Abstract

This research concerns the design, implementation and evaluation of a blended training course for interpreter trainers. Complex issues pertaining to professional development in a rich web-based learner-centered environment are addressed. Findings confirm a socioconstructivist design within which learners developed the expected skills and knowledge specified in the learning outcomes. Faculty, acting as cognitive and practitioner models, viewed this new teaching experience positively. The use of a design-based research approach led to the formulation of a set of design rules readily usable in similar adult training contexts. Future research will further investigate the potential of the TPACK framework to shed light on faculty’s techno-pedagogical competencies.

Reference

Design Issues for Technology-Enhanced Professional Development

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This research concerns the design, implementation and evaluation of a blended training course for interpreter trainers. Complex issues pertaining to professional development in a rich web-based learner-centered environment are addressed. Findings confirm a socio-constructivist design within which learners developed the expected skills and knowledge specified in the learning outcomes. Faculty, acting as cognitive and practitioner models, viewed this new teaching experience positively. The use of a design-based research approach led to the formulation of a set of design rules readily usable in similar adult training contexts. Future research will further investigate the potential of the TPACK framework to shed light on faculty’s techno-pedagogical competencies.

Introduction

The context of this research is a complete redesign of a successful two-week traditional face-to-face course for interpreter trainers into a one-year blended socio-constructivist course. The process is supported by a design-based research (DBR) project. This paper presents the findings from the first two new editions of the course, and focuses on the professional development of both the faculty and the course’s target audience, composed of professional conference interpreters.

Participation in a learning community as an adult in a continuing education program is considered part of professional development, especially
when participants are active professionals. Speck (1996) offered insight into the learning process in adult training and formulated several pedagogical design rules: To be motivating, learning should be real-world oriented with immediate possible application in the professional context. The entire design should give some control to learners and provide them with regular constructive feedback. The diversity of backgrounds should be built into the training and the link between both the training and the professional setting must be very explicit. A collaborative dimension offering the opportunity to learn and exchange in small groups is also often a source of motivation and enhanced learning.

Professional development is also linked to societal and market change, and interpreter trainers may have to be trained differently in order to be able to cope with these changes. Working with technology represents one of these changes. Being able to work collaboratively in teams, effectively and efficiently, is another example, particularly since interpreters work together in the booth. These are two major reasons why, since 2004, the training of trainers at the Faculté de Traduction et d’Interprétation (FTI) has been carried out within a virtual learning environment. Such an environment provides an opportunity to train trainers in the use of technology and also in collaborative work, due to the overall pedagogical orientation chosen. Furthermore, student trainers can learn from faculty through cognitive apprenticeship during the course. This is reinforced by the team’s leitmotiv, *the medium is the message*. To achieve this change, faculty itself (i.e. teachers and tutors) had to go through a learning process that contributed to their own professional development.

The goal of this study is to examine professional development as it pertains to both faculty (teachers and tutors who deliver the training) and participants (student trainers who receive the training). Faculty had to undergo professional development if they were expected to provide training compatible with contemporary challenges. The target audience, composed of professional interpreters wishing to add a skill to their existing repertoire by becoming trainers, was explicitly involved in a process of professional development.

The present article begins with a description of the study. It then offers some insights into teachers’ professional development conducted in a rich technology-based learning environment. This is followed by an outline of the pedagogical design, learning environment and methodology used.

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1 Prior to 2011, it was the École de Traduction et d’Interprétation (ETI). Throughout the remainder of this paper, it will be referred to by its present designation (FTI).
The article concludes with a presentation and discussion of the findings and practical outcomes.

**The Study**

This study concerns a training course for interpreter trainers involving 55 adult participants, seven faculty members, one technical support person and one pedagogical advisor. The in-depth study was carried out over two editions of the course, but elements from successive editions of the course are also integrated. Formal training of interpreter trainers was introduced at FTI in 1996 with a two-week intensive face-to-face course. In 2004 this course was transformed into a 12-month blended course entailing one face-to-face week after student trainers had completed a series of nine on-line modules and before they started writing their theses. This change was introduced to meet interpreters’ needs. Interpreters are mobile professionals and it was difficult for them to take two solid weeks out of their professional agenda to come to Geneva. In the 2006 edition, to acknowledge the increased workload of the course, it became a continuing education Master’s of Advanced Studies (MAS), representing 60 ECTS (European Credit Transfer and Accumulation System) credits. Most student trainers were already engaged in teaching when they began the course but wanted to receive formal training on how to teach interpreting. Some of the non-teaching participants showed an additional characteristic: they had actually never received any formal training; in other words, they were self-taught interpreters, as in the early days of interpreting, and took this course as a kind of mirroring experience, which allowed them to go back to their own learning and adjust their interpreting practices in an autonomous and consciously focused manner.

Thus, from a professional development perspective, three profiles need to be considered: 1) the professional conference interpreters who apply for the MAS in order to add the skills required to become certified trainers; 2) the professional conference interpreters who hone the skills they have already developed and refocus them for improved performance; and 3) the MAS teachers and tutors who, by introducing the activity-based learner-centered environment, develop new skills and approaches to the training of conference interpreters.
Interpreters and 21st Century Skills

Interpreting is a complex cognitive skill developed within two paradigms: expertise and progression. (1) Interpreting is about converting a message from one language to another using spoken words. Interpreting as a complex cognitive skill is successfully acquired when learners and trainers respect the principles of skill acquisition as seen from the vantage point of expertise development (Moser-Mercer, 2008). (2) In addition, skill-based training involves cognitive apprenticeship in the field (development of a meta-cognitive approach to learning, self-regulation, and self-assessment), deliberate practice and modeling as well as coaching, with the latter diminishing as the novice evolves in terms of autonomous learning and expertise. In a scaffolding perspective (Wood et al., 1976), the expert gradually fades to allow the novice, who has built capacities in autonomy and self-evaluation, to become master of his/her learning. Activity-based learning, formative teacher/tutor and peer feedback and collaborative approaches to practice are among the key tools for implementing such training. In interpreter training, pedagogy and technology are closely interrelated. Furthermore, technology mediates simultaneous interpreting performance, and is thus integral to the learning environment, which mediates the acquisition of this skill. Finally, evaluation must also address these special challenges, that is, it must cover both the professional dimension of technology use and its integration in the learning environment.

The profession of conference interpreting is undergoing change as a result of societal, economic and technological developments. The skills needed are synthesised in Albl-Mikasa’s (2012, p. 63) model, and organised into para-, pre-, peri-, in- and post-process steps (Figure 1). Unfortunately, the framework does not include technology, but it has the advantage of showing the complexity of the interpreting skill and all the parameters that interpreters have to control in order to perform at the expected professional level.

Professional Development and Identity Issues

Time devoted to the acquisition of new skills, knowledge and attitudes provides an opportunity to belong to a community of practitioners, where actors involved can be more or less active and proactive. The identities of the three previously mentioned profiles – faculty, interpreters becoming teachers, and self-taught interpreters honing their skills – will correspondingly be more or less deeply transformed by the learning experience; as a
matter of fact, adults’ willingness and capacity to engage in boundary interactions are a function of their identities (Wenger, 1998; Wenger, White, & Smith, 2009). Professional development in the domain of teaching aims to enhance both teachers’ content knowledge and their teaching skills. Teaching is known to be a multi-tasking activity, and Wise, Darling-Hammond, McLaughlin & Bernstein (1985) define it as labor, a craft, a profession and an art.

Figure 1. Process- and experienced-based model of interpreter competence

Under the conception of teaching as labor, teaching activities are “rationally planned, programatically organized, and routinized in the form of standard operating procedures” by administrators (Mitchell and Kerchner, 1983, p. 35). The teacher is responsible for implementing the instructional program in the prescribed manner and for adhering to the specified routines and procedures. Under the conception of craft, teaching requires a repertoire of specialized techniques. Knowledge of these techniques also includes knowledge of generalized rules for their

ELF refers to « English as Lingua Franca ».
application. Under the conception of teaching as a profession, teaching requires not only a repertoire of specialized techniques but also the exercise of judgement about when those techniques should be applied (Shalevelson & Stern, 1981). To exercise sound professional judgement, the teacher must master a body of theoretical knowledge as well as a range of techniques. Under the conception of teaching as an art, teaching techniques may be novel, unconventional, or unpredictable. (...) As Gage explains, the teaching art involves “a process that calls for intuition, creativity, improvisation, and expressiveness - a process that leaves room for departures from what is implied by rules, formulas, and algorithms” (1978, p. 15). (Wise et al., pp. 65-66).

Sachs (2001) argues that, as a result of the learning sequence, the teacher’s identity emerges from the tension between two main streams: the entrepreneurial identity and the activist identity.

The managerialist discourse gives rise to an entrepreneurial identity in which the market and issues of accountability, economy, efficiency and effectiveness shape how teachers individually and collectively construct their professional identities. Democratic discourses, which are in distinct contrast to the managerialist ones, give rise to an activist professional identity in which collaborative cultures are an integral part of teachers’ work practices” (p. 159).

Developing new skills, learning and teaching in a technologically-enhanced environment raises new challenges. For faculty, it means developing a new way of teaching, in a blended context, with an activity-based collaborative environment, where the role of the teacher is to provide meaningful learning experiences and guide participants. For interpreters seeking to improve their teaching skills, the challenge is more about how to bring their field into the course and take the course out into their field. And for self-taught interpreters, the challenge lies in training with new strategies, auto-evaluating the outcome and making the adjustments required to improve their interpreting competencies.

Technology in Action

Learner-centered, on-line environments are based on the following core values and assumptions: “(a) centrality of the learner in defining meaning;
(b) scaffolded participation in authentic tasks and sociocultural practices; 
(c) importance of prior and everyday experiences in meaning constructions; 
and (d) access to multiple perspectives, resources, and representations”
(Land, Hannafin & Oliver, 2012, p. 8).

The TPACK (Technological Pedagogical And Content Knowledge) framework has been developed to elucidate the kinds of knowledge needed by a teacher for effective pedagogical practice in a technology-enhanced learning environment (Koehler & Mishra, 2009). Not only do teachers need to master content, pedagogy and technology; they also need to understand how these elements interact in various ways and, in particular, how to design scenarios that integrate pedagogy and technology appropriately within a given discipline. This framework is relevant to the study, for two reasons: faculty themselves had to develop TPACK competencies, and they represent models for these future trainers. The TPACK framework (Figure 2) is used a posteriori in this paper. An in-housework framework (reported in Class, 2009) – had been used back in 2004 to design the course and comply with continuing education standards. Today, the TPACK framework offers an opportunity to look back and pack the design process into a framework that has held considerable interest for academics since its creation in 2006 (Koehler, Shin & Mishra, 2012). Having accumulated nine years of teaching experience in an activity-based on-line learning environment, faculty are now in a good position to reflect on and discuss technological, pedagogical and content knowledge in the domain of teaching conference interpreting.

**Content Knowledge.** “Content knowledge (CK) is teachers’ knowledge about the subject matter to be learned or taught” (Koehler & Mishra, 2009, p. 63). Teachers and tutors are themselves professional conference interpreters in addition to performing as faculty members in this training of trainers programme and in programmes to train conference interpreters. Topics taught within the MAS are logically related to the EMCI (European Master’s in Conference Interpreting) core curriculum, which recommends integrating the theory of interpretation; the practice of interpretation; consecutive interpreting; simultaneous interpreting; the European Union and international organization.

**Pedagogical Knowledge.** “Pedagogical knowledge (PK) is teachers’ deep knowledge about the processes and practices or methods of teaching and learning” (Koehler & Mishra, 2009, p. 64). Pedagogical knowledge is closely related to knowledge about how people learn, since pedagogical strategies are based on learning theories. In the MAS programme, a socio-constructivist orientation to learning was adopted as the best way to help conference interpreters develop the pedagogical competencies necessary.
to perform as interpreter trainers. Faculty were already engaged in activity-based pedagogies before going on-line, but they had to further develop capacities in socio-constructivist learning and pedagogy, and specifically, in situated learning (Lave, 1988), social development theory (Vygotsky, 1962), collaborative learning (Dillenbourg, 1999), cognitive apprenticeship (Collins, Brown and Newman, 1987) and reflection (Boud, 2001). Role plays, case-based learning, situated problem solving and reflection are some of the core pedagogical strategies used to train interpreter trainers in this MAS programme.

Figure 2. The TPACK framework. Reproduced by permission of the publisher, © 2012 by tpack.org.

*Pedagogical Content Knowledge.* “PCK covers the core business of teaching, learning, curriculum, assessment and reporting, such as the con-
ditions that promote learning and the links among curriculum, assessment, and pedagogy” (Koehler & Mishra, 2009, p. 64). Since interpreting is a complex cognitive skill and since teaching this skill within the expertise paradigm yields good results, decisions pertaining to the design of activities are aligned with this paradigm. Concretely, four main strategies dominate, namely, cognitive apprenticeship, knowledge building, problem-based learning and collaborative learning.

Technological Knowledge. According to Koehler and Mishra (2009):

TK is always in a state of flux—more so than the other two core knowledge domains in the TPACK framework (pedagogy and content). Thus, defining it is notoriously difficult. (...) The definition of TK used in the TPACK framework is close to that of Fluency of Information Technology (FITness), as proposed by the Committee of Information Technology Literacy of the National Research Council (NRC, 1999). They argue that FITness goes beyond traditional notions of computer literacy to require that persons understand information technology broadly enough to apply it productively at work and in their everyday lives, to recognize when information technology can assist or impede the achievement of a goal, and to continually adapt to changes in information technology. (...) This conceptualization of TK does not posit an “end state,” but rather sees it developmentally, as evolving over a lifetime of generative, open-ended interaction with technology. (p. 64)

Teaching with technology requires being ready to implement scenarios using different types of tools (content, communication, reflection, etc.) to mediate the learning process. In addition, blended learning can be seen as “the organic integration of thoughtfully selected and complementary face-to-face and online approaches and technologies” (Garrison & Vaughan, 2008, p. 148). These two principles, combined with training on the learning environment, are broad enough to enable the emergence of creative and innovative teaching techniques – inspired from the wide existing repertoire of the senior professional faculty – in line with the aforementioned conception of teaching as an art.

Technological Content Knowledge. “Understanding the impact of technology on the practices and knowledge of a given discipline is critical to developing appropriate technological tools for educational purposes. The choice of technologies affords and constrains the types of content ideas that can be taught” (Koehler & Mishra, 2009, p. 65). After conducting a needs’
analysis and taking into consideration the pedagogical choices expressed by faculty, a decision was taken to use a community, content and collaboration management system (C3MS) as the appropriate learning environment. The technological achievement resides in the actual construction of this activity-based, collaborative learning environment to support activities within chosen pedagogical orientations.

*Technological Pedagogical Knowledge.* “TPK is an understanding of how teaching and learning can change when particular technologies are used in particular ways. This includes knowing the pedagogical affordances and constraints of a range of technological tools as they relate to disciplinarily and developmentally appropriate pedagogical designs and strategies” (Koehler & Mishra, 2009, p. 65). Five types of tools were identified to serve pedagogical purposes: content and production tools, communication and regulation tools, metacognitive tools, awareness and organizational tools, and finally, evaluation tools. It was important to use these tools in a way consistent with adult training principles. Faculty were reminded of the classical adult learning framework developed by Knowles, Holton & Swanson (2011), who identify six core adult learning principles: the need to know, the learners’ self-concept, the role of the learners’ experiences, readiness to learn, orientation to learning and motivation.

*Technology, Pedagogy and Content Knowledge* (TPACK) refers to the emergent form of knowledge, integrating all three core components: content, pedagogy and technology.

> Technological pedagogical content knowledge is an understanding that emerges from interactions among content, pedagogy, and technology knowledge. Underlying truly meaningful and deeply skilled teaching with technology, TPACK is different from knowledge of all three concepts individually. Instead, TPACK is the basis of effective teaching with technology, requiring an understanding of the representation of concepts using technologies; pedagogical techniques that use technologies in constructive ways to teach content; knowledge of what makes concepts difficult or easy to learn and how technology can help redress some of the problems that students face; knowledge of students’ prior knowledge and theories of epistemology; and knowledge of how technologies can be used to build on existing knowledge to develop new epistemologies or strengthen old ones (Koehler & Mishra, 2009, p. 66).

During the fifth edition of the MAS a need for integrating past participant’s experience was expressed. The portal then also could help alumni to
develop and sustain a community of practice. The growing expertise of faculty with respect to the mastery of technology and thus of TPACK competencies in general, as well as the evolution of technology (mobile devices, cloud services, etc.) and of the very profession of conference interpreting, will drive a redesign (Class & Schneider, 2012). The next cycle of the design-based research will also be the occasion to investigate faculty’s TPACK capacities with appropriate, valid and reliable instruments.

The Design-Based Research

The general approach of this study is a type of developmental research known as “design-based research” or “design experiment”. According to Collins, Joseph, and Bielaczyc (2004, p. 15), “Design experiments were developed as a way to carry out formative research to test and refine educational designs based on principles derived from prior research.” Reeves (2000, p. 8) identifies the following critical characteristics of Brown’s (1992) and Collins’ (1992) design experiments: “(a) addressing complex problems in real contexts in collaboration with practitioners, (b) integrating known and hypothetical design principles with technological affordances to render plausible solutions to these complex problems, and (c) conducting rigorous and reflective inquiry to test and refine innovative learning environments as well as to define new design principles.”

Three essential features of design-based research (DBR) are action-orientation, situatedness and complexity.

The overall goal of research within the empirical tradition is to develop long-lasting theories and unambiguous principles that can be handed off to practitioners for implementation. Development research, on the other hand, requires a pragmatic epistemology that regards learning theory as being collaboratively shaped by researchers and practitioners. The overall goal of development research is to solve real problems while at the same time constructing design principles that can inform future decisions. In Kuhn’s terms, these are different worlds. (Reeves, 2000, p. 12).

Situatedness and the complexity of “naturalistic contexts” are important features of most DBR experiments (Barab & Squire, 2004) and require an iterative approach. DBR experiments are not one-time experiments, but try to expand understanding of conjectures expressed with intervening variables.

Prototypically, design experiments entail both engineering particular forms of learning and systematically studying those forms of learning
within the context defined by the means of supporting them. This designed context is subject to test and revision, and the successive iterations that result play a role similar to that of systematic variation in experiment” (Cobb, Confrey, diSessa, Lehrer, & Schauble, 2003, p. 9).

Burkhardt and Schoenfeld (2003, p. 4) discuss the “productive dialectic between educational research and practice”. They conclude that for the case under discussion, 25 years were necessary for the DBR to produce sustainable results. As a matter of fact, certain unusual contingent events were part of the adventure and may have prolonged it a bit, but overall, DBR experiments are certainly “long route models” (p. 4).

According to Sandoval, designed learning environments embody conjectures about learning and instruction, and the empirical study of learning environments allows such conjectures to be refined over time. The construct of embodied conjecture is introduced as a way to demonstrate the theoretical nature of learning environment design, and to frame methodological issues in studying such conjectures. (Sandoval, 2004, p. 2)

An embodied conjecture is a conjecture about how theoretical propositions might be reified within designed environments to support learning. Designed environments include tools (such as software), materials, and activity structures, defined as the combination of task structure, how a task is organized and social participation structures. Accordingly, design-based research can be driven and organized by so-called “conjecture maps” (Sandoval, 2004). A conjecture map manages complexity. It identifies the important research components of a pedagogical design and highlights interesting relationships. It identifies the theory embodied in a design that should favor cognitive processes and finally lead to learning outcomes. These maps are highly idiographic, that is, researchers must come up with their own best representations depending on their overall research purpose, and they should evolve over time.

To summarise, Anderson and Shattuck (2012), after researching published DBR studies, extract the following characteristics of this type of research: being situated in a real educational context, focusing on the design and testing of a significant intervention, using mixed methods, implementing multiple iterations, involving a collaborative partnership between researchers and practitioners, and resulting in the evolution of design principles.

In this study, the DBR began in 2004. Its first big cycle is still in progress and will not end until a solid research framework that thoroughly takes
into account the findings from the first cycle is put in place to launch the second cycle. This paper focuses exclusively on professional development aspects and highlights the micro steps undertaken in the first cycle.

- 2004 (first edition of the course): training of faculty on on-line course design and facilitation;
- 2006 (second edition of the course): faculty facing tutoring challenges due to a significant increase in the number of student trainers;
- 2008 (third edition of the course): faculty debriefing and decision-making after the face-to-face week for the next edition;
- 2010 (fourth edition of the course): introduction of formal documents (learning outcomes, grading policy, learning ethics) and evaluation of the on-line part of the modules; some research conducted on how faculty combine on-line and face-to-face portions of the modules; research conducted on how to best support a community of interpreter trainers.
- 2012 (fifth edition of the course): awareness of the need to assess TPACK capacities in the domain of interpreter training, due to changes in technology and in the profession.

Research questions and findings mainly concern the 2004 and 2006 editions of the course.

The Learning Environment

In terms of design, one output of this DBR is a community portal within which student trainers are active knowledge and skill builders, working collaboratively most of the time. The community portal is anchored in the so-called activity-based learning environments family (Hannafin, Land, & Oliver, 1999; Jonassen, 1999). Its various communication, collaboration, social and cognitive scaffolding tools and resources enable activity-based learning. The teacher’s role is transformed to that of orchestrating scenarios to scaffold meaningful learning experiences for learners (Dillenbourg & Jermann, 2010). Learning values underlying such learning environments are related to situated learning, meta-cognitive monitoring and progressively refined higher-order learning.
Physically, the portal is organised like a “cockpit,” where the central view changes but access to tools, navigation and information blocks always remains available (Figure 3). These systems integrate simple and proven web applications that existed on a stand-alone basis (i.e. forums, chats, news exchange, etc.) as modules, so that each user/institution can configure the environment according to the needs of the community. Based on open-source technology and philosophy, they allow a community to develop customised modules precisely tailored to its needs. The portal developed for interpreter trainers includes tools to support production, communication, meta-cognition, evaluation, awareness and organisation (Class, 2009). In the HY-SUP project, Burton et al. (2011) analysed teaching approaches to blended learning environments according to a typology consisting of six types, ranging from a teacher-centered transmission model with limited learner autonomy and restricted use of external technological resources (Type 1) to an open, learner-centered approach supported by a rich and varied learning environment offering a full range of technological and

\[4 \text{ http://spiralconnect.univ-lyon1.fr/webapp/website/website.html?id=1578544}\]
pedagogical resources (Type 6). According to this typology, the portal lies somewhere between type 5 and 6 of their classification. In other words, the portal enables student trainers’ active participation in both on-line and face-to-face formats and provides them with many tools and resources to support rich productions. It also addresses reflection objectives with methodological, metacognitive coaching by teaching staff and peer learning; finally, it ensures access to external expert human resources.

Research Questions

The main goal of this study is to examine professional development as it pertains to both faculty (teachers and tutors who deliver the training) and participants (student trainers who receive the training), driven by the following questions:

1. What are the effects of the design on skill acquisition and knowledge building?
2. To what extent is the portal an effective learning environment and in what ways did tools support pedagogical goals?
3. Faculty’s perspective on the change management strategy. How did they manage?

Question 1 concerns the professional development of the second and third profiles: interpreters becoming trainers and self-taught interpreters continuing their education.

Question 2 is design related. It is also linked to faculty’s professional development in the sense that if tools do not support faculty’s teaching conceived as an art, faculty will lose interest in technology-based teaching.

Question 3 is explicitly concerned with faculty’s professional development in a technologically-enabled learning environment.

Method

Mixed methods (MM) were used to conduct the first cycle of this DBR. The philosophical underpinnings of MM research are pragmatism, “a deconstructive paradigm that debunks concepts such as ‘truth’ and ‘reality’ and focuses instead on ‘what works’ as the truth regarding the research questions under investigation” (Teddlie & Tashakkori, 2009, p. 8), and the transformative paradigm. “MM research questions guide MM investiga-
Findings

This section highlights the most salient findings obtained through the survey study, database mining and qualitative interviews (Class, 2009, pp. 275-389), regarding the professional development of faculty and student trainers. Readers are reminded that student trainers are professional conference interpreters taking this course either to add a new skill, that of becoming a trainer in their profession, or to continue to refine their self-taught skills as conference interpreters.

Findings for question 1 – What are the effects of the design on skill acquisition and knowledge building? – confirm that those student trainers who were also teachers acquired skills and developed many techniques for training student interpreters (Figure 5, Table 1). For those student trainers who were not teaching at the time, 75% agreed or strongly agreed that they did...
acquire skills, with the remaining 25% ranging between somewhat agreeing and agreeing (Class, 2009, p. 293). Student trainers also claimed to be confident about conducting a face-to-face course, while showing interest in learning more about teaching in a blended mode. Both groups agreed or somewhat agreed that they were confident about introducing distance learning tools in their course. Some findings comparing student trainers according to their grades suggest that those who used tools thoughtfully to complete activities, and used their journals to engage in reflection, tended to get better results. The correlation between journal entries and grades for one module (4) is weak ($r=0.4, \text{sig.}=0.008$), and not significant for another one (5). Given what is said in the literature about reflection, namely that it involves three central processes – monitoring, regulating and controlling one’s thinking about thinking – that are essential for creating expert knowledge, the fact that participants who used their journals tended to get better results is not surprising.

Figure 4. Global unstructured conjecture map.
In the DBR context of this study, one theoretical contribution consists in the formulation of the following design rules extracted from the findings to the first question:

- Authentic activities develop expert, self-directed learners.
- Authentic activities generate knowledge and skills that interest learners. The debriefing session ensures that objectives are met and reinforces learners’ transfer capabilities.
- Activity-based learning occurs on five levels, namely, production, feedback, reflection, collaboration and organisation.
- Reflection should be scaffolded within an activity and considered an integral part of the activity.

Findings for question 2 — To what extent is the portal an effective learning environment and in what ways did tools support pedagogical goals? — show that the portal did in fact provide a socio-technological place for student trainers to interact and co-construct meaning. Quantitative data (Figure 6) show that the most frequently used tools identified by participants (the forum, course description and social awareness tools) were those which represent the basic necessities for them to be productive, communicate, get organised and connect with the distant community. Participants were able to identify the most important tools, and then developed personalised ways of working with the other tools, alternating in their preferences for the journal, the chat, the shoutbox or the personal messages tool.
Qualitative data show that faculty developed an integrated view of the portal as a learning environment with tools complementing one another. In this setting, some tools occupy a more prominent place because they serve a particular pedagogical function, such as the forum, which is the central place for negotiating meaning and building knowledge. Faculty also recognized the teacher forum as a valuable tool for discussing issues, and appreciated the written and reflective dimension of the portal. Faculty agreed that the portal required them to be very clear and structured. It also encouraged them to collaborate more. In addition, it provided them with an opportunity to monitor participants’ progress in an unobtrusive way. Finally, it allowed faculty to have more in-depth, constructive discussions with student trainers about course content. As a result, faculty agreed that the written component of distance learning and the framework provided by the portal did have an influence on teaching and learning.

On the technical side, both participant and faculty data suggest that community, content and collaboration management systems (C3MS)
(Schneider et al., 2002) constituted an effective socio-constructivist learning environment and that the tools supported pedagogical goals.

Findings to this second question led to the formulation of the following design rules:

- Decisions related to the choice of a learning environment must begin with the adoption of a learning philosophy and only then move to the design of learning scenarios.
- The constraints inherent in the written mode of distance learning must be perceived as added value, providing increased structure, increased participation and increased time devoted to the teaching/learning enterprise.
- Learners should be provided with a set of central and peripheral tools that allow them a degree of flexibility in performing activities.
- A reflective architecture similar to the one developed for the learners should be developed for the teachers’ and tutors’ as well.
- Faculty training should be adaptive and designed in three stages: 1) learn how to use, 2) learn how to produce, and 3) learn how to create and innovate.

Findings for question 3 – Faculty’s perspective on the change management strategy — show that, on the whole, the teaching staff experienced the transition to activity-based teaching with a portal positively. One teacher commented:

*Well, I think the blended edition is an improvement over the face-to-face, precisely because you see both aspects of people. You see them over a long period at a distance and you really see their work, the process which they engage in to do their work. Whereas when we only saw them face-to-face, you saw them admittely for two weeks, but you were never there from one end to the other, so you saw them for a very short period and the interaction was much less deep. I prefer this system. This being said, it is a tremendous amount of work.*

*In fact, I would not say, I prefer, but I enjoy teaching in this way rather than coming in, not knowing students’ reactions. There is a much stronger bond with each participant. But I think you need the face-to-face; I am not sure that only on-line is as satisfying as finally discovering people that have been revealing one facet of their character. I would also say that this kind of teaching has created the opportunity to work as a team, for us as teachers, that we do not have in our regular work. (...) I find also that this distance teaching where you don’t see the person means you*
concentrate more on what they say, how they say it, and it is amazing how people’s personality comes through in the way they respond in writing. [...] I think so, I enjoyed... to tell you the truth, I almost enjoyed the online stuff more than the face-to-face.

Concerning human resources support, one teacher reported:

I have not given that much thought and thought of another model, but we certainly needed someone who headed the whole thing, T1, having an overall view of what we are going to achieve, how this Certificate fits in with her relationship with the school hierarchy, with other institutions. And having someone like you [pedagogical advisor] who has the technical know-how and some answers to questions. And someone like Tutor1 who was really very good and very present. I do not see how we could do it another way. It definitely supported me.

The following strengths of the blended edition were cited: 1) the volume of knowledge shared, 2) the collaboration among learners, 3) the activity and reactivity of learners, 4) the on-going discussion on the teacher forum, and 5) the flexibility to organise one’s time. The perceived drawbacks were related to lack of sufficient knowledge about creating online resources, slow connections during travel, and the volume of responses that had to be assessed. To conclude, it seems that the social and written dimensions of a socio-constructivist portal enhance the teaching process. The addition of teacher and learner dashboards providing learning process analytics is planned for the future and should improve the efficiency and the effectiveness of the environment.

Overall findings from the analysis of the qualitative data indicate that, on the whole, the organisation of human resources supported the teaching staff. In the 2004 edition of the course, not enough consideration was given to tutor training and integration; members of the teaching staff needed to complete five modules before fully comprehending each other’s roles. In the 2006 edition of the course, tutors were integrated from the start. However, the additional coordination that this entailed and the significant increase in the number of student trainers added to the teachers’ workloads.

Findings to this third question led to the formulation of the following design rules:

- When a course is transformed from a face-to-face only format to a blended format, appropriate support structures have to be devised to accommodate the resultant changes in the format, the content and the teaching team.
The actors need to be identified, their roles and responsibilities both in face-to-face and online need to be clearly defined, and a structure to support them needs to be designed.

Activity-based learning is scale-dependent and cannot be changed drastically without conducting a new constraint analysis.

Both teachers and tutors need to learn how to work together in a distance mode. Teachers should know what the tutor training involves and vice-versa. Only then can they learn how to teach together effectively and efficiently.

Training faculty in guiding small groups is necessary in an activity-based learning environment.

Impacts and New Developments

By the 2010 edition of the course, faculty had developed considerable expertise in teaching blended courses and were much more aware of strategies for facilitating work in both settings. Findings from a small study conducted in the 2010 edition show that one teacher actually used the face-to-face session to put into practice what had been developed on-line. Within a role-play, student trainers were invited to set up a “real” course for a given class of interpreting students. This was an occasion for them both to use, and thereby enhance, the theoretical knowledge they had acquired during on-line activities and to be fully aware of all the work done on-line. Participants carried out the exercise successfully and the debriefing session helped them to consolidate best teaching practices on the basis of what had transpired. Participants found the experience extremely beneficial. For another teacher, the face-to-face component was primarily about activating theoretical knowledge, determining whether student trainers were ready to use it in the classroom, and verifying whether they could actually do certain things at a relatively fast pace. No new knowledge was imparted during the face-to-face component. For yet another teacher, the face-to-face was both an extension and a reinforcement of work done on-line. Discussing material that was submitted on-line or introducing new activities that could best be taught face-to-face were the two strategies implemented. This teacher consciously built on both forms of communication – written and oral – which are of particular relevance in a context of interpreting.

Regarding quality issues, the MAS in interpreter training went through an accreditation procedure in 2009-10 and was awarded unconditional ac-
creditation at the beginning of 2011 by the Swiss Center of Accreditation and Quality Assurance in Higher Education (Class & Moser-Mercer, 2011). The burden of providing qualitative and quantitative evidence of the course and the recommendations of experts further shaped awareness of the utility of sound educational planning and decision making. Academic reflection related to the European Qualifications Framework\(^5\) and formal labelling of learning outcomes had been put on hold prior to 2010, due to the immense effort involved in the transition to a blended format. Four editions later, the entire staff was again cognitively available to absorb and integrate all these aspects for this particular course. The 2010 edition was thus far-removed from the 2004 edition. The 2012 edition concentrates on improving knowledge and skill management strategies within the team. It also seeks to create foundations for a community of interpreter trainers. This new space would not only leverage professional exchanges among practitioners but also offer short training-of-trainers sessions on chosen topics. It should also become a place to develop the vision of TPACK capacity-building in conference interpreting, both for trainers and actual interpreters.

**Conclusion**

First, it might be of interest, for similar projects, to highlight the most salient design rules that emerged from the first cycle of this DBR.

- When a course is transformed from a face-to-face only format to a blended format, appropriate support structures have to be devised to accommodate the resultant changes in the format, the content and the teaching team.
- Both teachers and tutors need to learn how to work together in a distance mode. Teachers should know what the tutor training involves and vice-versa. Only then can they learn how to teach together effectively and efficiently.
- Faculty training should be adaptive and designed in three stages: a) learn how to use, b) learn how to produce, and c) learn how to create and innovate.
- A reflective architecture similar to the one developed for the learners should be developed for the teachers’ and tutors’ as well.

The TPACK framework was used *a posteriori* to describe faculty’s capacities in terms of content, pedagogical and technological knowledge. To

summarise, pedagogy is socio-constructivist in orientation and four main strategies are implemented: cognitive apprenticeship, knowledge building, problem-based learning and collaborative learning. In addition, a customised, activity-based and collaborative learning environment has been developed to support pedagogical choices. Finally, the expertise acquired by faculty in teaching within a socio-constructivist learning environment has led to a growing awareness of the importance of TPACK competencies for the training of trainers in the domain of conference interpreting. The next cycle of the design-based research will therefore also be the occasion to investigate faculty’s TPACK capacities with appropriate, valid and reliable instruments.

References


