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Training Teachers with a Virtual Learning Community: Connecting Peers with an International Dimension

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Abstract. Here we present research into the use of a virtual learning community in formal teacher training to determine the associated pedagogical benefits. The community was used by 876 teacher candidates, graduate teachers and university teachers from Spain, Chile and Belgium. Using it resulted in benefits relating to the transfer of knowledge and pedagogical experiences, cooperative and collaborative work, teacher coordination and contextual diversity, and it has been highly valued by the participants.

Keywords: *virtual learning community; virtual professional community; teacher training; professional development; wikis.*

1. Introduction

The use of Web 2.0 tools for teaching is especially useful in university contexts because they improve teaching-learning processes in higher education (Hughes & Narayan 2009) and foster digital competence (Greenhow, Robelia & Hughes, 2009). In particular, online collaborative tools can become virtual learning communities whereby participants can collaborate to create knowledge and share information (Sloep & Berlanga, 2011) and teaching methods, issues that are of particular interest in teacher training (Rolando, Salvador, Silva & Luz, 2014) and teacher professional development (Kao, Wu & Tsai,

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2011). These strategies form part of today's contemporary socio-constructivist research perspective (Singer & Moscovici, 2008), bearing in mind that students play an important part in their own learning through constructive processes (Wheeler & Wheeler, 2009).

The wiki stands out as a virtual learning community because it can become a knowledge repository (Duffy & Bruns, 2006) that encourages the exchange of documents, thoughts and experiences and the coordination of activities, aspects of great benefit in learning and teaching (Boud & Falchikov, 2007). Another strength is its collaborative dimension (Fayne, 2014), which allows large amounts of information to be organized, and open access limited to participants accepted by the administrator. Wikis also enable virtual learning communities to be created for members with similar interests (Hutchison & Colwell, 2012). They are a user-friendly resource (McLean & Rowsell, 2013) widely used in educational contexts (Parker & Chao, 2007), with a high pedagogical and didactic value (Biasutti & El-Deghaidi, 2012). These features make using wikis highly attractive, particularly in teacher training (Wheeler & Wheeler, 2009). For all the above reasons a wiki was selected as the instrument with which to set up a virtual learning community for teacher training, and also because one of the particularities of this tool is that it allows participating teachers to access the platform during different stages of their studies and professional careers, an aspect that promotes professional development (Blamires, 2015).

1.1. An international and multicultural dimension for students and teachers

The virtual learning community was set up in 2012, the aim being to investigate its usefulness as a knowledge-boosting resource in initial teacher training. It needed to facilitate an exchange of relevant information added by and for teachers, thereby making it possible to transfer academic knowledge to school even after participants had left university. International and intercultural dimensions were included in the design of the research so as to connect peers from different countries and diverse professional contexts, aspects of great interest in teacher training (Kobayashi, 2012; Santos, Lorenzo & Priegue, 2013), and satisfy the need to provide opportunities for teachers to learn in diverse multicultural contexts (Santoro, 2009) as it provides legitimization of diversity (Bakhov, 2015), and remain sensitive to diversity (Walters, Garii & Walter, 2009).

Firstly, the virtual learning community opened up a connection between students and teachers from the University of Castilla-La Mancha's (UCLM, Spain) Faculties of Education in Ciudad Real and Toledo. Its international dimension was developed when students from the Faculty of Education at the Pontifical Catholic University of Chile (PUC) joined the platform in 2012. Thus two student populations (PUC and UCLM) that were geographically far apart but united by a common mother tongue (Spanish) used the virtual learning community in teacher training. The community structure was set up to facilitate the teaching-learning process for students and teachers from Chile and Spain, to increase their chances of acquiring theoretical-practical knowledge and to improve teaching coordination. In 2014 students from the Faculty of Education at KaHo Sint-

Lieven (Odisee University, FEOU) in Sint-Niklaas (Belgium) joined the platform. Hence the participants, who from this point were students and teachers from Europe, South America, Africa and Oceania, had to use English as a common language.

The virtual learning community had to enable the greatest possible flow of information, knowledge and experience between all the participants in the investigation – students/teacher candidates, graduate teachers in continuous training and university teachers. For the three participating universities, the subjects involved were those related to science education (including final degree projects) and the in-service training period.

1.2. Research questions

The aim of the study was to analyse the use of this wiki-based virtual learning community in teacher training, in line with the following research questions:

a) What are the pedagogical benefits of using a virtual learning community that covers various academic contexts from different countries?

b) How do students perceive the utility of this virtual learning community?

2. Methodology

2.1. Participants

The sampling method was intentional non-probabilistic. The participants were 876 subjects, mainly teacher candidates (Table 1).

Table 1. **Description of the sample**

	Profile	**Un University**
Distribution (n = 876)	Teacher candidates: 88.59 % Graduate teachers (in continuous teacher training and mentor teachers): 9.36 %	UCLM: 94.17 % PUC: 4.31 % FEOU: 1.52 %
	University teachers: 2.05 %	UCLM: 44.44 % PUC: 44.44 % FEOU: 11.12 %

The UCLM participants were all from Spain, the PUC participants were all Chilean, and the FEOU contingent was made up of university teachers from Belgium and students from Northern Ireland, Cameroon, Lesotho, Zimbabwe and Vanuatu, following different Erasmus programs. The FEOU participants comprised only a small group as they belonged to programs with very stringent requirements, but they took an active part in the virtual learning community, making contributions and extracting information about supervised teaching practice in primary schools.

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2.2. The AulaCiencia virtual learning community

A multiple case study was carried out using a mixed method that makes it possible to analyse diverse quantitative and qualitative data (Gay, Mills & Airasian, 2006) due to the particular characteristics of each population and university context.

The virtual learning community was set up using a wiki and given the name AulaCiencia. It was located on the *Wikispaces* website (http://aulaciencia.wikispaces.com/Inicio). When setting up the AulaCiencia virtual learning community, general recommendations about virtual tools (Parker & Chao, 2007; Wheeler, Yeomans & Wheeler, 2008) and virtual learning communities (Darling-Hammond et al., 2005) were reviewed, taking into account the advantages of including different populations of participants belonging to the same professional field to boost information flows.

Workshops were held from the onset and, considering the results obtained by Kao, Wu and Tsai (2011), we aimed to boost motivation and stronger beliefs in the benefits of using the virtual learning community in the users' learning processes. The university teachers also set up a tutoring process to allow the students' time to be spent mainly on new learning (Hepburn, 2005).

The virtual learning community's structure was dynamic depending on the requirements of the context, since student populations from different countries and contexts were gradually being incorporated. Different spaces aimed at teacher candidates in nursery and primary education were set up. In each space the information was structured according to its typology, differentiating between materials from different scientific fields, didactic materials, and a specific space for the final degree project linked to the science education area, which provided relevant information and a bibliography section with references relating to the teachers' professional competences. Another space was set aside to allow participants to add links to websites with didactic resources set up by students and to education networks and websites of interest.

As regards in-service training, a specific space on the platform was made available because these virtual spaces in in-service contexts have great didactic potential (Rolando et al., 2014). Many of the students were doing in-service during the research period, and this enriched the virtual learning community through the incorporation of knowledge generated from classroom practice involving students and mentor teachers from the primary schools. Recent graduates who were looking for work and teachers who already worked as teachers also joined the virtual learning community.

The community was used as a part of teacher planning, considering the constructivist methodological approach to the teaching-learning of the subjects. It was provided with a welcome page giving information about the participating institutions from different countries (Figure 1) in line with recommendations made by Craft (2011), who highlights the importance of including the social dimension of the different educational contexts and cultural, social and individual diversity, and suggestions by Kudinovienė

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and Simanavičius (2015), who stress the significance of considering ethnic and national identities in education.

Fig. 1. *AulaCiencia virtual learning community home page*

2.3. Data analysis

We triangulated five types of data over three years (March 2012–March 2015):

a) Written contributions to the virtual learning community. We analysed written entries in AulaCiencia, categorizing them according to 1) the collective making the contribution, 2) whether the material was created by the participant or came from outside sources, 3) the type of contribution (links to websites, files, text, images, videos and other documents), and 4) whether they were materials of didactic application or contributions within the theoretical framework of the subjects involved.

b) Identification of the different types of interaction between participants in the wiki.

c) Evaluations by teaching staff regarding 1) the use of material extracted from the AulaCiencia platform in the students' reports in the subjects involved, as students were encouraged to cite AulaCiencia in those cases when they used it as source of knowledge, 2) the variety of resources shared in AulaCiencia, 3) whether there was an improvement in teaching material through the use of the platform, and 4) the utility of the platform for teaching coordination.

d) Student satisfaction regarding the use of the virtual learning community. To this end a validated online satisfaction scale was applied to a sample of 554 teacher candidates, chosen at random and distributed proportionally among the participating universities.

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The satisfaction scale (Table 2) is made up of 8 items, each with 6 answers on a Likert scale. The aim of this was to find out the students' perception of the general utility of the platform (item 1), the degree of motivation regarding its use (item 2), the contributions to the development of the subjects involved (items 3 and 4), the students' valuation of the international and multicultural dimension (item 5), and their perception of the importance of AulaCiencia as a learning and professional network (items 6, 7 and 8).

Table 2. **Satisfaction scale for scoring the AulaCiencia virtual learning community**

Score, from 0 to 5, the following aspects relating to the AulaCiencia virtual learning community, where 0 means that you absolutely disagree and 5 means that you absolutely agree.
1. The AulaCiencia virtual learning community will be useful to me in the future exercise of the teaching profession. 0 1 2 3 4 5.
2. I am very motivated when I learn through AulaCiencia. 0 1 2 3 4 5.
3. The information contained in the AulaCiencia virtual learning community contributes positively to the development of science education subjects and the final degree project. 0 1 2 3 4 5.
4. The use of the AulaCiencia virtual learning community contributes positively to the development of the in-service training period. 0 1 2 3 4 5.
5. I positively value the international and multicultural network of the AulaCiencia virtual learning community. 0 1 2 3 4 5.
6. I positively value the virtual learning community's contributions to the idea of sharing information as a learning network. 0 1 2 3 4 5.
7. I positively value the way the AulaCiencia virtual learning community makes it possible to open up knowledge to other members of the education community with no formal ties to the UCLM (primary school teachers, teachers and students from other universities, etc.). 0 1 2 3 4 5.
8. I consider that the AulaCiencia virtual learning community should be made more widely available in the education community. 0 1 2 3 4 5.

The scale was pre-validated by a panel of four experts in the areas of science education and general didactics, who confirmed the suitability and relevance of the items, the instrument's clarity and user-friendliness. The instrument was applied for validation to a random sample (teacher candidates, $N = 130$) during 2012. The number of responses used for the validation is higher than the minimum 10 subjects per item recommended by Thorndike (1982). Responses that were incomplete or invalid were discarded. A bivariate Pearson correlation analysis indicated the appropriateness of maintaining the 8 initial items. The Kaiser-Meyer-Olkin test of sampling adequacy (.894) and Bartlett's test of sphericity ($\chi^2 = 562.253$, $p < 0.001$, degree of freedom = 28) indicated the appropriateness of carrying out an exploratory factor analysis. This was done using the principal component method and a varimax rotation. The result pointed to the existence of a single dimension grouping together the 8 items on the scale. Finally, the scale's reliability also tested satisfactory (Cronbach's alpha .901). These results allow us to consider it a valid instrument.

e) Student motivation. We encouraged the students to include comments in their reports in the different subjects regarding which aspects of the platform were motivating.

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3. Results

3.1. Written contributions in the AulaCiencia virtual learning community

During the three years analysed, the virtual learning community registered over 3,100 actions (in addition to simple visits) by participants other than the administrator. Of these, 1,326 entries were recorded: 76.1 % from teacher candidates, 6.9% from graduate teachers and 17 % from university teachers. Of the total entries recorded, 66.3% were materials produced by participants and 33.7 % extracted from external sources. An analysis of the contributions revealed six different typologies: links to websites (36.2 %), files (30.7 %), text (29.9 %), images (2.9 %) and videos and other documents (less than 1 %). As regards the types of link (N = 478), these were categorized as leading to websites with teaching resources for nursery and primary education (43.7 %), to scientific information or university websites (12.6 %), YouTube (13.2 %), pages within the AulaCiencia virtual learning community (12.4 %), institutions (10.0 %), social networks (2.3 %), non-governmental organizations (1.4 %), magazines and newspapers (3.6 %) and SlideShare presentations (0.8 %). Finally, of the 1,326 recorded contributions that included materials, 51.6 % were for teaching applications while the rest (48.4 %) were contributions of theory within the framework of the subjects for which the platform was used.

3.2. Types of interaction between participants in the wiki

Two types of interaction have been recorded in the wiki: a) cooperative, with the participants being consumers and/or producers of knowledge on an individual level, and b) collaborative, in which knowledge was generated jointly between two or more participants.

3.3. Evaluations by teaching staff

The university teachers' experience shows the overall satisfaction of the teaching community involved, supported by four criteria:

1) Work done by students that exceeded the teaching staff's expectations. These results were obtained from the validation of the contributions made by teacher candidates and graduate teachers, comments in reply to peers and comments made in class about information extracted from the platform. In particular, the virtual learning community was used as a source for bibliographical references, since a total de 401 students of the different subjects involved cited AulaCiencia as a source from which they had extracted information in order to carry out their work. 72.6 % of this use of AulaCiencia as a source of knowledge corresponds to the period 2014–2015, because by then it already had a great many resources available.

2) The wide range of types of information handled (see Section 3.1). As regards science subjects, the formal and non-formal resources provided by participants (links to museums, nature centres, etc.) both individually and collaboratively provided a more holistic dimension of science teaching, highly recommended in these areas (Czerniak, 2013).

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3) The improvement in teaching material after it was shared with other teachers. In particular, the teaching material corresponding to in-service and science education was improved over the three years of the research through the use of the platform to share references and didactic strategies that enhanced the quality of the teaching practice.

4) The usefulness of the virtual learning community in coordinating and improving teaching, since during the in-service training period, the platform provided mentors with all the materials from the faculties and a common virtual space to share ideas and give feedback to university teachers.

3.4. Results of the satisfaction scale

The results show a high degree of student satisfaction overall, with 3.93 being the average value obtained in the 8 items making up the scale. The degree of satisfaction for each separate item was calculated (see Table 3) and associated with each aspect considered in the satisfaction scale (Table 4).

Table 3. **Results from the application of the satisfaction scale**

	Average	Standard deviation
Item 1	3.76	1.019
Item 2	3.89	0.935
Item 3	3.82	0.969
Item 4	3.79	1.006
Item 5	4.00	1.068
Item 6	4.08	0.935
Item 7	4.10	0.932
Item 8	4.06	1.022

Table 4. **Students' satisfaction with the AulaCiencia virtual learning community**

Aspects assessed	Related items	% of positive responses (value> = 3)
Future utility in teaching	1	89.20
Motivation	2	92.10
Contribution to the development of the subjects involved.	3, 4	90.95
International and multicultural dimension.	5	91.00
Contribution as a learning and professional network.	6, 7, 8	94.13

If we focus on the last three values on the Likert scale, i.e. those considered to be positive (3, 4 and 5) (Figure 2), 89.2 % of respondents approve the virtual learning community as a general didactics resource and believe that the information available on it will be useful as regards their future careers. Over 92 % say they become motivated when using

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the tool. More than 90 % consider the tool to be useful as academic assistance in the subjects involved. Again more than 90 % acknowledge the platform's international and multicultural component. Finally, 95 % believe that the virtual learning community has the potential to open up knowledge to other members of the education community with no formal connections to university, 94.3 % see AulaCiencia as an effective learning network and 93.1 % think it is important for it to be rolled out across the education community.

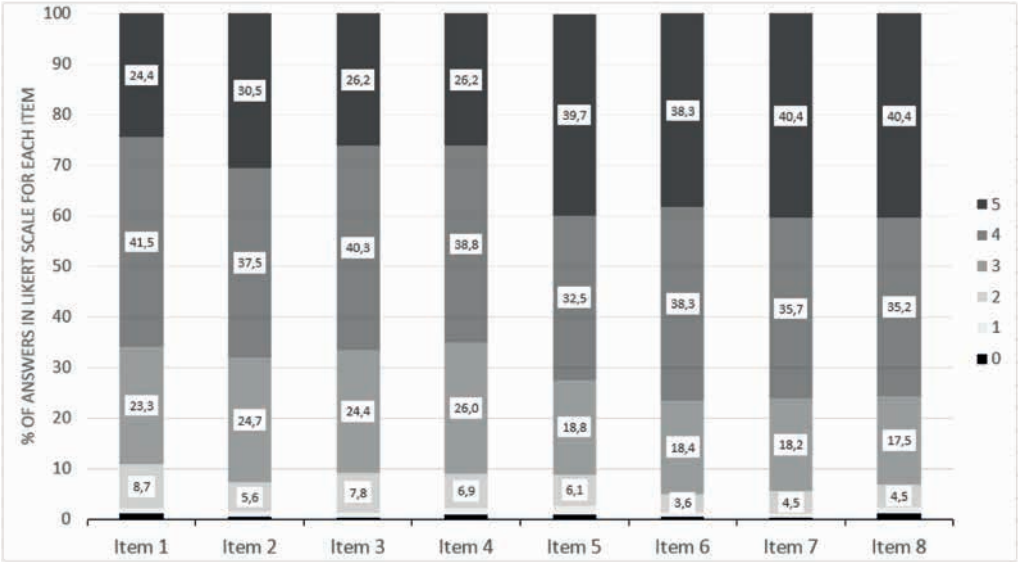

Fig. 2. *Results for each item on the scale (n = 554)*

3.5. Students' main motivations

A high percentage (84.0 %) of the 307 responses on this subject cited its international dimension as the main motivation to use the platform. They also highlighted the opportunity of sharing information and didactic materials (67.1 %) and the fact that they used materials from AulaCiencia shared by peers as they were previously validated by teaching staff (62.9 %) and they therefore trusted them. A high percentage (58.9 %) also cited having contact with someone with wider teaching experience as a motivating aspect.

4. Discussion

Virtual platforms do not in themselves facilitate the transfer of knowledge because, for this to come about, their use must be accompanied by the right didactic conditions (Hou, 2015). In the case of the AulaCiencia virtual learning community, these conditions are

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achieved by structuring the platform according to different fields of science education, a design that allowed a heavy flow of information and resources to pass multidirectionally between users. This made it possible to transfer interdisciplinary and applied knowledge between teachers and students from different education contexts and countries. This led students to perceive the platform as a useful learning space for their training as teachers, as the research results reveal.

The resources that the students incorporated into the virtual learning community are aimed mainly at teaching rather than social interaction and come from formal and non-formal education. We agree with Greenhow and Robelia (2009) and Rolando et al. (2014) that these aspects give the platform an important educational potential. It is notable that there is a varied range of resources, such as a repository of didactic instruments, professional development experiences and the generation of new knowledge, which stem from a relation with didactic practice and an exchange of pedagogical and disciplinary information.

It is important that it was the university teachers themselves that validated the materials contributed because this generated a climate of trust that the students found motivating and which is related to the high level of participation since it guaranteed the quality of the information. This can be seen from the reports made by student 249 ("I used bibliographical references for the final degree project because they were supervised") and student 436 ("I found that using AulaCiencia motivated me because the didactic materials I've used for in-service had already been corrected by the teachers"). This means added value because today there is a growing market for buying and selling teaching resources and materials and this encourages the commercial use of virtual spaces, as can be seen in the *Wikispaces* platform itself[1]. In this case the participants have free access to the materials generated and shared by and for teachers and which are only available on this platform. All this explains the high scores that students give to the learning and professional dimensions of the platform on the satisfaction scale, a premise that usually indicates that they will adopt this type of resource as their own (Norman & Schmidt, 2000).

A detailed analysis of the materials and the didactic use of the virtual community reveals a transformation of the roles that traditionally exist between teacher and student (Wheeler, 2010) into something more egalitarian, an aspect directly related to becoming an active learner (Le Cornu & Ewing, 2008). Hierarchical learning has been replaced by more autonomous learning, associated with the provision of didactic and disciplinary materials which turned the participants into both producers and consumers of these materials.

[1] Commercial use of resources on wiki platforms. Retrieved from: http://blog.wikispaces.com/2015/03/get-in-early-to-sell-your-teaching-materials-to-over-6-7-million-teachers.html.

Another useful training component open to the virtual learning community is in-service. Almost two-thirds of the entries recorded are contributions designed by the participants, while a third is material generated by other authors. Over half the entries are aimed specifically towards in-service in primary schools because many of the participants were doing guided practice with children. Materials created and shared for collective use revealed the usefulness of the virtual learning community for both the in-service period and teacher professional development, and this is how it is perceived by the students according to the results of the satisfaction scale.

AulaCiencia was designed primarily for use in the formative and professional development of teacher candidates and graduate teachers, but has also ended up having an influence on the coordination of university and mentor teachers, especially in the in-service training period. In particular it has allowed the in-service calendar to be rethought, since as one of the mentor teachers notes in the space set aside for in-service: "As a mentor teacher, I think that the in-service period should start in September, so they could stay in the school for three months and they could observe the children's evolution. For instance, they miss the adaptation period of children in kindergarten education <…>." (mentor teacher 8). We were able to establish that this perception of the calendar was not an isolated case. Other comments were generated along the same lines, such as that from a mentor teacher from another city who agrees, telling us about her experience and adding a link to the blog that she uses during lessons so that any participant in AulaCiencia can access it: "I agree with the previous comment. September is a very important month for in-service as all the routines begin, mainly for 3-year-olds. This adaptation period is complicated and essential in teacher training. It would also be interesting if they could stay longer in the school, as in a month they cannot observe how the school functions. <…>. Finally, I'd like to share the link to my blog, to which I have added didactic resources and some activities that we do in the classroom" (mentor teacher 21).

Easy participation in a virtual community whose common interest is in the professional area is highly relevant for teaching development as it fosters communication and professional improvement in the teachers themselves (Darling-Hammond et al., 2005). One of the platform's characteristics is that it was open to a wide collective of the education community (mentor and university teachers, and teachers in initial and continuous training) and it will continue to allow them access once their initial training has finished, an aspect they value positively according to the results of the satisfaction scale, particularly item 1. This increased the number of potential participants above the usual number that take part in academic platforms at universities because it does not restrict the learning environment to the university classroom but opens it up to wider contexts.

AulaCiencia has served to overcome geographical barriers to learning, which has contributed to work on the intercultural approach to teacher training. This means that it facilitates the sharing of knowledge and pedagogical experiences and fosters the acquisition of intercultural competences, both of which are perceived by the stu-

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dents, as shown by the results of the satisfaction scale and comments from the students themselves. Thus the students generally feel motivated when they acquire knowledge through this virtual didactic tool, as the results of the satisfaction scale reveal. This result is highly correlated with the interest shown by participants in the other items, particularly those connected to interculturality and its usefulness in teacher training and professional development. This is backed up by their comments on motivation included in the reports: "This project has been really interesting for us because we have been shown a different way of working, and we have also been in contact with someone from another country with wider experience, and working with her has provided us with a lot on a practical level" (student 332); "Through this project we have compared ideas and experiences, been given different perspectives, etc…" (student 541); "I find it motivating that the materials we have created are going to be used by teachers in another country" (student 644). All this reveals a high degree of sensitivity regarding learning focused on contextual diversity, which is also fundamental in teacher education (Baker, 2014).

We would also highlight the diversity of interactions that the virtual community enables. Firstly, the platform has allowed cooperative work to be carried out, based on an exchange of knowledge resulting from the individual uploading of didactic materials and their subsequent perusal and use by other participants. However, in addition to this the platform has made it possible for new materials to be generated on the basis of collaborative work between participants from different academic and cultural contexts. During cooperative work the participants have not needed to share the same space, time or academic requirement. They have been able to be producers and consumers of material on an individual level, although at the same time influencing the learning process of the rest of the community. In the case of collaborative work it is indeed necessary to share academic expectations, although the barriers of space and time are overcome. This latter type of interaction has been possible thanks to the teaching coordination carried out by the participating academic communities, which was instrumental in leading to successful participation.

5. Conclusions

AulaCiencia is a virtual learning community which, because it is structured according to knowledge areas and academically integrated into the course design, is user-friendly and has allowed extensive participation by different sectors of the academic community, bringing an international dimension and contextual diversity to teacher training. Access to the platform is not restricted to a university context, and this assures participants that their didactic applications and resources can be used in the practice of teaching even when they have graduated.

The diversity of the resources, both disciplinary and pedagogical and linked to in-service and science education, has led students to perceive AulaCiencia as a useful virtual community for learning and professional development, not only for working on their subjects but also for their future as teachers. The design of materials exclusive to the platform makes it possible to build up a repository of information that is not available in other networks, enriched by contributions whose quality has been approved by university teachers and which deals with different education contexts in different countries, generating unique *ad hoc* flows of information and feedback. To this can be added the fact that it has also brought about improved coordination between schools and universities and generated cooperative and collaborative interactions.

While these characteristics have made the AulaCiencia virtual learning community motivating, highly valued by the students and particularly useful in teacher training in the participating countries and contexts, more research is needed to find out whether these aspects also have a positive impact on other educational contexts, looking especially at the international component and the contextual diversity of the platforms. Indeed, in this case both these aspects were valued very positively by the students, who also pointed them out specifically as the main elements motivating them to use the network. We should not ignore the fact that growing diversity in the classroom makes this type of focus a priority when using learning networks because it converts these online platforms into tools that make it easy to acquire the necessary competences for teachers to work in a diverse, global world.

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References

Baker, D. P. (2014). *The Schooled Society. The Educational Transformation of Global Culture.* Stanford, U.S.A.: Stanford University Press.

Bakhov, I. S. (2015). Historical Dimension of the Formation of Multicultural Education in Canada. *Pedagog*ika, *117*(1), 7–15. http://dx.doi.org/10.15823/p.2015.063

Biasutti, M., El-Deghaidy, H. (2012). Using wiki in teacher education: Impact on knowledge management processes and student satisfaction. *Computers & Education, 59*(3), 861–872. http://dx.doi.org/10.1016/j.compedu.2012.04.009

Blamires, M. (2015). Building portals for evidence-informed education: lessons from the dead. A case study of the development of a national portal intended to enhance evidence-informed professionalism in education. *Journal of Education for Teaching.* http://dx.doi.org/10.1080/02607476.2015.1105532

Boud, D., Falchikov, N. (2007). Assessment for the longer term. In D. Boud, N. Falchikov (Eds.), *Rethinking assessment in higher education. Learning for the longer term* (pp. 3–13). London, U.K.: Routledge.

Czerniak, C. M. (2013). Interdisciplinary Science Teaching. In S. K. Abell, N. G. Lederman (Eds.), *Handbook on research in science education*, 537–570. Routledge: New York.

Craft, M. (2011). Cultural diversity in teacher education. In M. Craft. (Ed.), *Teacher education in plural societies: an international review.* New York, U.S.A.: Routledge.

Darling-Hammond, L., Hammerness, K., Grossman, P., Rust, F., Shulman, L. (2005). The design of teacher education programs. In L. Darling-Hammond, & J. Bransford (Eds.), *Preparing teachers for a changing world: What teachers should learn and be able to do* (pp. 390–441). San Francisco, U.S.A.: Jossey-Bass Inc.

Duffy, P. D., Bruns, A. (2006). The use of blogs, wikis and RSS in education: a conversation of possibilities. In *Proceedings Online Learning and Teaching Conference,* 31–38. Brisbane, Australia: Queensland University of Technology ePrints.

Fayne, H. R. (2014). Preparing Preservice Teachers in a Virtual Space: A Case Study of a Literacy Methods Course. *The Teacher Educator, 49*(4), 305–316. http://dx.doi.org/10.1080/08878730.2014.934081

Gay, L. R., Mills, G. E., Airasian, P. (2006). *Educational research: competencies for analysis and applications* (8th ed.). Upper Saddle River, New Jersey, U.S.A.: Pearson Education, Inc.

Greenhow, C., Robelia, B. (2009). Informal learning and identity formation in online social networks. *Learning, Media and Technology*, *34*(2), 119–140. http://dx.doi.org/10.1080/17439880902923580

Greenhow, C., Robelia, B., Hughes, J. E. (2009). Learning, Teaching, and Scholarship in a Digital Age. *Educational Researcher, 38*(4), 246–259. http://dx.doi.org/10.3102/0013189X09336671

Hepburn, L. (2005). Open source software and schools: New opportunities and directions. *Canadian Journal of Learning and Technology, 31*(1).

Hou, H. (2015). What makes an online community of practice work? A situated study of Chinese student teachers' perceptions of online professional learning. *Teaching and Teacher Education*, *46*, 6–16. http://dx.doi.org/10.1016/j.tate.2014.10.005

Hughes, J. E., Narayan, R. (2009). Collaboration and learning with wikis in post-secondary classrooms. *Journal of Interactive Online Learning, 8*(1), 63–82.

Hutchison, A., Colwell, J. (2012). Using a wiki to facilitate an online professional learning community for induction and mentoring teachers. *Education and Information Technologies, 17* (3), 273–289. http://dx.doi.org/10.1007/s10639-011-9159-7

Kao, C. P., Wu, Y. T., Tsai, C. C. (2011). Elementary school teachers' motivation toward web-based professional development, and the relationship with Internet self-efficacy and belief about web-based learning. *Teaching and Teacher Education*, *27*(2), 406–415. http://dx.doi.org/10.1016/j.tate.2010.09.010

Kobayashi, M. (2012). A digital storytelling project in a multicultural education class for pre-service teachers, *Journal of Education for Teaching, 38*(2), 215–219.

Kudinovienė, J., Simanavičius, A. (2015). Folk Art as the Precondition for Developing Ethnic Culture. *Pedagogika, 117*(1), 64–71. http://dx.doi.org/10.15823/p.2015.067

Le Cornu, R., Ewing, R. (2008). Reconceptualising professional experience in pre-service teacher education. Reconstructing the past to embrace the future. *Teaching and Teacher Education, 24* (7), 1799–1812. http://dx.doi.org/10.1016/j.tate.2008.02.008

McLean, C. A., Rowsell, J. (2013). (Re) designing literacy teacher education: a call for change. *Teaching Education*, *24*(1), 1–26. http://dx.doi.org/10.1080/10476210.2012.721127

Norman, G., Schmidt, H. (2000). Effectiveness of problem based learning curricula: theory, practice and paper darts. *Medical Education, 34*(9), 721–728. http://dx.doi.org/10.1046/j.1365-2923.2000.00749.x

Parker, K. R., Chao, J. T. (2007). Wiki as teaching tool. *Interdisciplinary Journal of Knowledge and Learning Objects*, *3*(1), 57–72.

Rolando, L. G. R., Salvador, D. F. Silva, A. H., Luz, M. R. M. P. (2014). Learning with their peers: Using a virtual learning community to improve an in-service Biology teacher education program in Brazil. *Teaching and Teacher Education, 44*, 44–45. http://dx.doi.org/10.1016/j.tate.2014.07.010

Santoro, N. (2009). Teaching in culturally diverse contexts: what knowledge about 'self' and 'others' do teachers need? *Journal of Education for Teaching*, *35*(1), 33–45, http://dx.doi.org/10.1080/02607470802587111

Santos M. A., Lorenzo, M., Priegue, D. (2013). (RED) Conectando a los profesores para el desarrollo de la interculturalidad. *Educación XXI, 16*(1), 63–84. http://dx.doi.org/10.5944/educxx1.16.1.717

Singer, F. M., Moscovici, H. (2008). Teaching and learning cycles in a constructivist approach to instruction. *Teaching and Teacher Education, 24*(6), 1613–1634. http://dx.doi.org/10.1016/j.tate.2007.12.002

ISSN 1392-0340
E-ISSN 2029-0551

Sloep, P., Berlanga, A. (2011). Redes de aprendizaje, aprendizaje en red. *Comunicar, 37*, 54–64. http://dx.doi.org/10.3916/C37-2011-02-05

Thorndike, R. L. (1982). *Applied Psychometrics*. Boston, U.S.A.: Houghton-Mifflin.

Walters, L. M, Garii, B., Walters, T. (2009). Learning globally, teaching locally: incorporating international exchange and intercultural learning into pre-service teacher training. *Intercultural Education, 20*(1), 151–158. http://dx.doi.org/10.1080/14675980903371050

Wheeler, S., Yeomans, P., Wheeler, D. (2008). The good, the bad and the wiki: evaluating student generated content for collaborative learning. *British Journal of Educational Technology, 39*(6), 987–995. http://dx.doi.org/10.1111/j.1467-8535.2007.00799.x

Wheeler, S., Wheeler, D. (2009). Using wikis to promote quality learning in teacher training. *Learning, Media and Technology, 34*(1), 1–10. http://dx.doi.org/10.1080/17439880902759851

Wheeler, S. (2010). Open Content, Open Learning 2.0: Using Wikis and Blogs in Higher Education. In U. D. Ehlers, & D. Schneckenberg (Eds.), *Changing Cultures in Higher Education. Moving Ahead to Future Learning* (pp. 103–114). Heidelberg, Germany: Springer.

Mokytojų rengimas pritaikant virtualią mokymosi bendruomenę: bendraamžių jungimas tarptautiniu lygmeniu

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Santrauka

Straipsnyje pristatomas virtualios mokymosi bendruomenės pritaikymo formaliajame mokytojų rengime skirtingų universitetų kontekstuose (Ispanijoje, Čilėje ir Belgijoje) ir švietimo bendruomenėse (mokytojų kandidatų, diplomuotų mokytojų ir universitetų dėstytojų) tyrimas. Virtualios mokymosi bendruomenės buvo įtrauktos į mokymosi kursus, kuriuose dalyvavo 876 studentai ir mokytojai. Duomenys gauti iš rašytinio įnašo rengiant virtualią mokymosi bendruomenę, pasitenkinimo skalės, pedagoginio personalo įsivertinimo, skirtingų sąveikos tarp dalyvių tipų identifikacijos, studentų motyvacijos. Tyrime taikytas trianguliacijos metodas. Tyrimo rezultatai rodo, kad studentai, patys prisidėdami prie virtualios mokymosi bendruomenės kūrimo, šią priemonę vertina kaip motyvuotą ir naudingą rengiant mokytojus. Virtualios mokymosi bendruomenės pritaikymas rengiant mokytojus kuria bendro ir bendradarbiaujančio darbo sinergiją. Virtualios mokymosi bendruomenės reikalingos mokytojų darbui koordinuojant virtualų mokymąsi daugiakultūrėje bendruomenėje palengvinti. Virtuali mokymosi bendruo-

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menė yra tapusi didaktinių priemonių, profesinės raidos patirčių ir naujų žinių kūrimo saugykla. Šios problemos leidžia numatyti pedagoginių disciplinų pritaikomumą realiame profesiniame gyvenime. Per virtualias mokymosi bendruomenes žinios lengviau perkeliamos į pedagoginę praktiką.

Esminiai žodžiai*: virtuali mokymosi bendruomenė, virtuali profesinė bendruomenė, mokytojų rengimas, profesinė raida.*

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