
Connecting Early Career Researchers: Investigating the Needs of Ph.D. Candidates in TEL Working with Web 2.0

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Abstract. This article describes the results of a case study conducted amongst 21 doctoral candidates and three senior researchers at the Joint European Summer School on Technology Enhanced Learning 2010. The study aims to analyse the needs of early career researchers working within the field of TEL in geographically distant communities, particularly with respect to online collaboration, communication and information exchange. This study can be seen as a needs analysis on support structures to enable research 2.0 in TEL among young researchers.

Keywords: communities of practice, Research 2.0, Social Media, Web 2.0, case study, awareness support

1 Introduction

Our personal experience suggests that collaboration and communication within the European TEL community usually looks like this: researchers use many offline and web-based tools to work and to share their findings and opinions, there is no standardised way of communicating, and various channels are used to disseminate information. It is difficult to keep up with who is doing what in the field, though many researchers are making a considerable effort to monitor the data that is being spread on the Web by colleagues [1], [2], [3]. Ph.D. candidates new to the field frequently have problems finding relevant information, people, events and platforms to help them in their research endeavours. Recent talks with a number of Ph.D. students we are in touch with have underlined these perceptions.

Some efforts have been undertaken to make it easier for doctoral candidates to stay up-to-date on current topics and events and to enable them to collaborate online. These include the establishment of inter- and transorganisational mailing lists,

newsgroups, social media groups or forums¹. Despite these efforts, however, anecdotal evidence from our discussions with Ph.D. students indicates that doctoral candidates still feel that support in terms of information and collaboration could be improved. To address these concerns, the STELLAR Network of Excellence² supports doctoral events that aim to improve collaboration and communication between junior and senior researchers as well as enhance the flow of information. In addition, STELLAR also plans to create a virtual doctoral community of practice (DoCoP) to help Ph.D. candidates stay in touch, share and conduct research, help each other solve problems and get in touch with further junior and senior researchers by means of Web 2.0 technologies, the latter being nowadays referred as social media. We understand Communities of Practice (CoP) to be a group of people who share the same interests and passion for something they do and shape their identity by a shared domain of interest whilst engaging in activities around this domain with other members of the community. They thereby develop a shared repertoire of resources, a shared practice, as Wenger calls it in his explanation of a CoP [4]. For an overview of the implications of CoP's on learning and the possibilities of online CoP's see [4], [5], [6].

We saw it necessary to develop an understanding of the needs of Ph.D. candidates as the starting point for the development of the DoCoP planned in STELLAR. Our first step towards developing such an understanding was to consult with Ph.D. candidates.

An opportunity to do so arose at the 2010 Joint European Summer School on Technology Enhanced Learning, which took place in June 2010, gathering together about 50 Ph.D. candidates working in TEL. We conducted a workshop with focus on students' views on the creation of a doctoral community of practice in the field of TEL. 21 doctoral candidates as well as three senior researchers participated in the workshop. We asked them about what type of information may be of value to them to increase awareness in terms of collaboration, what type of awareness support would be of use to them, what tools they use when collaborating in dislocated research teams and how they believe a sustainable community of practice can be implemented. We report about our findings below.

2 Consulting on a DoCoP with Ph.D. Candidates in TEL – A Case Study

During the workshop at the Summer School the doctoral candidates worked in groups of 5-6 people and were asked to discuss how they would wish to receive support for their doctoral work in terms of personal support, awareness support, tools for collaboration and the characteristics of a doctoral community of practice that would be of value to them. Each group then presented their findings, explained their results and engaged in discussions about their thoughts with the other participants of the

¹ Examples include JTEL Summer and Winter Schools, Doctoral Consortia at conferences like EC-TEL or Earli, the STELLAR Mobility Programme or DocNet from the University of St. Gallen, Switzerland

² <http://www.stellarnet.eu>

workshop. We recorded the entire session to be able to further analyse the results after the Summer School.

2.1 Results of analysis of needs of Ph.D. candidates in TEL

We analysed their reported needs and categorized them into two levels, each describing the personal involvement or gain of the individual researcher (see Table 1). The *individual level* of needs describes issues that occur on an individual level like review of one's own paper or managing one's own information. Support on this level aids the individual in her endeavour more than it does a larger peer-group. The *community level* is the actual community or peer-group level. Support on this level is useful for more than the individual researcher. A larger CoP would benefit from assistance on this level. Table 1, below, summarises the findings within each of these two categories.

Table 1. Needs of doctoral students on the individual and community levels.

Individual Level	Community Level
Peer-review of artefacts	Information modelling
Methodology	Researcher information
Problem solving	Futuregazing
General feedback	Networking
Jobs / internships / exchange programmes	Guidelines for community management
F2F meetings	Sharing testbeds / datasets
Information management	Peer groups
	Collaborative filtering

As we can see from Table 1 doctoral candidates would, on the one hand, appreciate support on a very individual level concerning the process of finishing their Ph.D. thesis like advice on the methodology they are planning to use, how to solve problems they encounter when doing their research as well as meeting face to face with a senior scientist to discuss their work to be able to better evaluate if they are on the right track. On the other hand, doctoral candidates see the need for a community of peers working in related fields to network, discuss their work, get a notion of where others in the field are, what their work is about and how they cope with writing a Ph.D.. In addition they would like to get feedback from a community of peers on their work and share research findings and data.

When we asked them about how they believe they can be supported in their endeavours and needs on a technical level we received answers related to information gathering like RSS feeds from relevant sites, collaboration tools like a semantic wiki with an ontology as well as information filtering tools like recommender systems and a reputation system to enable them to better match the information with their current needs. The proposed solutions Ph.D. candidates gave revolve around support issues that have a high technical (system) component. They require the provision of some sort of Web 2.0 tool or are in essence already a tool.

What we can see from the distinction we made is that the categorization of needs in two levels is not a sufficient distinction, since some issues on the individual and community levels are at the same time themes that fall into the area of proposed solutions like networking or sharing testbeds. This is not a surprise, though, since communication, collaboration and awareness of a community go hand in hand.

2.2 Results of awareness support of Ph.D. candidates in TEL

In addition, we asked the 4 groups to consider what kind of awareness support may be helpful in research communities with respect to contributing to increased productivity. With awareness we mean the state or quality of being aware of the current themes, projects, events and researchers including their background within the field of TEL and one's own position within it. Again they discussed within their groups and presented their findings in a plenary.

We analysed the plenary discussions and were able to place the findings into two areas. The first area, *personal*, pertains to information available on the personal/professional background of other researchers and contains topics like research background or projects that the person has worked on. The second area of interest in awareness support, *research*, concerns information on the actual output of researchers (artefacts like publications) as well as opinions of others about them. Table 2 sums up the awareness support results of the case-study participants.

Table 2. Awareness support

Personal level	Research level
Research background	Artefacts / publications
Expertise / Competencies	State-of-the-art of topic
Projects	Opinions from peers
Social media handles ³	

Table 2 shows that doctoral candidates wish to have personal information on people within their area of research in terms of scientific background and expertise, as well as their online handles like Twitter and delicious user names or blogs. On the research level they suggest information on current artefacts and publications, as well as the state-of-the art of research in their field and opinions from peers on research, publications and other researchers.

When asked about technical solutions to make it possible to gather and filter information within the community to increase one's awareness of the field of TEL in terms of people, topics, and events, the Ph.D. students proposed open-source solutions to share datasets as well as reputation mechanisms to increase awareness of and within the TEL community. However, the results on the tool level were low which we believe is due to the fact that there are few good services available and the time we gave the doctoral candidates was too short to come up with productive and creative feedback.

³ social media handels are usernames for social media services like Twitter, Delicious, Slideshare or URL's to blogs or wikis

2.3 Suggestions for the creation of a doctoral community of practice by Ph.D. candidates in TEL

The last part of the workshop revolved around collecting ideas on how a sustainable virtual doctoral community of practice (DoCoP) amongst former and future Ph.D. candidates participating in STELLAR doctoral events could be established and maintained. We saw a key consideration within this discussion as the tools used to support the DoCoP. Further, participants were also asked which Web 2.0 tools they use in their own practice and for what purposes in order to inform our understanding of what they value. This discussion, again, took place amongst the whole group.

Our analysis of the discussions led to three main results. The first is that the participants in our case study find it unlikely that a larger doctoral community of practice can be sustained in a reasonable manner by itself. Their experience is that events such as, for example, the Summer School, function as an umbrella, or a macro-level of community, out of which several smaller, actual communities of practice arise with about 6 to 10 members. The Ph.D. candidates suggested that these smaller communities of practice should be supported not by a particular tool or service, since the community members would decide on those depending on their needs and habits, but rather by the provision of guidelines on collaboration, including the use of existing Web 2.0 tools for research and community management.

The second conclusion the participants drew was that the sustainability of a community of practice, based on the philosophy underpinning Research 2.0, would be highly dependent on individuals dedicated to it. They concluded that the community is independent of the tools in the sense that tools are used regardless of the community. Participants recommended a community facilitator to keep the flow of information going and the community members active in participating.

The third conclusion was that the tool or service needs to fulfil collaboration and communication functions and should be user-friendly in the sense that it is easy to use. The doctoral candidates already use a number of tools for these purposes as well as for research and the organisation of their projects, they did not see the pressing need for a “new” tool or platform.

Table 3, below, summarises the participants’ reported use of Web 2.0 tools for communication, collaboration, research instruments and organisation.

Table 3. Tools used by case-study participants

Tool	Communication	Collaboration	Research	Organization
E-mail	x	x		x
Google Docs		x		
Google Talk	x			
Google Scholar			x	
Google Analytics			x	
Google Forms			x	
Google Sites	x	x		x
Google Wave	x	x	x	x
BSCW	x	x		x
Dropbox		x		

Mendeley		x	x	
Group Wikis	x	x	x	x
FlashMeeting	x	x		
Skype	x			
MSN Messenger	x			
Doodle				x
Gigapedia			x	
Library			x	

3 Conclusions

The results show that Research 2.0 in a doctoral community takes place on many different levels and involves quite a few issues that need to be taken into account. For one, Ph.D. candidates spend time working alone, independently on their thesis and would value support on a very personal, face-to-face level from senior researchers. Further, doctoral candidates appreciate a community of peers they can discuss problems with, share results and remain up-to-date on what is happening in their field of research. They would like to have tools that make it easier for them to gather information on relevant researchers to their topic, important events, possibilities for scholarships and internships as well as collaboration tools like a semantic wiki to collaborate and share findings. In addition, doctoral candidates find an awareness support system useful that allows them to see how is doing what in the TEL community with whom.

In terms of creating a sustainable doctoral community of practice within the field of TEL we could distinguish two main findings: we have a large, fuzzy community of TEL researchers and Ph.D. candidates. Bringing them together in one virtual doctoral community of practice and having them all collaborate and communicate seems unlikely. However, this large community is in need of a virtual space that collects information, makes it available to others and has mechanisms to share that information to increase awareness of the community and bring it closer together. This type of umbrella-platform can enable the smaller communities within the field of TEL gather under the same roof, form and proliferate and share information within the smaller communities as well as the larger TEL community.

Our second conclusion is that there seems to be little need to develop a super-tool to fulfil the needs of Ph.D. students to work and collaborate in their community. What we could see is that doctoral candidates use tools for collaborating, communicating, conducting research and organizing their work flow processes and information. There is little need for yet another tool according to the workshop participants. In addition, the participants noted that preferences as well as needs differ, so tool choice should be left up to the Ph.D. candidates. Rather, there is a need for guidelines on existing tools and their use for research.

In summary, we can say that the findings from the workshop we conducted lead to the conclusion that Ph.D. candidates working within the field of TEL feel they have sufficient Web 2.0 tools at their disposal but would appreciate more support in terms of their use as well as finding and filtering information relevant to their research.

References

1. Reinhardt, W., Moi, M., Varlemann, T.: Artefact-Actor-Networks as tie between social networks and artefact networks. In Proceedings of the 5th International Conference on Collaborative Computing (CollaborateCom'09) (2009)
2. Ochoa, X., Mendez, G., Duval, E.: Who we are: Analysis of 10 years of the ED-Media Conference. In: Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications (ED-Media 2009), pp. 189-200 (2009)
3. Fisichella, M., Herder, E., Marenzi, I., Nejd, W.: Who are you working with? Visualizing TEL Research Communities. In: Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications (ED-Media 2010), pp. 2010 (2010)
4. Wenger, E.: *Communities of Practice: Learning, Meaning, and Identity*. Cambridge University Press, New York (1998)
5. Wenger, E., McDermott, R., Snyder, W.: *Cultivating Communities of Practice: A Guide to Managing Knowledge*. Harvard Business School Press, Boston (2001)
6. Wenger, E., White, N., Smith, J.D.: *Digital Habitats: Stewarding Technology for Communities*. CPSquare, Portland (2009)

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