showing them the positive sides and what can be derived from the SN. Then teachers should be taught how to change the class management through the SNs.*" Once the limitations have been overcome and teachers have become familiar with the various aspects of the network, the participants believe that it is possible to:

> ... set up classes whereby several groups are opened with regard to topics which interest the pupils who chose them. Moreover, pupils can perform inquiry assignments in groups or in a combination of similar age groups from several schools. This can also be done with collaboration of schools abroad (depending on the pupils' age).

Further to this, another participant noted that sharing personal knowledge through a social network: "*creates great motivation for learning among participants. Online writing increases the participant's involvement and responsibility for the written content, promoting knowledge of the group and adapting it to their needs.*"

Exposure to various SM environments and SNs during the course led the participants to think more broadly about ways of harnessing the SN to teaching, causing the participants use them and to implement them in teaching and learning processes in their classrooms. Consequently, the growing importance of personal experience of network-oriented activities, comprehension of security aspects and the policy of using the network becomes apparent. After getting acquainted with the policy of using the network and knowing to adopt the appropriate security measures, it is

then possible to think about the options of using networks and their role in supporting students with different styles of learning, learning outside the boundaries of the classroom and even global learning. As for the lecturers and participants, in addition to using the network for learning in the course, they can use the network for establishing relations with colleagues and professionals and being exposed to experts and leaders in the areas relevant to them.

One of the participants noted that:

> *The learning style of a teacher, pupil, chalk and blackboard is not nurturing or stimulating students to think. Hence, I enjoy the M.Ed. studies, aiming to enrich the lessons and stimulate the students to adopt an independent, enjoyable and in-depth thinking.*

Another added that:

> *An SN is an inseparable part of learners' lives. This is almost their mother tongue. Integrating an SN in a mindful manner which complies with pedagogy can intensify the learning experience, open the classroom walls at the time and place and even integrate the parents in the learning processes in class.*

The participants were also asked about their attitudes towards the integration of social networks in teaching with their students following attendance of the course. Results are presented in Table 6.

Table 6. *Descriptive Statistics and t-test Results for the benefits of using an SN for learning*

| Outcome | Pre-test | | Post-test | | $n$ | $t$ | $Df$ |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | | | |
| Improving academic achievement | 2.3 | 0.68 | 2.4 | 0.53 | 34 | 2.3 | 63 |
| Increasing the motivation of learners to actively participate | 2.5 | 0.66 | 2.7 | 0.53 | 34 | 1.40 | 63 |
| Development of 21st Century skills | 2.6 | 0.61 | 2.7 | 0.54 | 34 | 0.62 | 63 |
| Strengthening the relationship between teacher and student | 2.1 | 0.11 | 2.5 | 0.68 | 34 | 1.79 | 63 |
| The possibility of expression for all participants | 2.4 | 0.66 | 2.8 | 0.48 | | *2.53 | |
| Strengthening the social relationship between the participants | 2.5 | 0.79 | 2.5 | 0.76 | | 0.11 | |

*$p < 0.05$

As seen in Table 6, participants were generally positive with regard to the role of social networks in improving academic achievement, increasing the motivation of learners to actively participate, developing 21st Century skills, strengthening the relationship between teacher and student and strengthening the social relationship between the participants. Participants' attitudes changed significantly through the course (($P < 0.05$, t (34) = 2.53), particularly in believing that SNs facilitate the possibility of expression for all participants.

Further, at the end of the course, participants noted that the course had contributed to their knowing about SNs (M=3.0, SD=0.0), having familiarity with the SNs in education (M=2.9, SD=0.2), developing their attitudes toward implementation of SN in teaching (M=2.9, SD=0.3), and increasing their personal learning network (M=2.4, SD=0.6). The participants expressed their willingness to implement SNs in their teaching (M=2.5, SD=0.5).

To sum up, several participants shared their beliefs on the power of SNs in the service of teaching. On a personal level, one declared that:

> *I have a love affair with SNs. I love to express myself and voice an opinion in many areas which interest me. You will [find] very little personal information about me and my family, but you will learn there about my attitudes towards almost any area. I am registered as a member in numerous content groups and do not like to miss any information posted there.*

Another demonstrated the power of the network by offering that:

> *From my point of view, the technological instruments are the keys to the whole world, information and people.*

Parallel to the risks there are also the caution and amount to which teachers can direct the students:

> *I feel that SNs for me are like a beehive, the bees are always active and produce a lot… make a lot of buzz (and sound [like]it) and sometimes they sting… therefore I believe that we have to define an amount of using the network.*

Another participant considered the place of the networks today and the functions of educators in this context by noting that:

> *It seems to me that SNs are like agglomerated cities where infinite lights turn on and off perpetually. There is constant invisible movement within its members. As I see it, the possibility, which the Internet has created, of reaching people and information from anywhere in the world at any time is also the generator of a world revolution. My aim is to learn to understand its potential and … educating people to use it as a tool to improve their lives.*

It is apparent that participants internalised the important role of social networks in their own lives:

> *An SN for me is an instrument for creating a dialogue and expressing opinions in a reasonable amount. Gather thought-inspiring information, sometimes just for pleasure, hear stories and learn new things. An SN is a kind of musical score which you choose for yourself in order to listen and play the music which you like. When you are more in control and the music comes into being rather than having been written ahead.*

## Discussion and conclusions

At the beginning of the course, the participants - who are in-service teachers - were not acquainted with the pedagogical applications of SNs in teaching. Some of them had no concept of the integration of networks in teaching while the majority failed to see the potential embodied in the SN applications for personal use and teaching.

The course lecturer/researcher adapted the SM type to the activities implemented. This enabled diversification of teaching methods so that it included: individual work activities, collaborative activities, peer teaching, place-oriented activity, and presentation of issues for discussion, performing experiential activities in and beyond the classroom (Richardson, 2006; Sorrentino, 2007; Yildiz & Hao, 2009). This variety allowed exploitation of the uniqueness of the media and the presentation of matching activities.

The research findings indicate that such a course dealing with the use of SNs and their integration in teaching allowed greater flexibility in planning the course as it advanced. The content that emerged in the lessons as well as the learning opportunities that were created greatly contributed to the learning process. The course was based on a learning design characterised by independent learning. It was also characterised by interaction and varied communication and collaboration options between participants (Rogers et al., 2007; Sheely, 2006). This fuelled the participants' creativity and involved them in knowledge construction in personally meaningful ways and promoted their learning (Mayer, 1984). Moreover, the participants gained an understanding that activities employing SNs should chose the most suitable SM. Effectiveness is based on mindful selection.

Modelling best practices in the course enhanced teachers' positive attitude and confidence regarding the implementation of SNs/SM. That is, that in SN-oriented activities undertaken during the course, the lecturer intentionally acted as a guide (King, 1993) and the learning process was learner-focused (Barr & Tagg, 1995).

Both the collaborative and independent work undertaken by the participants during the course enabled them to learn from the varied references, get new ideas, contribute from their experience and their knowledge and comprehend the perspective of the lecturer and the learners. Because of the "social" nature of this work, information was not only submitted for perusal by the lecturer but was presented to everyone in the course. This increased the learners' responsibility for the outputs they submitted as well as for choosing the activities they undertook with others in the course. This study indicated that participants usually avoided using the network for managing learning in their own classrooms.

The course mandated the use of an LMS for creating a connection to all activities. In practice, the participants used the SN in an independent way and without mediation of the LMS. The lecturer/researcher found the LMS to be more efficient for activities that required pre-preparation and for presenting them at a certain point in time. Using SNs for activities that required pre-preparation reversed the order of the activities in some cases and created confusion among the participants. On the other hand, the public nature of SNs gave them an advantage over the LMS for activities that required instant participation and response.

In the course, the lecturer/researcher and the participants used environments that were convenient and functional for performing the different assignments (Kennelly, 2009). The working process throughout the course and the participants' feedback upon completion of the course attested to a change in their teaching paradigm, emphasising the participation, personalisation and collaborative work on outcomes (McLoughlin & Lee, 2011) and higher levels of engagement and in generating content. Both the lecturer and the participants employed a variety of instruments and media environments and were able to select the most suitable tool according to the learning objectives (Dabbagh & Reo, 2011). From this point of view, the participants had been exposed to constructivist learning approaches that privilege collective wisdom and to connectivist learning approaches (O'Reilly, 2005; Siemens, 2005). They acquired competencies essential for integrating social media in teaching in accordance with their students' language and thinking. Thus, they could engage in potentially lifelong learning that is more relevant to their students' needs in the changing reality (Johnson, et al., 2014; Prensky, 2001; Richardson, 2006; Windham, 2005).

Bower et al. (2010) contended that the design of the learning activity and the selection of SM are interdependent. When participants in this study designed activities, some were more intuitive in how they selected the SM technology because they had been using it for a while, while others designed the activity and selected the SM whose technology affordances supported the learning goals of the learning activity. On the other hand, others selected the SM technologies because they wanted to get familiar with them through their implementation or because they wanted to experiment with popular SM. Therefore, participants' strategies for designing appropriate activities concurs with Bower et al.'s (2010) interdependence between SM tool and the design of learning activities.

The research findings show that the learning design of the course and the participants' active involvement during the course, their sense of control and ownership of the discourse and the information, enhanced the development and change of the group (Bozarth, 2010; Velestianos & Navarrete, 2012), their engagement in higher thinking levels (Anderson & Krathwohl, 2001) and sophisticated and creative utilisation of the technological environment. The course design enabled the simultaneous implementation of theory and practice. The learning taxonomies and the SAMR model served as a compass to the design of activities and to the refinements of their implementation.

This study suggests that optimal educational experiences using SNs can provide a bridge from theory to practice and might also lead an innovative pedagogy to re-shape the learning in spaces known to the participants (as teachers) and to their students. In this role, these teachers can appease the policy makers as well as lead and promote challenging but supervised use of the SNs to ensure that their students are safe whether through closed groups or SNs designated for teaching. Knowing the characteristics of the SNs that include, as one participant says, "*availability, accessibility, collaboration, sense of community, empowerment, creativity and enjoyment,*" ensures that their use in classrooms can facilitate leading a dynamic, relevant and experiential teaching.

Similarly to what transpires on the Internet, also with the SM, we know the starting point but cannot predict the final point. Hence, the importance of the lecturer's role resides in orchestrating the delicate dance between the area of the acquired expertise, diversification of the teaching methods and the boundaries of the changing learning space. This delicate balance encompasses the learning experience that is enabled due to the enhanced perceptions that collaborative Web 2.0 environments promote.

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