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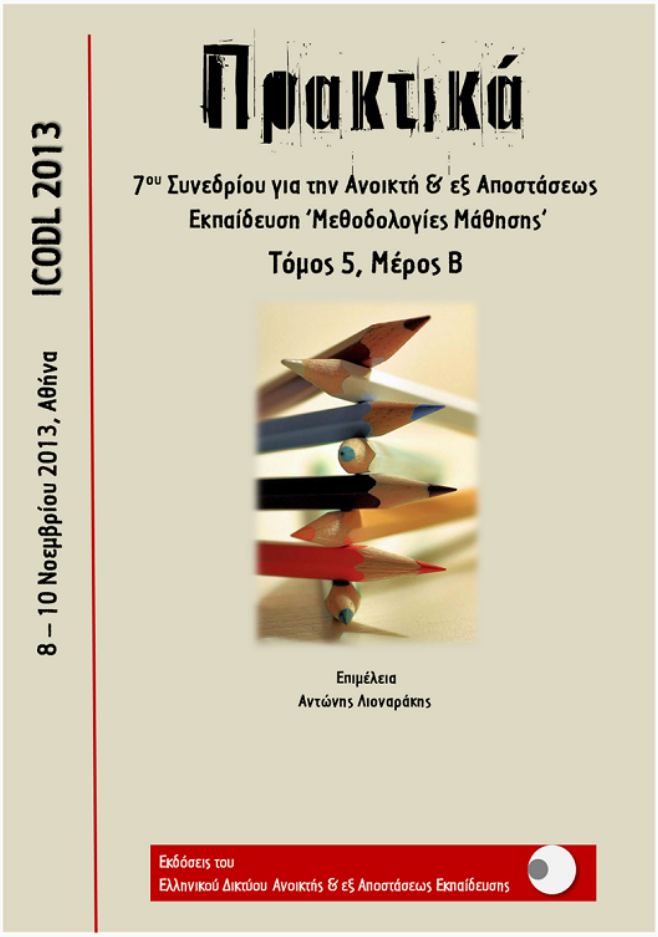

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Exploring factors that affect K-12 Greek teachers to adopt social media in their classes

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Abstract
During the last decade there is a rapid progress in Web 2.0 technologies and especially in social media. Every day, many people and mostly teenagers become members in web communities in order to communicate, to make friends, to express themselves in a huge international audience. Education could not remain unaffected by this progress. Nevertheless there is a scarcity of research regarding the factors that may influence elementary and secondary education teachers to adopt and integrate such technologies in formal educational activities and courses. This paper describes a study with the main aim to explore the factors that may affect teachers in the adoption of Web 2.0 technologies and especially social media in their classes with a focus on Greek formal education and schools. Semi-structured interviews were conducted with six Greek teachers in K-12 and secondary education. Findings reveal a general positive attitude towards the adoption and use of these technologies and a tendency for a smooth integration in the educational activities. Problems and challenges are also discussed.

Keywords: *social media, Web 2.0, innovations, digital natives, Education 2.0*

1. Introduction
Every day many people and especially teenagers, become members in web communities, social media and generally in online social spaces which constitute the so-called Web 2.0. In the old days of the Web 1.0 the focus was mainly on presenting information, where the users were passive receivers and didn't have the opportunity to change, comment or develop new content on the websites. Today's "Read-Write-Web" allows for information presentation and participation in creating information. Anyone with an Internet browser can "write" to the Web with very little or no technical knowledge. Those who were previously only consumers of information can now also be producers. Furthermore, Web 2.0 applications allow people ways of interacting, collaborating and sharing their creations with others. (Rosen and Nelson, 2008)
As Downes wrote in 2005, Web 2.0 "is not a technological revolution, it is a social revolution". Social networking websites have become an essential part of the daily communication patterns for many individuals. Recently, social networking has been reported to surpass email in use (Perroti and Hair, 2011). At the same time, the pupils in the schools are members of "Net Generation" or as they often called "Digital Natives". These terms identify a new generation of individuals who are comfortable, almost natural, at using technologies (Rosen and Nelson, 2008).

To this end it is imperative that the style of education has to be changed. The "Digital Natives" after their graduation will be citizens of the Information Society. Schools' mission is not only to give them knowledge but also the required skills they need in order to perform effectively in a new demanding era. Such skills are collaboration, critical thinking, problem solving, decision making and ability to adapt to innovations, new technologies and generally changes which may happen everywhere. Using Web 2.0 applications in education (Education 2.0) (Rosen and Nelson, 2008) can contribute a lot to this new learner-centered pedagogy. In this study the main aim is to explore the factors that may affect teachers in Greek schools to adopt and integrate social media in their classes and educational activities. Much work has been done but most of it is still anecdotal and there is a scarcity of relevant research that delineates these factors especially for the Greek elementary and high schools.

2. Background literature

While reviewing the extant literature we came up with a list of possible factors that may affect teachers in their decision to adopt and implement social media technologies in their classes. In the next section we present these factors.

2.1Perceived usefulness –Relative advantage

Perceived usefulness is one of the factors coming from the Technology Acceptance Model (TAM). The Technology Acceptance Model (TAM) has been found to explain technology users' behavior. This model links *behavioral intention* to use technology and especially computer use, with some other factors such as *perceived usefulness*, *perceived ease of use* and *attitude towards using*. Both perceived usefulness and perceived ease of use jointly affect attitude towards using, whilst perceived ease of use has a direct impact on perceived usefulness but the reverse is not true (Teo, 2011). In addition according to Rogers' Diffusion of Innovations model the *relative advantage* is one of the five factors which affect the adoption of an innovation (Wood, 2010).

We found perceived usefulness as a critical factor in many studies during the literature review. In the study of Kale and Goh (2012), teachers were asked about the use of Web 2.0 in their classrooms. It was found that most of them rated very high the usefulness of these media (in a scale from 10 to 50, teachers think positively with a score of 40.33) .

Other relevant studies with a focus on game-based learning reveal high perceptions on the relative advantage from such applications as being "*more motivating and engaging*" (Nielsen, 2010; Kebritschi, 2010).

Finally, according to Wood's survey (Wood, 2010) perceived usefulness and relative advantage were key factors regarding the adoption and use of virtual worlds in some American colleges. For instance the faculty argued that there are many affordances of using social virtual world technologies in the classroom such as: *"Virtual world technology provides an immersive learning environment that encourages more student-centered learning" or "Virtual world technology promotes collaborative learning opportunities*", etc.

2.2 Compatibility

It is a main factor in Rogers' innovation theory and there is also in Theory of Planned Behavior (TPB) as curriculum and subjective norms.

Such factors have been used in studies dealing with games for example in Nielsen (2010) and Kebritchi (2010). For instance Nielsen (2010) found that games have to

be close to the classic textbooks . Kebritchi (2010) found that educational games have to be compatible in the following points:

- The game alignment with the state and national standards.
- Available time for playing the game.
- Available computers for playing the game.
- The teachers' technology training.

De Grove et al. (2012) investigated the behavioral intention of the teachers to adopt digital games in the classroom and found that curriculum relatedness is a main factor to the behavioral intention; it mainly refers to how digital games fit the curriculum etc. According to the results the positive association of curriculum relatedness and behavioral intention, usefulness, learning opportunities and ease of use, were confirmed .

The analysis of Kale and Goh (2012) showed that the workload and a structured and standardized curriculum seem to be one of the biggest inhibitors for Web 2.0 adoption. The researchers suggest the need for adjusting and restricting standardized curriculum in order to reduce teachers' workload and providing them with time both in and outside their classrooms to prepare and execute Web 2.0 learning activities. While such arrangements requires school or statewide changes in policies and curriculum planning, promoting Web 2.0 as a means to reduce workload may be useful to help address teachers' concerns .

2.3 Ease of use – Time requirements - Experience

In these factors is examined how easy is an application in its usage, if there are any problems when an instructor tries to use a Web 2.0 application in the classroom and how experienced is the innovator in such media. These factors are described in Rogers' theory, in Technology Acceptance Model (TAM) and in Planned Behavior theory (TPB).

De Grove et al. (2012) found that ease of use will be positively associated with learning opportunities; experience with using games in the classroom will be positively associated with behavioral intention, usefulness, curriculum relatedness and ease of use . Motaghian et al. (2013) while investigating factors affecting university instructors' adoption of web-based learning systems confirm the correlation between the perceived ease of use with information quality, service quality, subjective norms and finally with their intention to use .

The factors influencing K-12 teachers' intention to use technology were examined by Teo (2011). According to the results, perceived ease of use was successfully linked with attitude towards use . Time requirements, experience and complexity were key factors in Nielsen's study (2010) regarding the diffusion of innovation with games . Ease of use and time requirements were also key factors in Kebritchi (2009), who also studies the adoption of educational computer games.

2.4 Trialability

Rogers (2003) in his theory points out that trialability is positively related to the adaptation of an innovation. It is important that the teachers can think of an innovation as easy to try out. Educational and social games can are usually perceived a form of technology that is easy to try.

In the same vein, Kebritchi (2009) argued that teachers should be given the opportunity to experience the technology (the educational games in their study) before adopting it. The teachers suggested that offering a trial version of the game for a limited amount of time is an appropriate method.

2.5 Observability

One of the key factors that affect adoption of an innovation is observability according to Rogers' theory (2003). Observability refers to the degree to which the results of an innovation are visible to potential adopters. It is not easy for anyone to observe the results of use because every application and context is different and the students as users are also different. However, in Nielsen's study (2010) for educational games it is reported that games-based learning is probably quite easy to measure its educational results. Accordingly teachers who want to introduce them in their classes may have a former idea of their effectiveness. Given that social media integrate popular services such as social games, observability could be a possible factor that may influence teachers to adopt and use them in the classes.

2.6 Subjective norms

In practical terms this factor means the extent to which a teacher perceives that most people who are important to her think she should or should not use technology and especially social media in her classes. It is a factor coming from Planned Behavior Theory (TPB). In the study of Teo (2011) a strong relationship between subjective norms and perceived usefulness was confirmed. Motaghian et al. (2013) found that subjective norms increased instructors' perceived usefulness of web based learning systems. In other words, if key stakeholders (e.g. students, fellow instructors and school authorities) support the instructors' use of web-based learning systems, instructors will consider such systems as useful.

2.7 Conclusion

According to the literature review it is evident that that there are many researches which search for factors which affect instructors to their intention to use computer technologies in their lessons. However, there are still few studies for Web 2.0 tools and fewer for the use of social media in K-12 students. So, in order to cover this gap, we decided to invest the factors which affect the behavioral intention of instructors, to use social media in K-12 classrooms, in Greek schools.

3. Research Methodology

The research aimed to shed light on the following question: "Which factors affect teachers to adopt and use social media in their classrooms?" To this end, an exploratory qualitative research design was developed in order to discover these factors.

Semi-structured interviews were used as the main data collection method; such a method is appropriate if no data is available regarding the research question. Although there is some research evidence regarding adoption factors for social media in the classroom, there is very limited knowledge on the issue regarding teachers in Greek schools. Moreover, this qualitative research was only the first part of a broader research effort and the main aim was to create a factors model based on the experiences and perceptions of the teachers. Over a period of 1 week, 6 in-depth interviews using a semi-structured interview protocol were conducted. The sample of interviewees was selected in order to cover all the age groups, the geographic areas and the type of schools they work. The demographic facts of the participants are shown in the next table:

Code Names	Specialty	Place of work	Age group	Work experience (in years)
P1	Kindergarten teacher	Kindergarten of Nicosia	<25	3
P2	Computers teacher	High school of Chios island	25-35	8
P3	Primary teacher	Private elementary school Thessaloniki	35-45	10
P4	Mechanical engineer	Vocational high school of Siatista Kozani	35-45	17
P5	Doctor in Pegagogy	Education Advisor in schools in Thessaloniki	45-55	28
P6	Computer teacher	Assistant manager in high school in Thessaloniki	45-55	20

Table1: Demographics

All the interviews were carried out via Skype and were recorded, after the agreement of the interviewees, with MP3 Skype Recorder. The interviews were notified by mails and an appointment was made in advance in order to guarantee that the interviews could be conducted over the full length of 15-20 minutes. An interview guideline was prepared in advance, which sought to examine the factors which may affect teachers in adoption and use of social media in their classes.

We asked the interviewees to express their perceptions and experiences with ICT and more specifically with social media. In addition we asked them about their beliefs regarding innovation using ICT, the adaptability required in their teaching and educational activities, the limitations that may be derived from the official curriculum, the time they need in order to introduce social media in their courses, the subjective norms of other individuals like the school management, their colleagues, pupils' parents and finally we asked about the learning gains the students will get from the use of social media in classroom.

4. Results

The analysis of the interviews is organized along the main themes of this research study: relations between teachers and students through social media, teaching style, communication issues, use of mobile devices, issues of innovation and the official curriculum and the subjective norms.

4.1 The relation of teachers and students through social media

All the interviewees are members in Facebook. P2 is also member in Twitter but he is inactive. They all know that their students are familiar with social media and that the majority of them are also Facebook users. P5 has her own blog where she posts educational issues and actions which take place in several schools. She also uses *Slideshare* where she creates, posts and shares her presentations. P2 said that "*it is quite annoying that, during the informatics course, many students are entering Facebook and chat or view profiles*".

Although many students of the interviewees are Facebook members, teachers tend avoid to be "friends" with them. P3 mentioned that his school *doesn't allow this kind of relationship* and he becomes "friend" with his students after their graduation. P2 and P4 agree that it's not good idea to be "friend" with some of your students because then you can't avoid any other invitation. P6 said that "*the relationships between teachers and students have to be limited into the classrooms and social media friendship is a kind of connection which disorientates students from the main aim of school, which is learning"*.
P5 is a shining exception as she becomes "friend" with all of her students and their parents too. She thinks that such type of communication and connection is very critical and facilitates the educational process. Her great experience and her leading position reinforce her positive attitude to the social media introduction. She thinks that instructors have to use "everything" that can help them to perform their job better, to be closer to their students and to have the best possible educational results. P1 is very positive in using social media but as her students are very young, she prefers to be "friend" with their parents while she tries to teach her pupils some guidelines of the appropriate use of internet and social media.

4.2 Teaching style

None of the interviewees has a standard and formal teaching style. All of them argued that they adapt their courses to the students' needs and they try to incorporate new knowledge and methods from several educational seminars they attend. They also tend to foster collaborative learning strategies when teaching and assessing knowledge; for instance they usually develop group projects, where the students can take advantage of Web 2.0 tools, such as wikis and Google Docs.

4.3 Communication between teachers and students

Regarding this issue, it seems that there is no regular communication outside the classrooms except for emergency issues when teachers have to make announcements. However, some of the interviewees said that they use e-mails to communicate with their student in order to provide some feedback on their exercises. P5 expressed her opinion that weblogs are tools where communication is offered, either between teachers and students or between teachers and parents. In her blog, she doesn't only post news and articles but also she gives exercises to her students and they answer them either online or offline.

4.4 Use of mobile devices from students

It can be said that most of the teachers are very skeptic (or negative when it comes to mobile phones) towards the use of mobile devices from their students during their classes. For instance P2 could allow use of netbooks or tablet PC's but never smartphones. P3, P4 and P5 are very positive towards the use of mobile devices such as netbooks, tablets etc., given that this is happening under the control of teachers in special occasions. On the contrary there is a rather negative attitude towards the use of mobile phones/smartphones.

4.5 Curriculum vs Innovations

Most of the teachers believe that the official curriculum is not a big problem in the adoption and use of social media in their classes. They think that new curricula steer educators to use new technologies and they try to motivate all the educational community towards this direction. However, some teachers like P6 think that

curricula are very tight and they don't give plenty of freedom to teachers to use innovative methods in their classrooms. All of them agree that in kindergarten, elementary schools and the first classes of high school. They think that it is easier to override somehow the curriculum and test some new ideas but this is getting very difficult at the final classes of high school (Lyceum), where the main aim of students is to be prepared and succeed in the Universities' nation-wide entry exams.

4.6 Subjective norms

All of the interviewees agree that the majority of students will be enthusiastic if their teacher adopts and uses social media in their classes. As "digital natives", they are members (most of them) in several media and they are very familiar with them. On the other hand, as interviewees said, some other teachers are suspicious when somebody introduces something new. They can't understand the motives behind it, they tend to be at most technophobic, so they have a fear that soon they will have to use the same tools and they don't encourage their colleagues. In addition, the directors of schools sometimes encourage innovative actions but sometimes they have a negative attitude, either because of the fear of financial costs or because they tend to be quite conservative. As far as regards the students' parents, those who are IT competent are usually positive towards the adoption and integration of social media in the educational process. On the contrary there are many of them that feel some kind of fear and technophobia and they tend to be negative.

5. Discussion

According to the literature review and the findings of this study, it becomes evident that social media adoption and use in formal education is potentially facing a lot of challenges. On the other hand it seems that as a technological and pedagogical innovation, social media may be a good fit with the current structures and the needs of formal education in Greece.

For instance, the *relative advantages* from social media adoption are well perceived by the study participants, as they believe that students will have more fun during the educational process, they will better understand some abstract concepts that demand collaborative activities etc. There is also a *performance acceptance*, as teachers believe that their job will be enhanced and better presented. All study participants also agreed on the *perceived usefulness* of the use of social media in their classes. Another encouraging finding is the belief that new curricula allow for innovative teaching styles and practices and they support teachers to this direction. The use of social media in classrooms seems quite *compatible* and not very demanding in terms of time that is needed to be integrated in courses and educational activities. They are perceived as quite *easy to use* and most of *young* teachers have the necessary competences in order to introduce them to their classrooms.

The next table exhibits the main expectations from each study participant, regarding the adoption of social media in their classrooms:

Teacher	Expectations
P5	*"New "armor" for teachers. Learning aims can be achieved more directly and more effectively. Kids learn while they are playing and they gain skills useful for Information Society"*
P6	*"Daily contact and communication. Development of useful skills".*
P1	*"Kids perceive alternative educational uses of computers and internet".*

P2	*"Helps distance learning and communication".*
P3	*"Increase pupil's interest. Understanding difficult concepts. Construction of knowledge by the students".*
P4	*"Skills and knowledge that traditional education cannot provide".*

Table2: Expectations of participants

In conclusion, some positive and negative points for the adoption and use of social media in formal K-12 education can be summarized according to this study:
(see table no3)

Positive	**Negative**
Students' enthusiasm	Poor equipment in schools
Students' experience in social media	Teachers' unwillingness
Curriculum encouragement	Digital divide between students who are competent IT "digital natives" and those who doesn't even have access to computers
Collaboration	Directors' concerns
Sufficient knowledge of teachers in the use of social media	Parents' concerns
Adequacy of time needed for the innovation	Addiction of young people in internet
Improvement of educational work	Technophobia
Improvement of communication	Suspicious between colleagues
Great expectations from teachers	Preconception in students' use of mobile devices

Table3: Positive and negative points of the social media use in classrooms according to the interviewers

A basic limitation of this study is that the sample is rather small. Nevertheless as already said there was a quite big geographical representation from several parts of Greece. Besides the size of the sample some basic conclusion can be drawn: it seems that there is a positive tension for the adoption of social media in formal education. However there are still many concerns and barriers and further studies are needed that have to take into account issues such as financial crisis and budget cuts versus innovations and how all these may affect educational practice and procedures.
As it happens in all kinds of educational technologies, social media cannot be approached as a panacea for an array of problems. However they have a lot to offer if used appropriately. Since it is a common place that the educational system has to change and adapt, authors believe that social media can facilitate this process and support effectively the new demands of Information Society and the skills that Digital Natives have to acquire.

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