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The use of Web 2.0 tools to develop e-portfolios
in a teacher training program: An exploratory survey

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Web 2.0 technologies offer educators amazing opportunities for creating an effective and engaging learning environment for their students. In this paper we present how Web 2.0 tools can be successfully used for promoting collaboration and technological skills in teacher education programs. Participated in the study 24 teachers enrolled in a master program in Education at the University of Minho, Braga, Portugal, in the 1st semester of 2007/2008. The experience involved the use of Web 2.0 tools – Googlepages and GoogleDocs – to build an e-portfolio and explored advanced collaborative interactions and participative assessment as part of the teaching method. Teachers´ opinions and perceptions on the learning experience with Web 2.0 tools were evaluated at the end of the semester through survey techniques. Findings show that teachers valued the learning experience and felt more responsible for preparing the learning opportunities that facilitate students' use of technology to learn, and communicate. We do hope that this work will contribute to the development of appropriate training programs for ICT skills of teachers that will prepare them to play an essential role in producing technology capable citizens for the 21st century.

1. Introduction

We live times of fast changes and transformations where the access to information is important because, as Alvin Toffler said in the early 90´s "who has information has power" (Toffler, 1990). We move from a social context where the information was a scarce resource, to another where the information is huge but precarious and highly volatile. In the global society of the twenty-first century, the Internet is not a simple technology of communication, but the epicenter of many areas of social activity and economic policy (Castells, 2004).

Many adults, including teachers, struggle with basic computer functions such as email, search engines, and presentation software (Jacobsen, Friesen, & Clifford, 2004). However, it is critical for teachers to improve their capacities to use and instruct with computer and internet technologies as their students are likely to enter the classroom with increasingly sophisticated web literacy (Prensky, 2001). The "digital native" phenomenon that Prensky described, has created an environment where teachers have the opportunity to capitalize upon students' inclination towards technology integration. The disconnect, however, between teachers' and students' comfort with technologies requires new teacher roles, new pedagogies, and new approaches to teacher training (Unesco, 2008).

In fact, new technologies not only enhance the creation of innovative learning environments but also model the ways that the students use technology and construct knowledge (Bonk & Cunningham, 1998). Teachers must be conscious that they are teaching a generation born in the computer age. Technology is second nature to these children. By the time they started to walk, they were familiar with remote controls, computers, cell phones, and other technology. To teach this group effectively, educators must keep abreast of developments in digital and Web-based media and take advantage of the opportunities they offer to help children learn.

Web 1.0 applications typically consist of browsing and searching on the Internet, essentially a reading operation. In contrast, Web 2.0 applications allow users to read and also to write to the Web. Building on the read/write applications that have emerged in rich, interactive, user-friendly application platform, Web 2.0 has essentially transformed the Web from a Web page publishing venue to a global network community where every user is invited to create content (Alexander, 2006). The Web's shift from a tool of reference to one of collaboration, from passive to active, from consumer- to participant-oriented, allows teachers to use these tools to empower students and create exciting new learning opportunities (Richardson, 2006; D´Souza, 2007).

According to Ferreira (2007) and Moura (2007), the Web 2.0 applications hold profound potentials in education because of their open nature, ease of use and support for effective collaboration and communication. They change the traditional view of human knowledge and open up more opportunities in teaching and learning. Teachers must use Web 2.0 tools not only to attract students' attention but to enhance their learning experiences. Today, over several hundreds of the Web 2.0 applications are available and have potentials in teaching and learning. Some of these tools include: podcasts (i.e., audacity, iTunes), Weblogs (i.e., Blogger), wikis (i.e., Mediawiki, PBWiki), social bookmarking tools (i.e., del.icio.us), social networking tools (i.e., EduSpace, Facebook, MySpace), social media sharing tools (i.e., Flickr, SlideShare, YouTube), virtual 3D community (i.e., Second Life), social library tools (i.e, LibraryThing), customized sites (i.e, Googlepages) and collaborative writing tools (i.e., Google docs).

In Portugal, research reporting the use of Web 2.0 technologies in educational contexts is still very scarce. However, recent studies analysing educational blogs show how powerful and versatile tools they can be for information retrieval and communication, group collaboration, text production, knowledge construction both in primary and secondary schools (Carvalho, Moura, Pereira & Cruz, 2006; Cruz & Carvalho, 2006; Cruz, Bottentuit Junior, Coutinho & Carvalho, 2007;) as well as in higher education (Coutinho & Bottentuit Junior 2007a, 2007b). The use of blogs as e-portfolios was also studied by one of the authors in pre-service teacher education programs with promising results (Coutinho, 2006, 2007a, 2007b).

The study presented in this paper reports how in service teachers enrolled in a post graduate program in Educational Technology used two Web 2.0 tools– GooglePages and GoogleDocs – to set up a digital portfolio for class work and assessment. The goal of the study was to verify if the Web 2.0 tools: a) were effective to create and maintain an e-portfolio, b) enhanced motivation, knowledge construction and communication, c) provided a technology-rich experiences throughout all aspects of training, and d) incentivated teachers to integrate technology into their own classroom activities. On the other hand, as we believe that the call to integrate technology into education can be used as a starting point for educators' professional growth, we expected the experience with Web 2.0 tools to give us guidelines to prepare models of teacher professional development for the integration of information and communication technology into classroom practice.

2. Conceptual framework
2.1 ICT in Teacher Training Programs

The impact of ICT in our global societies held the development of different policies regarding the introduction of information and communication technologies in schools and educational systems. To live, learn, and work successfully in an increasingly complex,

information-rich and knowledge-based society, students and teachers must utilize technology effectively. The informed and responsible citizens of the 21st century must be technological prepared to be: a) capable information technology users, b) Information seekers, analyzers, and evaluators, c) Problem solvers and decision makers, c) creative and effective users of productivity tools and d) Communicators, collaborators, publishers, and producers.

At varied different levels, both professional development programs for teachers currently in the classroom and programs for preparing future teachers should provide technology-rich experiences throughout all aspects of the training. Very recently, in the current year of 2008, the UNESCO published a policy framework untitled *ICT Competency Standards for Teachers* that states as follows:

> Today's classroom teachers need to be prepared to provide technology-supported learning opportunities for their students. Being prepared to use technology and knowing how that technology can support student learning have become integral skills in every teacher's professional repertoire. Teachers need to be prepared to empower students with the advantages technology can bring and so they need training programs that provide them with ICT skills Schools and classrooms, both real and virtual, must have teachers who are equipped with technology resources and skills and who can effectively teach the necessary subject matter content while incorporating technology concepts and skills. Interactive computer simulations, digital and open educational resources, and sophisticated data-gathering and analysis tools are only a few of the resources that enable teachers to provide previously unimaginable opportunities for conceptual understanding. (Unesco, 2008, p. 1).

Research shows that there is no change in schools without teachers and for teachers to use effectively technologies in the classroom it is crucial to invest in teacher training programs both at pre-service and continuing professional development (Fernandes, 2006; Piano, 2007; Ponte & Serrazina, 1998; Varandas *et al*, 1999). Research also supports that a substantial amount of work is done in teacher education to ensure teachers gain both personal skills and pedagogic approaches to using ICT in the classroom. However, there is evidence that a great deal of difficulty was encountered in presenting teachers with valid and meaningful examples of ICT integration in the classroom (Downes et al, 2001).

New technologies require new teacher roles, new pedagogies, and new approaches to teacher training. If we want teachers to utilize technology effectively in the classroom training programs must take into account that more important than getting familiarized with technologies teachers need time to reflect on learning strategies with ICT that facilitate students' use of technology to learn and communicate, and also that they need "to share problems and issues with instructors and peers" (Baylor & Ritchie, 2002, p. 410).

More than quantity it is the quality of teacher development programs that is the key to a successful integration of ICT into the classroom. The use of technologies in the classroom depends on the ability of teachers to structure the learning environment in non-traditional ways, to merge new technology with new pedagogy, to develop socially active classrooms, encouraging cooperative interaction, collaborative learning, and group work. This idea is clear in the Unesco report recommendations:

> The key skills of the future will include the ability to develop innovative ways of using technology to enhance the learning environment, and to encourage technology literacy, knowledge deepening and knowledge creation. Teacher professional development will be a crucial component of this educational improvement. However, teacher professional development has an impact only if it is focused on specific changes in teacher classroom behaviors and particularly if the professional

development is on-going and aligned with other changes in the educational system (Unesco, 2008, p. 2).

2.2 e-Portfolios

Electronic Portfolios (e-Portfolio) are usually defined as "a tightly integrated collection of Web-based multimedia documents that includes curricular standards, course assignments, student artifacts in response to assignments, and reviewer feedback to the student's work." (Gathercoal, Love, Bryde & McKean , 2002, p. 30). In teacher education, especially, e-Portfolios have been widely suggested as an effective tool to assess pre-service teachers' technology integration skills in classrooms. Barrett (2002) and Diez (1994) insisted that the process of creating e-Portfolios is valuable not only because it helps teachers acquire technology design, production, and integration skills but also because it encourages reflection thinking for entire developing and implementing process. Loughran & Corrigan (1995) also showed positive results of using e-Portfolios in teacher education programs: pre-service teachers can link digitized artefacts they created in a variety of media format through the reflection process they explored. According to Qi & Vandersall (2007) and also Tosh, Light, Fleming & Haywood (2005), the process of portfolio development improves students´ reflective thinking and fosters deeper learning. It was also advocated that e-portfolios, furthermore, afford teachers greater opportunities for professional development (Carney 2001).

Electronic Portfolios and paper-based portfolios essentially complete the same task but in a different manner. However, electronic portfolios can be set up as a website and so are easier to change and maintain, can be given to a large audience, are more flexible than paper-based portfolios, and, in teacher education programs, provide a way for teachers to integrate technology into the classroom (Herring & Notar, 2007). Electronic portfolios are more flexible because new technologies allow the structure and layout of the document to be easily changed. They also create a sense of "interconnection" between work, which leads to a "richer understanding of themselves, and the standards against which they are being measured" (Norton-Meier, 2003, p. 517). Educators of all types are incorporating electronic portfolios into their classrooms and into their professional lives. They play an important part in helping educators use technology skills in ways that were not thought of before. It is in this way that electronic portfolios are changing the technology face of education (Barrett, 2002).

Research on e-Portfolios (Abrami & Barrett, 2005; Milman, 2005; Strudler & Wetzel, 2005) shows that there are many benefits (e.g., they promote the development of technology skills), as well as challenges (e.g., they are time-consuming). Current research (Strudler & Wetzel, 2005; Tosh, Light, Fleming, & Haywood, 2005) also highlights the tensions that arise between the needs of schools, colleges, and departments of education in using digital portfolios as assessment tools, and the needs and purposes of teacher in developing digital portfolios.

Googlepages and Googledocs were Web 2.0 tools the in-service teachers who attended RME program used to build and maintain a website that functioned as e-Portfolio for group work and assessment. In fact, collaborative writing tools are technologies that facilitate the editing and reviewing of a text document by multiple individuals either in real-time or asynchronously. Online, web-based collaborative writing tools offer great flexibility and usefulness in learning groups and educational settings as they provide an easy mean to generate text exercises, research reports and other writing assignments in a full collaborative fashion. Documents generated with such tools are always accessible to all the editors and can be easily downloaded and exported in standard word processing file formats.

3. Method

3.1 The project

The study we present in this paper was developed in the first semester of 2007/08 (October thru February) and enrolled 24 post graduate students (most in service teachers) who attended a Master Program in Educational Technology. Our previous experience of teaching the subject Research Methods in Education to postgraduate students who work and have difficulties to attend regular classes, suggested that much more could be done in order to prepare wiser technological efficient teachers and researchers for the fast-changing knowledge-based societies we live in. We believed that learning would occur through the exchange and sharing of information and opinions among a peer group in an web-based learning environment and we used Web 2.0 tools in order to: a) to build a group e-portfolio that enhanced collaborative group skills as well as autonomy to use Web 2.0 tools and services to search and share the information on the web, c) promote teachers´ ICT professional development regarding the adoption of web-based learning facilities in the real classrooms. Teacher education programs in Portugal often view technology as a subject to be added to the program rather than a tool to be integrated into the curriculum but we also know that for changes to occur teachers need to be introduced and familiarized with pedagogical activities with technologies, then given time to practice and reflect about the importance of adopting ICT in the real classrooms (Paiva, 2002; Coutinho, 2007a; Fernandes, 2006).

3.2 Procedures

The instructor presented the project, defined timing and forms of assessment but all other tasks were managed by students. Students freely organized into groups and created a website in Google Page Creator; besides the inclusion of a section for individual presentation (with photo, contacts, profile, and actual position), the portfolio layout and structure was managed by the group. The website created by groups should function along the semester as the e-portfolio where students posted all artefacts, readings, essays, comments, reflections, and was considered for assessment at the end of the semester. Google docs was the web 2.0 tool teachers used for collaborative writing in order to develop essays upon the readings suggested in the given bibliography. Every week, during face to face classes the instructor presented new topics for assignment and groups organised and divided tasks for the next class; the rest of the week, at a distance, groups used Web 2.0 facilities to share ideas and develop assignments to integrate into the e-portfolio.

The instructor had also a class website (mieuminho.googlepages.com) were all course materials, readings, bibliography were available as well as links to all class portfolios, so that students could assess other group sites to visit and leave comments. The instructor visited the group portfolios every week in order to scaffold group work through comments and prompt feedback.

3.3 Data collection

The learning experience was assessed thru an initial questionnaire, direct observation and the administration of an online questionnaire at the end of the semester. The initial questionnaire

was filled by students at the end of the first session and included items related to age, sex, professional experience and familiarity with Web 2.0 technologies.

The final questionnaire was applied to students at the end of the semester (end of January). Some of the questionnaire items were new but others were adapted from previous instruments used by the authors in studies regarding the educational use of Web 2.0 technologies (Coutinho, 2006; Coutinho & Bottentuit Junior, 2007a; Coutinho & Bottentuit Junior, 2008a; Coutinho & Bottentuir Junior, 2008b). The final questionnaire was composed of items, with a total of 44 items in the format of a five-point Likert scale of agreement (1=Strongly disagree; 2=Disagree; 3=Neither agree or disagree; 4=Agree, 5=Strongly agree). The questionnaire was divided into 3 sections. The first section, with 20 items evaluated the importance of building an e-portfolio for class work and assessment in RME subject. The second part, composed of 15 items, evaluated the perceptions/opinions of teachers on the potential of Web 2.0 tools for teaching and learning. The third part, composed of 10 items, asked for the impact of the training program in ICT in teacher´s perceptions and attitudes on professional development.

- Were Web 2.0 tools (Googlepages and Googledocs) good to build an e-portfolio for group work and assessment?
- The development of a group e-portfolio with Web 2.0 was important to learn RME subject?
- Did it enhance collaboration, knowledge-sharing and construction? At what levels?
- Was it important for the development of ICT skills?
- Do you intend to use these tools in your own classroom activities?
- Did the learning experience with Web 2.0 tools contribute to your professional development? At what levels (11 items)

4. Results

24 students fulfilled anonymously the initial questionnaire during the first session in the beginning of October. All were in-service teachers, from different subject areas (Elementary Education= 4; Sciences= 6, Languages= 5; Arts =4; Informatics=1; Music Education=1; Religion=1) except for two Brazilian students attending the master program with an Alban grant. As to gender, 14 were female and 10 male and as to age, 36% participants had between 21-30 years old 30%, between 31 and 40 and 26% more than 40 years old.

The majority (63%) had never heard of the concept "Web 2.0"; web search engines were the tools participants used most for personal uses; blogs, photo publishing tools (e.g. Flick) as well as video publishing (e.g. Youtube) were the tools teachers said they used more frequently in the classroom. 56% had never participated in a web collaborative learning activity, and 60% had never built a website neither for personal or pedagogical purposes.

21 students/teachers completed the final online questionnaire at the end of the semester.

4.1 The importance of the group e-portfolio

Table 1 shows results of the 20 items that evaluated the importance of building an e-portfolio for class work and assessment in RME subject. Results are presented in % of degree of agreement on each statement as well as the weighted mean obtained for each item. For data interpretation we considered that the numeric values for means under 3 (for positive or reversed

negative items) meant "disagreement" with the statement, values between 3 and 4 "indifference", and values over 4 that respondents "highly agreed" with the statement.

Nº	To build a group e-portfolio with Web 2.0 tools in RME classes…	%					Mean
		SD	D	N A/D	A	SA	
1	Was a very easy task	0	9,5	9,5	47,6	33,3	4,04
2	Enhanced my participation in RME activities	0	0	9,5	47,6	42,9	4,8
3	Was very useful for my leaning because it made me self discipline myself	0	0	14,3	52,4	33,3	4,04
4	In general, I think it was positive to develop an e-porfolio for group work in RME	0	0	0	38,1	61,9	4,61
5	Was useful for my learning because it allowed for the group to reflect upon the work that was already done	0	0	4,8	42,9	52,4	4,47
6	Was very useful to support the study of the RME content subjects	0	0	4,8	47,6	47,6	4,42
7	To post the group artifacts in the e-portfolio was very useful because they could always be modified or replaced for new ones more complete and correct	0	0	0	23,8	76,2	4,76
8	To accede at any time to the documents posted in the e-portfolio was very important for my learning	0	0	14,3	38,1	47,6	4,19
9	I don't think it was important to build an e-portfolio with web 2.0 tools for RME	90,5	4,8	0	0	0	1,23
10	To build and manage the group e-portfolio helped me to develop ICT skills	0	4,8	23,8	47,6	38,1	4,23
11	To build a site/portfolio with Web 2.0 tools was difficult	23,8	71,4	0	0	4,8	1,9
12	It was gainful because all group works were organized until the end of the semester	0	0	0	47,6	52,4	4,52
13	To have all artifacts in the e-portfolio was important because we could always see other group works and take new ideas to complete our owns	0	0	14,3	47,6	38,1	4,23
14	To have all artifacts in the e-portfolio was an advantage because we could do group tasks at any time and from any place with internet access.	0	0	4,8	23,8	71,4	4,66
15	Through the feedback provided by the instructor we could understand if our work was concluded	0	0	0	28,6	71,4	4,71
16	The instructors´ comments were a factor of additional motivation	0	0	0	28,6	71,4	4,71
17	The existence of a site for the RME assignment was important because it represented the meeting point of all portfolios	0	0	0	38,1	61,9	4,61
18	To have a site for RME was important because we could always see what other groups were doing and we could share ideas and opinions on artifacts and tasks.	0	4,8	23,8	47,6	38,1	4,23
19	To accede to other group portfolios was important as it enhanced more transparency and fairness in the assessment of the learning activity	0	0	23,8	52,4	23,8	3,8
20	To visualize other group e-portfolios encouraged the group to work more	0	4,8	14,3	61,9	19	3,95

The analysis of data presented in Table 1, shows teachers considered that to build an e-portfolio (with GP &GD) was an easy task (It 1= 4,04, confirmed by negative statement It 11= 1,9); 61,9 % Strongly Agreed it was a *positive idea* (It 4=4,61 confirmed by negative mean on statement It 9=1,23), that enhanced the *participation in RME* pedagogical activities (It 2=4,8, 90,5% of respondents either Agreed or Strongly Agreed).

According to the Web 2.0 philosophy the Web is a platform that allows user productions to be online and available anytime and anywhere. In our study, the e-portfolios were always available and this was a great advantage the respondents recognized and valued as we can verify from the high degrees of agreement on the three statements that evaluated this dimension (It. 8=4,19, It. 13=4,23 and particularly It. 14=4,66). The digital format was also highly valued by respondents as it allowed the group to have all *work organized* along the semester (It 12=4,52), or even to *change* the contributions already posted for new ones (It 7=4,76).

As stated in the theoretical framework, the process of developing e-portfolios in teacher education improves students´ reflective thinking and fosters deep learning. The answers to our questionnaire reinforces this idea; in fact, to develop the e-portfolio in GP & GD allowed to reflect upon the work already done (It. 5=4,47), to change the artifacts for new ones more complete and correct (It.7= 4,76). This reflective practice was very useful as it enhanced *self-discipline* (It. 3=4,04), and supported the *study of the RME contents* (It. 6=4,42). The feedback provided by the instructor (It. 5=4,71 and It. 16=4,71) were highly scored by respondents as important factors that encouraged to improve the quality and cohesion of the artifacts collected in the e-portfolio.

The development of ICT skills (It 10=4,23) was also highlighted by the participants. Nevertheless, the existence of a class website was highly valued as the meeting point of all portfolios (It= 4,61), but participants did not consider that it enhanced more transparency in the assessment of the learning activity (It 19=3,8), nor that it helped groups to share ideas and opinions on the assignments of RME (It 18=3,9).

4.2 The potential of Web 2.0 tools for teaching and learning

15 questionnaire items evaluated the perceptions/opinions of students/teachers on the potential of Web 2.0 tools for teaching and learning. 2 items were negative statements that intended to confirm the internal coherence of participant answers. Table 2 shows results for 21 valid questionnaires.

Nº	I believe Web 2.0 tools…	%					Mean
		SD	D	N A/D	A	SA	
1	Enhance cooperative/ collaborative work	0	0	0	42,9	57,1	4,57
2	Promote learning opportunities that facilitate students' use of technology to learn and to communicate.	0	0	19	52,4	28,6	4,1
3	Promote students participation in the learning process	0	0	9,5	47,6	42,9	4,8
4	Promote critical thinking and enhance the emergence of new ideas	0	0	9,5	47,6	42,0	4,8
5	Increase students´ motivation to learn	0	0	4,8	61,9	33,3	4,28
6	Promote knowledge sharing	0	0	0	28,6	71,4	4,71
7	Develop students technology capabilities important in the information-rich and global society we live in	0	0	4,8	57,1	38,1	4,3
8	If correctly used by teachers´ they can be an excellent strategy in the teaching and learning process	0	0	0	38,1	61,9	4,61

Nº	I believe Web 2.0 tools…	%					Mean
		SD	D	N A/D	A	SA	
9	Demand new technology capabilities and skills in teacher's professional repertoire.	0	0	9,5	38,1	52,4	4,42
10	Are not suitable for cooperative/collaborative work	52,4	47,6	0	0	0	1,47
11	If correctly used can promote collaborative knowledge construction	0	0	0	52,4	47,6	4,47
12	If correctly used they can enhance the emergence of learner centered instructional models	0	0	4,8	61,9	33,3	4,28
13	Enhance peer communication	0	0	9,5	57,1	33,3	4,23
14	I will use these tools in my classroom with my students	0	0	19	47,6	33,3	4,14
15	I don´t believe in the potential of web 2.0 tools in education	85,7	14,3	0	0	0	1,14

The first overall analysis of Table 2 shows that, in most of the statements, participants either *agree* or *strongly agree* on the potential of Web 2.0 tools to teach and learn (all weighted means present over 4, confirmed by the low score on the negative statement of It 15, see last column).

An item by item analysis shows that the participants *strongly agree* that Web 2.0 tools enhance *cooperative/collaborative* work (It 1=4,57, confirmed by negative statement on It 10=1,14), promote *students participation* in the learning process (It 3=4,8), *critical thinking* and the *emergence of new ideas* (It 4=4,8), as well as *knowledge sharing* (It 6, 71,4% SA with statement, mean =4,7), *collaborative knowledge construction* (It 11=4,47) and *peer communication* (It 13=4,23). Considering that most respondents are in service teachers, it is important to verify how participants highly agreed on the potential of Web 2.0 tools to *promote learning opportunities that facilitate students' use of technology to learn and to communicate* (It 2=4,1), to *develop students technological skills* (It 7=4,3), and to *enhance the emergence of learner centered instructional models* (It 12=4,28). Participants also agree with the intention of using Web 2.0 tools in the classroom (It14= 4,14), although recognizing that this demands new teacher roles and *technological skills in a teacher repertoire* (IT 9= 4,42).

4.3 Web 2.0 tools and teacher professional development

According to the European policies, both professional development programs for teachers currently in the classroom and programs for preparing future teachers should provide technology-rich experiences throughout all aspects of the training (Unesco, 2008). In consequence, we were interested in evaluating if the impact of our web based learning strategy with Web 2.0 in teacher´s perceptions and attitudes on professional development. Table 3 presents data obtained.

Nº	The learning experience with Web 2.0 tools…	%					Mean
		SD	D	N A/D	A	SA	
1	Was irrelevant for my professional development	70	20	5	0	5	1,5
2	Opened new ideas for my future teaching activities	0	0	10	50	40	4,3
3	Was very motivating	0	0	15	60	25	4,1
4	It was an added value for my professional education	0	0	10	45	45	4,35
5	I don´t think I will use web 2.0 tools because schools have no conditions	25	50	25	0	0	2

Nº	The learning experience with Web 2.0 tools…	%					Mean
		SD	D	N A/D	A	SA	
6	Web 2.0 tools will help me to prepare more interesting classes for my pupils	0	0	10	55	35	4,25
7	If I have the opportunity I will use these tools in my classes	0	0	0	35	65	4,65
8	With these tools teachers can prepare different and more stimulating learning activities	0	0	0	45	55	4,55
9	It will help me to prepare technology capable students.	0	0	4,8	38,1	57,1	4,52
10	To work with Web 2.0 tools made me like more ICT	0	0	0	33,3	66,7	4,67

According to data, we verify teachers considered that the learning experience was *very motivating* (It 3= 4,1) and *important for professional development* (It 4=4,35, confirmed by the low score in negative statement in It 1= 1,5). They considered it *opened ideas* for more *stimulating* and *interesting* classroom activities (It2=4,3, It 8=4,55 and It6=4,25), and enabled them to prepare *technology competent students* (It 9= 4,52). Besides they agreed that to work with Web 2.0 made them like more ICT (It 10=4,67) and that they intended *to use* technologies in the classroom (It 7= 4,65) if *schools have conditions* (reversed It 5=2).

5. Final Remarks

The use of technologies is the classrooms is a central topic for educational policies in Portugal and so, in the last years, an increasing volume of public funds was invested in the equipment of all public schools with computers and internet access (Alves, 2008). However, recent research shows that although these initiatives have significantly increased the number of "wired" schools across the country educational practices have remained unchanged: teachers continue to teach in traditional ways and students rarely use computers and the internet for learning activities (Gil, 2001; Paiva, 2002; Alves, 2008). In fact, teacher education programs in Portugal often view technology as a subject to be added to the program rather than a tool to be integrated into current curriculum and for changes to occur teachers need to be introduced to innovative learning activities with technologies, then given time to practice and reflect about them (Coutinho, 2005; Coutinho, 2007a).

Teacher preparation and professional development is much more than technology training and so the call to integrate technology into education must be used as a starting point for educators' professional growth (King, 2002; Mayo, Kajs & Tanguna, 2005; Piano, 2007). As teacher educators in a public university we believe traditional educational practices no longer provide prospective teachers with all the necessary skills for teaching students to be responsible citizens of the fast changing learning society we live. As stated in the 2008 Unesco report on *ICT Competence Standards for Teachers*, "professional development programs for teachers currently in the classroom and programs for preparing future teachers should provide technology-rich experiences throughout all aspects of the training" (Unesco, 2008, p. 1).

Web 2.0 technologies offer educators amazing opportunities for creating effective and engaging learning environment for their students. The learning experience we present in this paper intends to sustain the need for new approaches to training both for pre-service and in-service teacher education programs. In fact, our main purpose was to prove that we can effectively teach the necessary subject matter content – in our case the curricular subject "Research Methods in Education" - while incorporating technology concepts and skills. The

enthusiasm maintained by teachers all over the semester, the quality of the e-portfolios developed by groups (Coutinho & Bottentuit Junior, 2008), as well as the feedback obtained on the final online survey, shows that teachers valued the learning experience with Web 2.0 tools and that they have a firm intend of incorporating technologies in their teaching practices.

We hope that the results obtained in our study can be used as a guide by those concerned with education decision-making and teacher professional development in preparing their training curriculum and course offering proposals.

6. Limitations

The number of participants in the study was relatively small and limits the scope of the study. Future research with more participants will certainly lead to more robust results. The course instructor was also the main researcher who constructed and administered the questionnaire, analyzed data and assessed the course artifacts (evaluation of portfolios and course performance).

Follow-up interviews are scheduled for within a year in order to verify if teachers´ intentions to use Web 2.0 tools in their classrooms is (or is not) a reality.

7. References

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