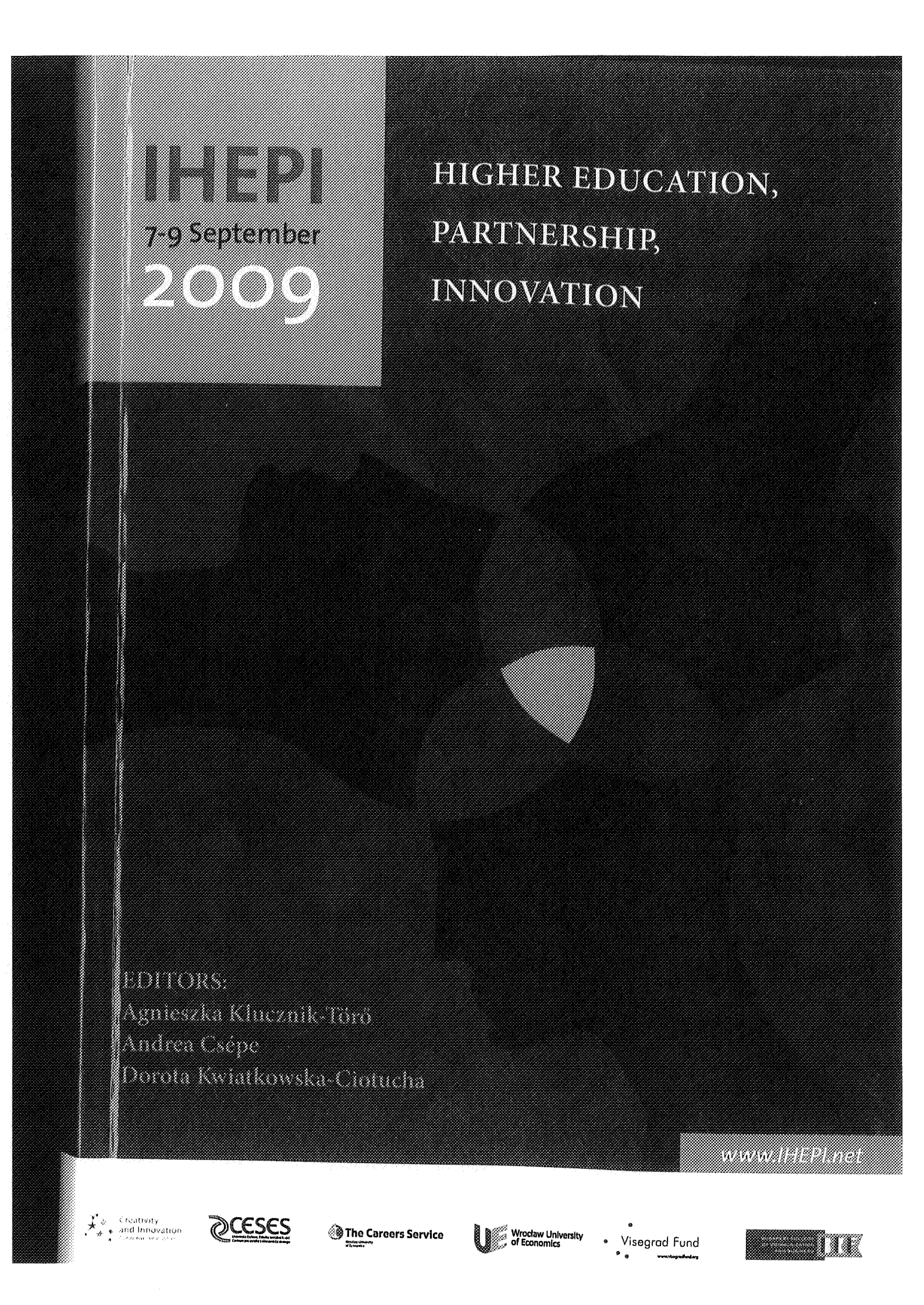
IHEPI

7-9 September

2009

HIGHER EDUCATION, PARTNERSHIP, INNOVATION



EDITORS:
Agnieszka Kluczník-Törő
Andrea Csépe
Dorota Kwiatkowska-Ciotucha

www.IHEPI.net

Creativity and Innovation

CESES

The Careers Service

Wrocław University of Economics

Visegrad Fund

IHEPI
7-9 September
2009

Higher Education, Partnership, Innovation

Budapest, 2009

International Conference and Workshops on Higher Education, Partnership & Innovation Proceedings of the IHEPI2009, Budapest 7-9 September 2009

ISBN: 978-963-88332-5-9

Website: www.ihepi.net

IHEPI2009 was organised by Budapest College of Communication & Business with the support of the Hungarian National Assembly and the financial assistance of the Visegrad Fund.

Partners of the Event: Wroclaw University of Economics, Bureau for Career and Professional Promotion and Charles University in Prague, Centre for Social & Economic Strategy.

Published by Publikon Publishers/IDResearch Ltd.
Cover page: Anna Nagy

Publication of this book is funded from the grant provided by the International Visegrad Fund (Serial Number: 20910117, Project category: Scientific exchange, research)

LIST OF CONTENT

LITERACY 2.0: PREPARING DIGITALLY WISE TEACHERS

Clara P. Coutinho[1], João B. Bottentuit Junior[2]

1. Universidade do Minho, Braga, Portugal, ccoutinho@iep.uminho.pt
2. Universidade do Minho, Braga, Portugal, jbbj@terra.com.br

ABSTRACT

In this paper we present an experience with teachers that used Web 2.0 technologies to develop digital skills and integrate technologies in the curriculum. The theoretical framework sustains the importance of developing technological-pedagogical-content knowledge (TPACK) if we want teachers to use technologies in the classrooms. Recent research shows that teachers' familiarity, confidence and skills in integrating technology into the curriculum are dependent on the type of education programs teachers attend. 21st century citizens need being able to read and write multiple forms of media and integrating them into a meaningful whole: this is the new hallmark of literacy 2.0 that has to be learned in the school classroom. Aware of this context and responsible for preparing digitally wise teachers we implemented a program with service teachers using Web 2.0 tools—blogs, podcasts and GoogleSites. Education programs must prepare teachers' to use technologies in the classroom as cognitive tools that enhance students' learning. For that to happen, teachers must feel at ease to handle technologies in order to design activities that motivate and engage learners in constructivist learning activities. In this article we describe and evaluate the training experience, reflect on the results and discuss guidelines for further research.

1. INTRODUCTION

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 [1]. In Portugal, at varied different levels, educational policies recognize the importance that 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 [2]. Taking these recommendations into account we have developed different learning experiences with Web 2.0 technologies in teacher education programs both at pre-service and post-graduation at the Minho University with promising results [3; 4]. This paper presents another training experience using Blogs, Podcasts and GoogleSites in a group of in-service teachers that attended a compulsory program to certificate pedagogical competencies for teaching K9-12 students.

2. DIGITAL LITERACIES 2.0

According to the Wikipedia, "Digital literacy is the ability to locate, organize, understand, evaluate, and create information using digital technology. It involves a working knowledge of current high-technology, and an understanding of how it can be used. Digitally literate people can communicate and work more efficiently,

especially with those who possess the same knowledge and skills" [5]. Digital Literacy 2.0 refers to the above abilities in the use of Web 2.0 technologies, and, according to [6, p.8] is "the term du jour used to describe the skills, expectations, and perspectives involved in living in a technological society". For [6], the traditional meaning of the term literacy—being able to consume and produce words through reading and writing—has evolved due to the emergence of the Web 2.0 phenomenon: "Because of inexpensive, easy-to-use, widely distributed new media tools, being literate now means being able to read and write a number of new media forms, including sound, graphics, and moving images in addition to text" (ibid). The emergence of the social web demands the development of collaborative and participatory skills for the construction and publication of contents through blogs and social networking tools like MySpace, Google Docs or Youtube, competencies that are crucial for the success of the XXI century citizen: "Being able to actively create rather than just passively consume new media is important for the obvious reason that it teaches literacy and job skills that are highly valued in a digital society" [6, p.9].

In fact, with the change of paradigm from web 1.0 to web 2.0 lots of tools became available online and those tools enabled people to contribute to the construction of knowledge in the global network. According to [7], the "Web is now a participatory, interactive place where we create information collaboratively and share the results. Everyone can participate thanks to social networking and collaborative tools and the abundance of Web sites that allow us to post journals, photos, movies, and more. The Web is no longer a one-way street where someone controls the content. Anyone can control content in a Web 2.0 world".

The generation of our students can be classified as Net generation, Digital Generation, Digital Natives, Zap Generation [8; 9; 10]. As [11, online] say "they are different from any generation before them. They are the first to grow up surrounded by digital media. Computers are everywhere in the home, school, factory, and office".

To teach this new generation of students is a challenge because the teachers are Digital Immigrants and the students Digital natives. According to [8] "digital Immigrants don't believe their students can learn successfully while watching TV or listening to music, because they (the Immigrants) can't." Teachers of the 21st century don't need to be experts in technology but they need to be aware of the potential these tools have to enhance learning, they have to be digitally wise [12]. This means keeping in mind they are responsible to develop students' competencies to find, select and evaluate the best information available online, because the internet is the most efficient way to find information, but there is a lot of low quality contents on the web. It happens due to easiness to create and publish on websites, blogs and internet pages. As stated by [13], 21st century citizens also need being able to read and write multiple forms of media and integrating them into a meaningful whole: this the new hallmark of literacy 2.0 that has to be learned in the school classroom.

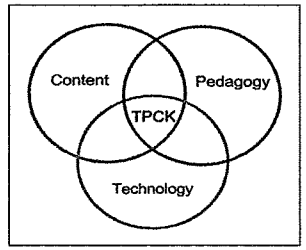
3. A THEORETICAL FRAMEWORK: TPACK

[14] consider that the well succeeded integration of technologies in the classroom context demands from the teacher a set of competences at three levels: scientific/contents, pedagogic and technologic.

For that purpose the authors developed a theoretical model which they named TPCK or TPACK and that, in the opinion of innumerable more current authors, should function as a referential for those who develop training courses for teachers, in particular at the continuous training level, for an effective professional development of teachers. Such as the authors, we considered that the professional development of teachers at the ITC competences domain is common to all other curricular areas, but should show concern with the specificity of each group or disciplinary area, contemplating its singularity. That is, it is not about giving teachers a standardized technological training and focusing on the tools domain/knowledge in itself, but on a modular training put in context and linked to what is the teacher's pedagogic activity and to the age level of the students with who he works with [2].

The TPACK model considers that a complete and advantageous integration of technologies in the teachers' practices depends on the relation of balance that the teacher is able to establish between the scientific knowledge and the domain of contents in that, more or less, specific area of training (C), the pedagogic knowledge (P) at the level of a competence anchored in learning theories and in techniques and didactic-pedagogic methodologies and the technological knowledge (T) he possesses, that is, its domain concerning the tools and other, increasingly available, technological artefacts which he uses (check Figure 1.).

FIGURE 1. TPACK Model



The dynamic articulation between these three components, represented in their intersection point (TPCK) is, therefore, essential so that it is possible to reach the level of highly competent teacher which is, more often, required for a school adapted to the society of knowledge. In the same way that TPACK is the knowledge which results from the competences that the teacher has at the scientific, pedagogic and technologic level, he understands and integrates, in a certain way, three particular aspects of that knowledge, which are represented in the scheme, by three other intersections:

- PCK (Pedagogical Content Knowledge): as to do with the way to teach a certain curricular content.

- TCK (Technological Content Knowledge): to know how to select and use technologies adequate to a certain curricular content.
- TPC (Technological Pedagogical Knowledge): how to integrate technologies in the teaching and learning process.

All and each of this knowledge forms are moulded by a myriad of contextual factors such as culture, the teachers training and the school organization itself [15]. Therefore, the TPACK use, in practical terms, is a complex process which is not easily applied, learned or taught. However, and in the measure in which it is a form of professional development, it takes place throughout time, fruit of the teacher's professional experience and, in that sense, many authors study forms of helping teachers to build and use TPACK. [14] tested a learning-by-design collaborative model with teachers and specialists, for curricular units planning, verifying the TPACK construction, but in very diverse forms. [16] defend an approach cantered on contents, in which technologies support teaching strategies moulded by trainers for trainees. [17] and [18] suggest that TPACK can be developed when technologies are the focus of reflexive investigation-action strategies by teachers undergoing training. Such as [19] we believe that an environment favourable to the construction of that important professional knowledge, should involve teachers in the development/planning of learning strategies which involve ICT's, in an interaction process with the trainer and the pairs, in which it is given to the trainee time to reflect and justify the options made in pedagogic and technologic terms and experiment the new methodologies in classroom context. It is an interactive and gradual process, in which the teacher appropriates progressively the new knowledge and skills in order to later implement them in the classroom and verify its efficacy in terms of communication dynamics occurred in the teaching and learning process.

4. METHOD

The descriptive survey [20] we present in this paper was developed in school year 2008/09 and enrolled a group of teachers who attended a program on Educational Technology as part of a compulsory professional development program in education. ET is a 3 hours/week class that aims to prepare teachers to integrate technologies in the curriculum. During eight weeks, teachers created a blog for classroom activities where they posted summaries of course readings, images, videos and podcasts that were produced using Audacity software. GoogleSites was also used to create a WebQuest for classroom use.

A final electronic questionnaire was administrated to participants. It was developed by the authors upon a similar questionnaire used in previous studies [21; 22; 23]. It consisted of 21 questions organized according to five categories of dimensions:

1. Personal data (dichotomy/multiple choice): gender, age, professional experience.
2. Acknowledgement of the Web 2.0 concept (dichotomy Y/N).
3. Familiarity with Web 2.0 tools/services (multiple choices: I know/I use for personal purposes/I use in the classroom).

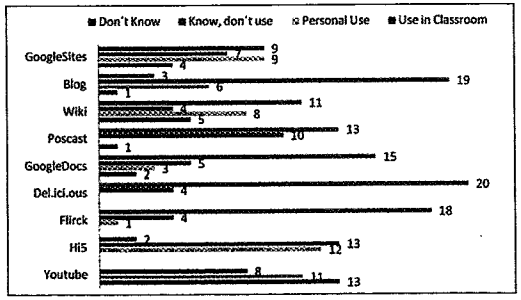
4. Opinion on the educational value of the Web 2.0 technologies experienced in the course activities: blog, podcast and GoogleSites (Multiple choice; open-ended).
5. Opinion on the course for professional development (5 points Likert Scale of agreement: Strongly agreé/Agree/Neither agree nor disagree/Disagree/Strongly Disagree).

28 teachers participated in the study. As to gender 8 were male and 20 female; 68% had ages between 31-40 years old, 20% more than 40 years old and only 10% less than 30. All teached at intermediary and secondary schools (K9-12) around the district. Most teached the curricular areas of Economy (72%) or Mathematics (28%). As to awareness of the emergency of the Web 2.0 paradigm before attending the course 55% answered negatively. However, 27% had already built a personal webpage, and three had a personal blog. In summary, we had a group of teachers with very different profiles regarding previous acknowledgement with technologies in particular with Web 2.0 technologies.

5. RESULTS

The first question of the questionnaire asked: *What Web 2.0 technologies did you know, know but did not use, used for personal purposes or used in the classroom?* Teachers had to choose one option for each Web 2.0 tool. Results are shown in Figure 1.

FIGURE 1. Teachers acknowledgement and use of Web 2.0 technologies



We can verify that Del.ici.ous and Flirck are the Web 2.0 tools that teachers are more unfamiliar with, and blogs, Hi5 and Youtube the tools teachers better know, although most do not use them. For personal use, Hi5 and Youtube are the most referred tools. As to classroom use, most Web 2.0 technologies are either never or scarcely used by participants; Youtube (n=13), Wiki (n=5) and GoogleSites (n=4) are the most used for classroom settings. However, this does not mean that teachers use these tools in the classroom as cognitive tools; previous studies [24; 25] show that Youtube is used in the classroom to present videos and Wikipedia as a source of information, but not for classroom activities that enrol students in learner centred activities where knowledge is shared and constructed. [26] sintethizes the several forms in which technologies can be used as cognitive tools: a) to support the construction of knowledge (representing the ideas in conceptual maps or conceiving multimedia products), b) to support

the exploration through access to the information and the comparison of different perspectives, c) to support learning through practice, such as when it occurs in the simulations, d) to support learning through conversation (collaborating with others, discussing and defending ideas), e) to support learning through reflexion [26]. Next questionnaire section asked for an opinion on the educational value of each of the Web 2.0 technologies experienced in the course activities: blog, podcast and GoogleSites.

5.1. Blogs

Do you believe in the potential of blogs for teaching and learning? At what levels?

All teachers said they agreed that blogs were powerful tools for learning. The most pointed out reasons for using blogs in teaching and learning were: i) blogs increase motivation, ii) more communication inside and outside the classroom, iii) easiness to use, create and leave comments, iv) ideal as space for classroom debate, v) a space to leave actualised information, vi) a different way to teach the curricular subjects and vii) a space for knowledge sharing.

Do you intend to use this tool for classroom activities? What about pedagogical purposes?

Again 89% teachers answered positively (1 teacher said "No", and 2 teachers said they were already using blogs in the classroom). As to pedagogical purposes for using blogs, teachers said they would use the tool: i) as a portfolio, for students to leave the work develop all year around, ii) To communicate with the students, iii) To post films, news, texts and classroom resources, iv) To diversify pedagogical methods, v) To teach and explain the program topics.

Do you intend that your students to create and manage their own blogs?

26 teachers answered the question: 25 said "Yes" and one answered "I'll try". It was important to verify that teachers intended to encourage their students to create and manage blogs for classroom activities. According to the literature, the innovative nature of the pedagogical practices with ICT if not accompanied by training actions that can stimulate a practical and reflective practice among teachers, does not have, by itself, the capacity to operate great changes in the teacher's pedagogical practices [27]. It is important to invest in training models which allow teachers to use and create digital learning resources, to share problems and to explore new projects with their peers before they try them with their students [28].

5.2. Podcasts

The creation of podcast was considered difficult for 56% of the participants. However only 3 teachers said they did not believe in the potential of the tool for educational purposes. As to reasons pointed out in favour of the educational use of podcast, teachers argued:

- *It is a new and innovative way to communicate with students.* (T3)
- *To give students summaries of the main topics.* (T10)
- *It allows students to listen to the teacher anytime and anywhere.* (T12)
- *Students like MP3 and MP4, so why not to allow them to download contents?* (T14)
- *It allows a different way to learn the curricular topics.* (T17)

- *It enhances learning specially when we associate image and sound.* (T23)
- *It works like music for students.* (T27)

Asked if they intended to use the tool in the classroom activities, only 11 teachers answered "Yes". However, most teachers had not yet an idea of how to explore the tool in the classroom; 2 said they could create a podcast to explain the main topics of the subject, and 1 said he would use it to train reading competencies. Finally when asked if they intended to let stimulate students to create podcast, 55% said they would, although many admitted still having difficulties in handling the tool.

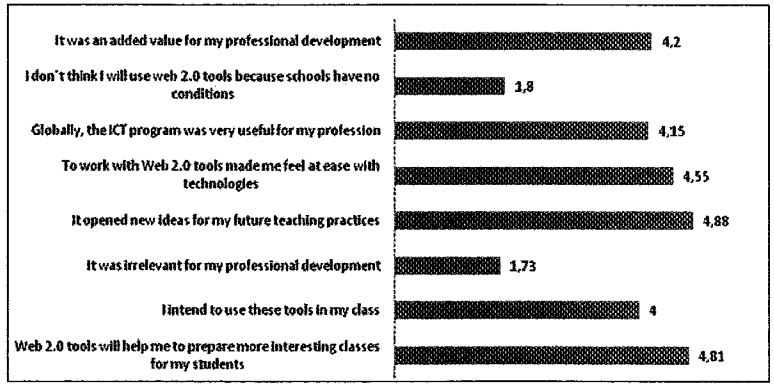
5.3. GoogleSites

73% of participants said they had no difficulties in using the tool. Two teachers pointed out technical limitations of the tool that did not allow the construction of personalized websites like those built with Frontpage or Dreamweaver. As to classroom use, only 55% of respondents intended to use GoogleSites for pedagogical purposes, to create course and/or class websites (n=6), to create Webquests (n=6), for the development of collaborative work (n=2), and even as an individual portfolio (n=2).

5.4. The impact of ICT in teachers' professional development

Figure 2 shows the results of the 8 items that evaluated the importance of the learning experience with Web 2.0 technologies in teachers' professional development program. Data are presented in values of 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.

FIGURE 2. The importance of Web 2.0 tools experience in the training program



The first overall remark is that teachers' expressed a very positive response set regarding the learning experience of using Web 2.0 in their professional development program (all positive agreements over 4 and the negative one above 2). In fact,

teachers' recognized that the program was very useful for the profession (It3=4,15), because working with Web 2.0 tools opened new ideas for teaching practices (It7=4,8) and helped to prepare more interesting classes for the students (It9=4,79). Teachers recognize that the learning experience was an added value to their professional development (It1=4,2, confirmed by negative value in It6=1,73) and that they intended to use Web 2.0 tools in the classroom (It4=4, confirmed by negative value in It2=1,8).

6. CONCLUSIONS

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 [29; 30]. 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 "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" [31, 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 teacher education programs. In fact, our main purpose was to show that if we want teachers to use technologies in the classroom we need to give them the opportunity to use the technologies to create educational resources/artefacts for the real classroom students. The enthusiasm maintained by teachers all over the course, the quality of the artefacts developed 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.

ACKNOWLEDGEMENTS

This paper presentation was financed by CIED, Minho University, Braga, Portugal

REFERENCES

[1] UNESCO (2008). ICT competency standards for teachers. Paris: United Nations Educational, Scientific and Cultural Organization. Retrieved the 7th March 2009 from http://unesdoc.unesco.org/images/0015/001562/156209E.pdf

[2] AA.VV. (2008). Competencias TIC: estudo de implementação Vol I. GEPE – Ministério da Educação. Available http://www.escola.gov.pt/projectos_ctic_documentos.asp

[3] Coutinho, C. P. (2008). Web 2.0 tools in pre-service teacher education Programs: an example from Portugal. In D. Remenyi (Ed), The Proceedings of the 7th European Conference on e-Learning. Reading, UK: Academic Publishing Limited, pp. 239-245.

[4] Coutinho, C. P. (2009). Web 2.0 Technologies as cognitive tools: preparing future K-12 Teachers. In I. Gibson (ed.). Proceedings of the 20th International Conference of the Society for Information Technology and Teacher Education, SITE 2009, pp.3112-3119.

[5] Wikipedia http://en.wikipedia.org/wiki/Digital_literacy

[6] Ohler, J. (2009). Orchestrating the Media Collage. Educational Leadership, Vol 66 (6), March, pp. 8-13.

[7] Solomon, G.; Schrum, L. (2007). Web 2.0: New Tools, New Schools. International Society for Technology in Education. Available at: http://www.iste.org/source/orders/excerpts/newtoo.pdf.

[8] Prensky, M. (2001). Digital native, digital immigrants. On the horizon, 9 (5): 1-6.

[9] D'Eça, T. (1998). NetAprendizagem: a internet na educação. Porto: Porto Editora

[10] Veen, W.; Vrakking, B. (2009). Homo zappiens: educando na era digital. Porto Alegre: Artmed.

[11] González Lima, L. P. (2001) Characteristics of the XXI Century students: Challenges of the teachers from the last century Revista Razon Y Palabra. Available at: http://www.razonypalabra.org.mx/anteriores/n24/24_llima.html

[12] Prensky, M. (2009). H. Sapiens Digital: From Digital Imigrants and Digital Natives to Digital Wisdom. Innovate, Vol 5, Febuary/March. Available http://innovateonline.info/index.php?view=article&id=705&action=login.

[13] Pitner, S. (2009). Digital literacy 2.0 and media collage: integrating multiple forms of sound, graphics, and images. Available http://medialiteracy.suite101.com/article.cfm/digital_literacy_20_and_media_collage

[14] Koehler, M.J., & Mishra, P. (2008). Introducing TPCK. AACTE Committee on Innovation and Technology (Ed.), The handbook of technological pedagogical content knowledge (TPCK) for educators (pp. 3-29). Mahwah, NJ: Lawrence Erlbaum Associates.

[15] Harris, J.; Hofer, M. (2009). Instructional Planning Activity Rypes as Vehicles for Curriculum-Based TPACK development. Proceedings of the 20th International Conference of the Society for Information Technology and Teacher Education, SITE 2009, pp. 4087-4094.

[16] Mishra, P. & Koelher,M. J. (2006). Technological, Pedagogical Content Knowledge: A new Framework for Teacher Knowledge. Teachers College Record, 108 (6), pp. 1017-1054.

[17] Niess, M. L. (2005). Preparing Teachers to teach science and Mathematics with Technology. Teaching and Teacher Education, 21, pp. 509-523.

[18] Dawson, K. (2007). The role of teacher inquiry in helping prospective teachers untangle the complexities of technlogy use in classrooms. Journal of Computing in Teacher Education, 24(1), pp. 5-14.

[19] Pierson, M. (2008). Teacher candidates reflect together on their own development of TPCK: edited teaching videos as data for inquiry. In K. McFerrin et al (eds.), Proceedings of SITE 2008, pp. 5305-5309. Chesapeake, VA: AACE.

[20] Babbie, E. (1997) Survey Research Methods. (2Ş Ed). Belmont, California: Wadsworth Publishing Company.

[21] Coutinho, C. P.; Bottentuit Junior, J. B. (2008). Web 2.0 in Portuguese Academic Community: An Exploratory Survey. In McFerrin, K, Weber, R., Carslen, R. & Willis, A. (eds),Proceedings of the 19th International Conference of the Society for Information Technology & Teacher Education, (SITE 2008), pp.1992-1999.ISBN1-880094-64-9.

[22] Coutinho, C. P. (2007). Infusing technology in pre service teacher education programs in Portugal: an experience with weblogs. In R. Craslen et al (Eds.). Proceedings of the 18th International Conference of the Society for Information Technology & Teacher Education, SITE 2007. Chesapeake, VA: AACE, pp. 2027-2034.

[23] Coutinho, C. P.; Bottentuit Junior, J. B. (2007a) Collaborative Learning Using Wiki: A Pilot Study With Master Students In Educational Technology In Portugal. Proceedings ED-MEDIA 2008. Vancouver, Canadá. pp. 1786–1791.

[24] Coutinho, C. P.; Bottentuit Junior, J. B. (2007b). Blog e Wiki: os futuros professores e as ferramentas da Web 2.0. Proceedings of the 9th Simpósio Internacional de Informática Educativa, November 2007, Porto, Portugal.

[25] Costa, et al. (2009). Conhecer e utilizar a Web 2.0: um estudo com professores de 2Ş e 3Ş Ciclo. (In press)

[26] Jonassen, D. H. (2007). Computadores, Ferramentas Cognitivas - Desenvolver o pensamento crítico nas escolas. Porto: Porto Editora.

[27] Austin, D. (2004). New Literacies: Are Colorado Teacher Education Programs Preparing Pre-Service Teachers to Use Technology in Their Learning.

[28] Baylor, A. L. & Ritchie, D. (2002). What factors facilitate teacher skill, teacher morale, and perceived student learning in technology-using classrooms? Computers and Education, Vol 39 (4), pp. 395-414.

[29] Mayo, N., Kajs, L. & Tanguna, J. (2005). Longitudinal Study of Technology Training to prepare future teachers. Educational Research Quartely, 29 (1), pp. 3-15.

[30] King, K. (2002). Educational Technology professional development as transformative learning opportunities. Computers & Education, 39, pp. 283-297.