



PERCEPTIONS ON WHICH SOCIAL NETWORKING TOOLS ARE USEFUL FOR TEACHERS' PROFESSIONAL DEVELOPMENT

Andreas Koskerisⁱ,

John Garofalakis

Computer Technology Institute and Press "Diophantus",
Greece

Computer Engineering and Informatics Department,
University of Patras,
Greece

Abstract:

Teachers are expected to be able to keep up with the technological development in the classroom. Integrating ICT into teaching is a complex process and they may encounter a number of difficulties. They seek opportunities for professional development, so that they can meet the needs of students leading to recognition as a "reform-minded" educator. Social networking/WEB2.0 which is the technology connecting people is providing new opportunities for professional development by assisting to remain current on skills important for teachers' role. Aim of our research is to study, for the specific professional category of school teachers, which are the professional skills which can be strengthened through social networking and which tools are the most appropriate for this goal. Based on a collection of information from various sources we present a series of conclusions which can be the basis for the design of training programs on how to effectively use social networking.

Keywords: social networking, Web 2.0, professional development, teachers

1. Introduction

Integrating ICT into teaching is a complex process and one may encounter a number of difficulties (Bhagwan & Sharma, 2015). Teachers seek on their own, opportunities for professional development, so that they can meet the needs of their students or address issues derived from ICTs application in classroom (Cha, et al., 2020) leading to a recognition as "reform-minded" educator (Luehmann & Tinelli, 2008). Professional development activities for teachers could include: individual development, continuing education, and in-service education or staff development, curriculum writing, peer collaboration, study groups, peer coaching or mentoring, classroom visitation,

ⁱ Correspondence: email koskeris@cti.gr

attendance of conferences, action research, publication of papers, etc (Tuviera-Lecaroz, 2002). Professional development programs are important to respect and encourage the leadership development of teachers. A current trend on professional development activities for teachers is the networking. Teachers join on-line study groups within and outside the school to explore new and better ways of teaching and to share lesson plans, web-based resources, and experiences with web-based activities. Social networking (WEB 2.0) tools are a current trend to support this process. Aim of the presented research is to study for the specific professional category of school teachers, on how to design and evaluate proper educational program on social networking effective utilization for professional development purposes. We focus on what kind of social networking tools is useful for teachers' professional development and in more detail.

- 1) Which are the professional skills of a teacher which can be strengthened through social networking applications?
- 2) Which social networking tools are the most appropriate to achieve professional development?

2. Social Networking tools and Professional development of teachers

Social networking/WEB2.0 is the technology to support connecting people with various ways (Groff, et al., 2009). The arise of Web 2.0 technology allowed web users to enhance their actions when accessing the internet not only for searching information but above all to interact, collaborate, and share contents (Coutinho & Lisboa, 2013). Web 2.0 has provided new opportunities to access information, improve existing skills (e.g. communication, digital literacy, decision making) and therefore enhancing personal and professional development (Diaz-Prieto, et al., 2019).

Social networking tools are characterized by the following issues which are differentiate them form other www applications (Cachia, 2008):

- Providing a way to present oneself (setting up a "profile" / personalized page to present for example cv, photos etc.)
- Externalization of own data (sharing of information with closed or open groups of friends/colleagues/ general public etc.)
- Provision of new ways for community formation (e.g. "likes", commenting, tagging of content etc.)
- Enhance bottom up activities (e.g. document sharing to support collaboration, organize common protest activities)

They are having strong application on education by serving as a potential vehicle to deliver a richer and more enhanced learning experience for students (Dunn, 2013) by supporting combination of traditional place-based education and online education and interaction (Kidd, 2012).

There are several examples on how WEB 2.0 is providing new opportunities for teachers to build and gain professional development by assisting to remain up-to-date on skills and issues important for their professional role:

- Using twitter as a mean for communication reform between teachers (Kent County Council, 2011). Twitter can be a great way to connect and have questions / answers not only to help a teacher but also other school staff and students.
- Using professional social networks to research people and companies and reconnect with past colleagues (Hatter, 2012).
- Wikis (Anzai, 2010) which can provide an important workplace to construct shared knowledge within an educational community.
- Creation of groups/online communities and tools such as blogs and forums to initiate discussions with a new way comparing with emails (Stewart, 2009). Such groups facilitate a new community based approach to mentoring which increases access to constant learning, support opportunities, communication with parents (Boufardea, et.al., 2018) etc.
- Specialized Peer learning tools to enhance continuous learning experiences and teacher retention (Hargadon, 2010).
- Shared e-portfolios allowing reflection with colleagues (Beach, 2012). Novice teachers receiving feedback from veteran mentors could benefit from this more experienced perspective on their work.
- Utilization of popular social media environments such as Facebook, Instagram etc. to provide opportunities for self-directed learning (Harvey, et al., 2020).

3. Evaluation Indicators and Research Questions

To evaluate the success of teacher's utilization of social networking tools the bibliography suggests several approached and metrics focusing either on tool usage or in impact for professional development (Koskeris, et al., 2020):

- Post evaluate the students' usage of ICTs coordinated by the teacher.
- Changes in confidence and on the perspective on the importance of social networks.
- Self-evaluation of skills for tools' usage and for applications in the classroom before and after a seminar.
- Quantitative metrics (e.g. frequency of use, number of posts) and qualitative data collection after some period.
- Usage statistics, (e.g. active users, time spent, usage of resources, participation rate).
- Metrics related with networking effectiveness: increase of the size of the personal network, sending and accepting invitations.
- Level of changes in phobias and preconceptions (comparing views "before" and "after").
- Specific metrics in relation with interactions between 2 persons or within a group.
- Specific quantitative metrics related with the extend of a tool's usage (posts, comments, words in each post or comment, times the user used links coming from other posts).

- Based on the above, the following three categories of metrics/ indicators are derived and proposed:
- Comparing views before and within a period after starting using Social Networking tools for professional scope (including also implicit factors such as phobias, preconceptions etc.)
- Quantitative metrics from tools' usage for professional development after a seminar
 - Action analytics (e.g. creating a group),
 - Discourse analytics (e.g. initiating discussions),
 - Content analytics (e.g. number of blog posts),
 - Context analytics (e.g. group participation on a specific issue raised),
- Indirect indicators (students' usage of ICTs in classroom).

Aim of our research, for the specific professional category of school teachers, is to provide important information to be used for the design and evaluate proper educational programs on social networking effective utilization for professional development purposes.

Based on the presented bibliographical study we set the following research question:

- What kind of social networking tools are useful for teachers' professional development?

Specific questions raised:

- What are the professional skills of a teacher which can be strengthened through social networking applications?
- Which social networking tools are the most appropriate to achieve professional development?

4. Research methodology and tools

To carry out our research based on the research questions of the previous chapter the following tools have been applied:

A. A specialized e-tool has been used in order to collect information from existing Web 2.0 educational portals (targeting teachers' collaboration)

In order to evaluate the efficient use of WEB 2.0 applications by teachers, the researcher needs to have access to qualitative (eg self-assessment and pre-use self-assessment questionnaires) as well as quantitative data (data in relation with various usage metrics) (Mahapatra, 2015).

The aim of the (Koskeris, et al., 2020) tool was to build an application that can help the researcher in collecting quantitative type of data. The developed application gets information (in a parameterized way) from collaborative educational Portals and extracts a series of specific indicators on the use of social networking tools for the professional development of teachers and the support of the educational process. This tool gives the

developers of such collaborative Portals, the opportunity to improve content, functions and understand whether they useful for their target audience or not.

B. A questionnaire to evaluate teachers' perceptions related with the first specific question

An online questionnaire has been created to collect teachers' views on how social media can help to strengthen:

- Confidence,
- Communication,
- Team learner,
- Continuous learner,
- Imaginative,
- Leadership,
- Organization,
- Innovative,
- Ability to manage online reputation,
- Ability to engage,
- Understanding technology,
- Ability to empower,
- Organizing instructing and assessing strategies,
- Planning,
- Parent teacher conferences,
- Self-assessment,

C. Interviews for the collection of feedback to evaluate teachers' perceptions related with the second specific question

This was done using a small interview matrix where, for the following skills:

- Confidence,
- Communication,
- Team learner,
- Continuous learner,
- Imaginative,
- Leadership,
- Organization,
- Innovative,
- Ability to manage online reputation,
- Ability to engage,
- Understanding technology,
- Ability to empower,
- Organizing instructing and assessing strategies,
- Planning,
- Parent teacher conferences,

- Self-assessment.
The participants evaluated the importance of the following tools:
- Blogs,
- Wikis,
- Groups,
- Resources sharing,
- Tags,
- Ratings,
- Comments,
- Forums.

5. Analysis of collected results

5.1 Information gathered from the e-tool

We imported within the e-tool data from an educational portal (with social networking tools included) for teachers. This portal's main aim is to utilize Social Networking Tools with Peer Learning and Crowdsourcing to teach school communities to counter student bullying (Christodouloupoulou, 2016). The data collected refer to 140 users in a period of one year with 50% of the users active in the portal.

The quantitative findings using the developed tool and the analysis of data coming from the specific portal are as follows:

- Active users have created 79 blogs (almost one per active user), uploaded and shared 102 educational scenarios and 123 educational object.
- 14 active users have created and managed groups.
- In active users groups the average number of blogs are 1,15, shared educational scenarios: 1,56 and shared resources: 1,89.
- The 5 most active users are mainly sharing resources and scenarios.
- Most comments have been given in educational resources shared.
- There is no connection found between users with high level of activation in resources sharing and users' blog posts.

Based on the above findings the derived conclusions are as follows:

- The most used social networking tools are the ones relate with information sharing. Teachers are using mostly tools for educational resources and complete educational scenarios sharing. This is applied also for highly active teachers and for less active ones.
- In relation with which tools are gaining the most attention and interaction between users, the sharing of educational scenarios is gaining the most interest and therefore most of the comments from other teachers (comparing for example with comments on blog posts).
- The most activated teachers are mainly uploading and sharing resources and educational scenarios. However it seems that this does not mean that in the same

time they are highly activate in blog posts. Sharing of resources does not mean necessarily that the teacher is also activated and motivated to exploit blogs usage.

5.2 Responses from the Questionnaire

The questionnaire was replied from 50 teachers from all levels of school education (primary, junior high school, high school). Below we give a table summarizing the findings on teachers' views on how social media can help to strengthen several factors/skills related with professional development and a graph summarizing the positive evaluations ("pretty much" or "very much" selections).

Table 1: Summary of responses from the Questionnaire

Social media can help to strengthen: Percentage	Confidence	Communication	Team Learning	Continuous learning	Imaginative	Leadership	Organization	Innovative	Ability to manage online reputation	Engage	Understating technology	Empower	Organizing and assessing instructing	Planning	Support parental engagement	Self assessment
Not at all	22	6	14	2	18	42	26	8	4	14	12	24	26	20	28	26
A little bit	44	18	36	26	42	32	30	20	36	32	24	32	40	38	32	40
Pretty much	21	36	26	54	30	16	30	40	36	30	32	28	24	24	24	18
Very much	10	40	24	18	10	10	14	32	24	24	32	16	10	18	16	16

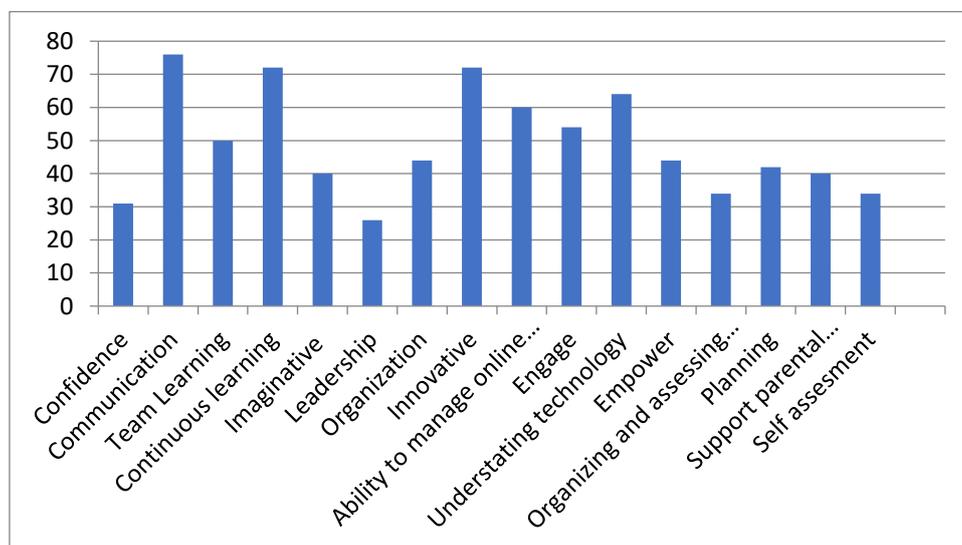


Figure 1: Responses with positive evaluation

In general, it is derived from the answers, that teachers are considering social media as a useful mean to strengthen the under investigation skills. Only for the specific skill of leadership there is less than 30% percent expression of usefulness (selection of “pretty much” or “very much” answers).

The specific skills which are considered as the most benefited from social media (positive answers with more than 70%) are: communication, continuous learning capability, innovation, management of online reputation. Communication skills and continuous learning capability are the two skills which are more considered as enhanced from the activation with social media.

On the other hand, there are no skills which are gaining more than 76% of positive answers, from which we can conclude that there is a strong portion of teachers which are reluctant on the importance of social media for their professional development skills enhancement.

5.3 Interviews' results

The collected results from interviews analysis are given below.

The derived main conclusions are as follows:

- 1) Ratings and tags are the most recognized tools to increase self-confidence (commenting is on third place)
- 2) Blogs and forums are considered as the most important tools to enhance communication skills (commenting is on third place)
- 3) Wikis are considered as useful to support and promote team learning as long as an important mean to assure continuous learning (along with resources sharing).
- 4) Imaginative, leadership and organization skills are not considered (low scoring in all cases) as ones to be enhanced from the involvement with social networking tools.
- 5) Resources sharing are recognised as the most important way to enhance innovative skills.
- 6) Use of tags (mostly) and ratings are considered as important to enhance online reputation.
- 7) Groups, as long as use of rating and commenting, are considered as important means to enhance the ability to engage others.
- 8) Wiki resources, as long as tagging, are considered as a feasible way to enhance the understanding of technology.
- 9) Self-assessment skills are considered to be mostly benefited from use of rating and comments.

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#	Field	Blogs	Wikis	Groups	Resources sharing	Tags	Ratings	Comments	Forums
1	Increase Self-Confidence	4.29% 3	3.77% 2	3.45% 3	4.92% 3	13.04% 3	20.00% 8	8.93% 5	4.17% 3
2	Enhance Communication skills	11.43% 8	5.66% 3	9.20% 8	6.56% 4	8.70% 2	7.50% 3	10.71% 6	12.50% 9
3	Support Team learning	7.14% 5	15.09% 8	9.20% 8	9.84% 6	4.35% 1	2.50% 1	3.57% 2	8.33% 6
4	Support Continuous learning	7.14% 5	11.32% 6	4.60% 4	11.48% 7	0.00% 0	0.00% 0	3.57% 2	8.33% 6
5	Enhance Imaginative skills	5.71% 4	0.00% 0	3.45% 3	6.56% 4	8.70% 2	0.00% 0	5.36% 3	1.39% 1
6	Enhance Leadership skills	7.14% 5	0.00% 0	9.20% 8	3.28% 2	0.00% 0	5.00% 2	5.36% 3	5.56% 4
7	Enhance Organization skills	5.71% 4	5.66% 3	8.05% 7	1.64% 1	0.00% 0	0.00% 0	0.00% 0	5.56% 4
8	Enhance Innovation skills	5.71% 4	3.77% 2	4.60% 4	11.48% 7	4.35% 1	5.00% 2	5.36% 3	2.78% 2
9	Manage online reputation	7.14% 5	5.66% 3	6.90% 6	6.56% 4	26.09% 6	12.50% 5	10.71% 6	8.33% 6
10	Enhance the ability to engage	4.29% 3	7.55% 4	10.34% 9	8.20% 5	4.35% 1	12.50% 5	10.71% 6	6.94% 5
11	Understand technology	10.00% 7	15.09% 8	5.75% 5	11.48% 7	13.04% 3	7.50% 3	8.93% 5	8.33% 6
12	Enhance the ability to empower	8.57% 6	3.77% 2	6.90% 6	4.92% 3	4.35% 1	5.00% 2	10.71% 6	8.33% 6
13	Support Organizing instructing and assessing strategies	4.29% 3	7.55% 4	8.05% 7	4.92% 3	0.00% 0	0.00% 0	0.00% 0	4.17% 3
14	Support parent teacher collaboration	8.57% 6	9.43% 5	9.20% 8	4.92% 3	4.35% 1	2.50% 1	1.79% 1	9.72% 7
15	Enhance Self assessment skills	2.86% 2	5.66% 3	1.15% 1	3.28% 2	8.70% 2	20.00% 8	14.29% 8	5.56% 4
		70	53	87	61	23	40	56	72

Showing Rows: 1 - 16 Of 16

Figure 2: Responses from the interviews

However, the findings lead to the main conclusion that most of the responders are not connecting strongly a social networking tool with most of the specific issues connected with professional development (there are no scores more than 30%).

We suggest that this is a finding is mostly connected with the need to increase self-confidence (Burtaverde, et al., 2020) and therefore with the need for training on the tools' effective usage, focusing on transformative learning practices (Raikou & Karalis, 2011) to assure the proper dealing with possible false preconceptions (Koskeris & Karalis, 2016).

6. Conclusion

Based on the research question and specific questions raised within the previous Section, the following conclusions are derived and summarized below:

- What kind of social networking tools are useful for teachers' professional development?

Specific questions:

- What are the professional skills of a teacher which can be strengthened through social networking applications?

In relation with which are the skills that are more enhanced from such tools, teachers are considering that communication skills and the capacity to innovate are the most affected ones. They are also judge positively the contribution of social media

activation to strengthen their lifelong learning efforts and achievements. On the other hand, there is a strong concern on how to manage the concept of online reputation which is a rather new issue (related with the evolution of social networking) and they are reluctant on how to handle it effectively and without risks.

- Which social networking tools are the most appropriate to achieve professional development?

Sharing of educational scenarios (and educational material in general) is gaining the most interest and therefore the most comments from other teachers (comparing for example with blog posts). In the same time the most activated teachers in social media, are mainly uploading and sharing resources and educational scenarios. As a result, this specific category of tools (sharing and commenting/interacting of educational objects/scenarios) can be considered as one which contributes on teachers' professional skills enhancement.

However, from the results of questionnaire and from the interviews' analysis, it is obvious that there is no clear perception on the importance and there is no strong connection of any type of social media tool usage with a specific professional development skill.

In conclusion from the previous analysis, it derived that some specific tools are expected to benefit from social media activation, but there is no clear connection with specific tools when teachers are asked to provide their perception on tools importance.

Potentially, there is a moderate impact evaluation for

- Ratings,
- Tags,
- Blogs,
- Forums,
- Wikis,
- Resources sharing,
- Groups.

with wikis and ratings to be considered as having the most horizontal impact.

There exist also several skills which are clearly considered as having no connection and benefit from social networking (imagination, leadership, organization).

This is a non-expected result since someone would consider for example that creating and sharing an educational scenario in a collaboration environment would be considered as important to enhance teacher's organization skills.

7. Further work

The answer to the previous section non-expected gap (teachers are recognizing the importance of social media but they are not clearly connecting their skills enhancement with specific tools usage) can come from training on how to effectively use such tools to support their daily work and lesson preparation. The utilization of transformative

learning methods (Raikou & Karalis, 2011) is important in such training programs to contribute on dealing with pre-existing perceptions identified.

Based on the work presented we propose the following further work to exploit additional research questions in relation with:

- 1) What educational activities can be efficiently supported by the social networking applications (with the effect of assisting the professional development of teachers)? Aim of such work would be to combine the perception of teachers on the usefulness of social media tools for the professional development with their views on which education activities such tools can be also efficiently used.
- 2) What are the existing fears and insecurities of teachers in relation to use social networking tools? Identification of personal misconceptions and problematic views which are holding teachers back from the active involvement on education related social media.
- 3) Which are the educational needs to address these? Design a generic training program to address and deal with the identified problematic views.

The results obtained from the current work can also be combined with the above additional research results leading to a methodology to identify which are the proper indicators to effectively assess a relevant educational program (to address the above needs). In more detail this additional research question is: What metrics can be used (through the use of social networking applications) for the evaluation of the above?

Conflict of Interest Statement

There are no financial or other substantive conflicts of interest that might be construed to influence the results or interpretation of the manuscript.

About the Authors

Andreas Koskeris is holding a BSc/MSc on Computer Engineering and Informatics (1993 - University of Patras), an MBA from the Hellenic Management Association and an MSc in Adult Education. He is from 2000 vice director of the Directorate for Telematics and Applications for Regional Development of the Computer Technology Institute and Press, with the main task to act as technical coordinator of all Department's R&D projects. His previous experience includes past R&D work in several EU funded projects concerning Computer Integrated Manufacturing, Telematics applications, e-Government, Social Networking. His research interests (>25 publications) include: Actions to deal with Rural Digital Divide, Adult education, Social Networking and E-government.

John Garofalakis is Professor of the Department of Computer Engineering and Informatics of the University of Patras, and senior researcher of the Computer Technology Institute and Press "Diophantus" (CTI). He is and has served as manager and scientific coordinator of several European, national and regional ICT projects (Erasmus+, ICT, Lifelong Learning, INTERREG, etc.). He has published more than 200 articles in refereed International Journals and Conferences with several awards. His research interests include: Web and Mobile Technologies, Educational Technologies, Performance

Analysis of Computer Systems, Recommendation Systems, Distributed Computer Systems, Queuing Theory.

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