Virtual benchmarking as professional development: Peer learning in authentic learning environments

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The creation of a virtual benchmarking model as a tool for professional development of teachers is examined in this article. The process employed authentic learning criteria as reflection and dialogue tools in a peer review of e-courses. The learning space the virtual benchmarking process provided and its effectiveness in supporting professional development as experienced by teachers are described. Strengths and development challenges of the model are discussed. The project itself became an authentic learning environment in which elements structuring authentic learning promoted peer learning and collaborative construction of knowledge. Virtual methodologies were tested and developed with the use of Adobe Connect Pro and Ning. Teachers felt new knowledge could immediately be transferred to their work and authenticity in e-learning fostered by increasing collaborative construction of knowledge, strengthening reflection and deploying interactive social media. While considered useful and a time-saver, further improvements to the multiphase model should focus on process instructions and role clarification.

Keywords: virtual benchmarking, peer learning, professional development, authentic learning, e-learning

Introduction

The digital age requires new models of teacher professional development in authentic learning environments (cf. Slepkov, 2008; Jackson & Lund, 2000). Benchmarking has proven to be a method worthy of investigation and development as answers to the following questions are sought: How can teachers' e-learning experiences be linked to the development of authentic learning? What tools are needed in the virtual benchmarking process? In what ways can benchmarking be used as professional development in this process?

In 2008, an authentic e-learning development project was conducted in the Finnish Online University of Applied Sciences (FOUAS), in which professional development (PD) of teachers was supported by a virtual benchmarking method. Teachers with their peers evaluated authenticity in e-learning practices, deploying a tool created from the authentic learning elements proposed by Herrington and Oliver (2000). A benchmarking model (known as VBM) employing virtual sessions and social media, was developed. Courses from 12 universities of applied sciences (UAS) were evaluated, forming six benchmarking pairs from different disciplines. Also, any UAS teacher could take part as an observer. Altogether 43 people participated in the project. In our previous article (Leppisaari, Vainio & Herrington, 2009) we analysed the VBM model; this article primarily examines how teachers experienced learning.

Theoretical framework: Peer learning as a professional development tool

From the perspective of developing teaching and improving pedagogy, there is an evident need for new methods that develop the expertise of teachers. It is especially important to establish practices and habits in a teacher's work that facilitate on-the-job learning of knowledge, and that support both individual and

collective learning, and professional growth. The application of virtual learning communities (Lewis & Allan, 2005) and horizontal learning (Tuomi-Gröhn, Engeström & Young, 2003) to the field of virtual education and work can be considered a common theoretical frame of reference for research in this context. Working closely together with colleagues from other schools can broaden teachers' perspectives. They learn by sharing experiences, examining different views, perspectives and experiences. Recording experiences and exchanging ideas is pivotal, resulting in activity related knowledge (Nonaka & Takeuchi, 1995).

It is important to implement PD in such a way that it is authentic, based on daily virtual education practices and focused on tasks meaningful to the teacher (cf. Slepkov, 2008). Dissemination of good e-learning practice, and the training of staff in such practices, are required elements in career development. According to Ilomäki and Lakkala (2006), especially in the development of e-learning, a lack of meaningful usage access is often a barrier to progress. PD is better supported by providing meaningful usage opportunities, developing pedagogic models and encouraging understanding of new applications, than by traditional IT training (Ilomäki & Lakkala, 2005).

According to the *Report by the European Council and the European Commission on progress towards Education and Training 2010* teacher PD could occur in all matters which influence the learning process of the individual, such as subject knowledge, teaching and learning methods, pedagogy, theories and practices. Teachers' key competences are:

1. Working with others (collaborative approaches to learning, collaborate with colleagues to enhance their own learning and teaching);
2. Working with knowledge, technology and information (to integrate ICT effectively into learning and teaching where this is appropriate, to build networks of knowledge, to learn from their own experiences);
3. Working with and in society (to promote cooperation).

Benchmarking as a tool for teacher PD seems to offer possibilities to meet these challenges. European teacher PD strategies underline benchlearning and peer learning approaches (Stella & Woodhouse, 2007; ET, 2020). Benchmarking is defined as a formal process of comparison as a way of generating ideas for improvement (Stella & Woodhouse, 2007). Fielden (1997) emphasises in particular peer learning when he defines benchmarking as "a means of comparing one's performance with one's peers".

Benchmarking aims to further develop an activity, meaning we can, in fact, speak of *benchlearning*. Karlöf, Lundgren and Froment (2001) have conceptualised benchlearning as a learning process. They highlight features of benchlearning that can be applied to this context as follows:

- *Experience* plays a key part in benchmarking. For example, teachers have a wealth of experience and learning material they can bring to the benchmarking process. Benchmarking encourages learning and understanding.
- *Problem-solving* is the starting point for benchmarking. A group analysis of the problem and choice of good example lay a firm foundation for absorptive capacity.
- Benchlearning leads to *understanding.* In benchmarking, the lever for acquiring understanding of how one's own teaching ought to be developed is *other people's experience*.
- Association to new elements of knowledge and understanding through benchlearning cultivates the ability to *innovate*.
- It is a concept for transferring not only calibrated key indicators and pre-codifed data but also *tacit knowledge*, which is harder to access. In benchmarking *transformation between tacit and codifed knowledge* can occur.
- Benchmarking also offers *models:* benchlearning leads to an understanding of other people's models; this can prompt revision of ideas about the logic of one's own teaching.
- Benchlearning enables us to better understand changes in reality, provides just-in-time learning in *turbulence*.
- It develops *social competence*, both interactions with the good example and within the group itself.
- Benchlearning trains *strategic thinking ability* in *complexity* and accelerates *faster* learning processes.
- It is the action-oriented educational method that gives the participants freedom to act on their own *initiative*. (Karlöf et al, 2001).

One-to-one and collaborative approaches have their value in benchmarking. In both cases issues of trust, confidentiality and information sharing must be handled sensitively. The advantage of collaborative benchmarking approaches is that they offer possibilities for further networking and PD between peers

from different institutions, reinforcing the learning dimension of benchmarking towards improvement and higher performance (BM_EHE). The benchmarking process introduced here can be described as a collaborative and horizontal benchmarking model based on qualitative methods (cf. Jakson & Lund, 2000; ACODE, 2007). *Virtual benchmarking* refers to benchmarking cooperation, in which electronic communication tools are employed in interaction.

Benchmarking supports the opportunity to learn from one's own and others' experience, something Malderez and Wedell (2007) consider important in a teacher's learning. Peer learning encourages reflection and analysis of teaching practices, and helps to create a reflective virtual learning space (Ihanainen & Leppisaari, 2009). The benchmarking process may become a learning space, created through communication and the exchange of ideas, knowledge, experiences and emotions in a reflective and authentic way (Boud, 2006; Docherty et al, 2006). Reflection means an honest examination and questioning of one's thinking and practice (Boud et al, 2006; Rogers, 2001). Benchmarking integrates individual and collective reflection, their interaction an important lever for promoting professional growth (cf. Rogers, 2001; Simson & Ruijters, 2004). At its best, benchmarking actors will become a peer learning community (cf. BM_EHE; Lewis & Allan, 2005), in which learning is boosted by mutually supportive relationships. Boud, Cohen and Sampson (2001) note that peer learning is a two-way reciprocal learning activity that involves the sharing of knowledge and ideas. In this paper, we examine the current innovative VBM as a new form of peer learning and PD support for higher education teachers.

Virtual benchmarking as a tool for developing authentic learning

An examination of teaching quality in the Finnish university of applied sciences sector (FINHEEC evaluation report, see Leppisaari, Ihanainen, Nevgi, Taskila, Tuominen & Saari, 2008) shows that the state of authentic e-learning is rather weak at the lower rungs, despite UAS being a workplace oriented HE sector. Authentic learning with its supporting pedagogic solutions and labour market partnerships have not yet translated into UAS e-learning good practice. Identification of development needs, with which the benchmarking process usually begins (cf. Löfström, 2001), has been initiated at a national level in the FOUAS network, as benchmarking of good practices in authentic learning has arisen as a development need (see Stella & Woodhouse, 2007).

The creation or selection of indicators can have a pivotal impact on the creation of a benchmarking model (BM_EHE; Stella & Woodhouse, 2007). For example, construction of a benchmarking process includes agreeing on areas of comparison and identification of appropriate criteria (Löfström, 2001). The focus of the FOUAS benchmarking was authentic e-learning (Herrington & Oliver, 2000) and was a basis for pedagogic activity and reflection**.** Elements of authentic learning were chosen as benchmarking indicators. They formed a scaffold and framework for inter-collegial dialogue and networked learning. The nine elements of authentic learning proposed by Herrington and Oliver (2000) were applied in authentic learning benchmarking (see also Herrington & Herrington, 2006). They propose learning is best facilitated in learning environments that:

1. Provide an authentic context that reflects the way the knowledge will be used in real-life
2. Provide authentic activities and tasks
3. Provide access to expert performances and the modelling of processes
4. Provide multiple roles and perspectives
5. Support the collaborative construction of knowledge
6. Promote reflection
7. Promote articulation
8. Provide coaching and scaffolding
9. Provide for authentic assessment of learning within the tasks

Virtual benchmarking project: Development of authenticity comparison

In 2008, the virtual benchmarking project (VBM) project established a virtual peer learning community (cf. Jackson & Temperley, 2007; Lewis & Allan, 2005), to support teachers in strengthening authenticity in e-learning. Matched collegial pairs engaged in peer learning, benefitting from each other's know-how, and supporting each other in developing e-learning. It was hoped an individual teacher would have a knock-on effect throughout an entire organisation, as changes in e-learning culture and teachers' learning are powerfully tied to organisational learning (cf. BM _EHE).

The VBM project (outlined in Table 1, see also Leppisaari, Vainio & Herrington, 2009) called for submissions of UAS online or web-assisted courses, either entire or partial. Course submissions to the

project were examined on the submission form by applying the authentic learning criteria proposed by Herrington and Oliver (2000). Twelve UAS participated in the project with eight entire and four partial courses. This resulted in six benchmarking pairs from different disciplines. Two cases involved pair teaching, so altogether there were 14 teachers on the project. Any interested UAS teacher could participate in the project as an observer. A project orientation was organised for the participants (case owners and other observers). Evaluation was conducted as peer review applying authentic learning evaluation criteria (Herrington & Oliver, 2000). The criteria also functioned as a discourse tool for pairs and in fact informed the discussions in virtual sessions.

The benchmarking process utilised Adobe Connect Pro software (ACP) as a synchronic communication tool in virtual meetings and the Ning environment as an asynchronous collective knowledge collation and interaction forum (http://vivabm.ning.com). Discussion forums were opened in Ning, in which all collective material, such as benchmarking session recordings and evaluation feedback discussion, was saved. Teachers could add new discussion areas as needed and create their own blog. An active collaborative construction of knowledge by teachers in Ning, concomitantly studying authentic learning in concrete ways, and sharing of expertise, were goals of the project. The purpose of technology was to support peer learning and to provide reflective space (Beck & Wyk, 2006), which is essential in deep reflective learning (Boud, 2006). A virtual way-of-doing provided the teachers with an authentic learning experience of technology deployment.

In the final stages of the project, the project leaders drew up a summary of the 12 cases, which was discussed in a virtual meeting. The project's international expert commented on some of the cases in September 2008. Research data was collected and developmental research engaged in throughout the duration of the project.

Table 1: An outline of the VBM model

Pedagogic tools:	Authentic learning criteria (Herrington & Oliver 2000)			
Virtual benchmarking of authentic e-learning 6 benchmarking pairs (total of 14 UAS teachers) and observers				
PROCESS: 1) Project commencement: Course description, kick-off seminar, pair formation, initial survey	2) BM advance preparations: Self-evaluation, preparation of pair's peer review, questions	3) BM session: Peer review discussion/open peer review within virtual community	4) "Post-mortem" / Further discussion: Open peer review within VC	5) Project conclusion: summaries, final seminar, expert feedback, final survey, research, reporting
VIRTUAL TOOLS: Ning (asynchr), Adobe Connect Pro (synchr)	Ning (asynchr) (43 individuals logged into Ning community)	Adobe Connect Pro (synchr) (7 x c.12 individuals)	Ning (asynchr) (43 logged into Ning community)	Ning (asynchr), Adobe Connect Pro (synchr)

Implementation of research

We have described in detail the implementation of the project in our earlier article (Leppisaari et al, 2009). Our focus in this research paper is to describe the learning space VBM project created for teachers in authentic learning development and how the method supported professional growth. An examination of interaction focused on how feedback was given and received virtually and how collegial interactive relationships were evident in virtual benchmarking work.

In the VBM project, a diverse range of data was collected. The core research data in this study was primarily comprised of an initial survey of open-ended questions (n=7) and a final survey (n=13). Open-ended questions, the core data of this study, helped to capture the authenticity, richness and depth of response (cf. Cohen, Manion & Morrison, 2005; Slepkov, 2008). Teachers' responses to the questions documented their learning and so provided insight into the nature of authentic PD from a teacher's point of view (cf. Slepkov, 2008). The core data also included the recorded virtual benchmarking session discussions (n=8, 6 sessions in spring and 2 in autumn) and the benchmarking session chat discussions and dialogue in the Ning environment (advance preparations, benchmarking pairs' reciprocal questions on their courses, and summary dialogue). The recordings were saved in Ning. Other data includes self-evaluations carried out on the basis of authentic learning evaluation criteria forms (n=5) and pair reviews

(n=5). Of the researchers, two also acted as project observers while coordinating the study. The research method employed a qualitative content analysis. The themes were directed by the project implementation stages and articulated research questions. The study can be described as a reasoning process in which induction and deduction, the data and theories, alternate and overlap (Cohen et al, 2005; Flick, 2006).

Implementation and analysis of the VBM process

Analysis of data revealed teachers' perceptions on how authentic peer learning was supported by the VBM and also provided insight into how the model should be further developed.

Commencement

The learning process (see Table 1) was initiated by self-evaluations during the project's submission stage in the *course descriptions* (objectives, content and methodology), as courses were mirrored against Herrington and Oliver's (2000) nine elements of authentic learning. The kick-off seminar was held online using the ACP program, which was also employed in the benchmarking sessions. The project idea, objectives, operational model and tools were introduced in the seminar. The choice of benchmarking pairs was key to the effectiveness of the benchmarking process (BM_EHE). The coordinators matched benchmarking pairs according to similar content and participants' wishes. The benchmarking pair suggestions were sent to participants for comment, and scheduling factors resulted in a few pairs being rematched. Not every pair had similar course content to evaluate.

Teachers expected from their peers rewarding interaction, interest and honesty, constructive discussion and feedback, clear development suggestions and the sharing of good practices. Openness with and sharing of material and work practices were also desired. One teacher expected questions especially supporting reflection: *Insightful questions and comments to help me improve the virtual courses in question and their authenticity* (Riitta by initial survey, pseudonyms used). The benchmarking pair's e-learning experience was seen to impact the success of the peer learning process: *My BM pair appeared to have little experience in leading an online course, so I refrained from pressuring her/him into greater collaboration in evaluation* (Laura by final survey).

Advance preparations for benchmarking in Ning

Ning was employed as an open interaction forum to house the project's history and "memory". Case descriptions were also collected here. The advance work in Ning (see Table 1) aimed to support purposeful preparation for the synchronic benchmarking session and included traditional information collection on the benchmarking process (cf. Löfström, 2001). The task involved collecting presentation material on one's course for the virtual session and also familiarisation with the course of one's pair. The next phase was a self-critique of one's course and peer review of the benchmarking pair's course applying the authentic learning criteria. According to Nicholls (2004, 136) enhancement of learning and the development of conceptual tools are key to the lifelong learner. Self-critical review is one way of achieving this. Assessment, description and self-critique of the current situation, one's own assessment of the subject, are central features of the entire benchmarking process (Löfström, 2001). Comparison against authentic learning criteria aimed to facilitate recognition of the authentic space of one's teaching and provide a realistic picture of strengths and development areas. Participants were asked to bring their self-evaluations to Ning, but not everyone did this. Reasons included lack of time, the foreignness of the environment, and the questions raised by the environment's openness.

It should be noted that benchmarking pairs did not have an opportunity to observe actual teaching; rather peer review was based on familiarisation of the course on the web and the teacher's introduction and description. Instructions during the first virtual meeting included that benchmarking pairs be given the possibility to become familiar with the courses, but these instructions were not given in writing. One teacher's criticism was*"participants had not been informed that one's pair be given access to the course. I spent a great deal of time trying to access the course to be benchmarked"* (Liisa by final survey). Another teacher felt a danger of the project to be a too superficial use of the benchmarking method as its use, in this teacher's opinion, requires a rather in-depth familiarisation with the benchmarking pair's course implementation. In this type of activity, especial attention needs to be paid to instructions.

Most teachers prepared in advance questions on all nine elements of authentic learning for their benchmarking pair to answer regarding their own course and a question concerning the benchmarking pair's course. One teacher pair (team teachers) describes this process and their feelings before the benchmarking session: *"We (with my colleague) went through our course with the help of the criteria and*

marked our response on the scale. This and our experiences raised questions. We'll probably send these questions to our pair by email as we haven't been able to do so through the work platform. We've given our pair visitor access codes so that s/he is able to read about our course. Work with the benchmarker should be interactive" (Tuula in Ning discussion 2.4.2008). Table 2 below is an example of a teacher's question and the colleague's reflection.

Table 2: An outline of the VBM model

Evaluation subject: elements of authentic learning	Teacher's question	Benchmarking pair's response
5. Collaborative construction of knowledge	How can students be encouraged to construct a collective document, not just you do this, I'll do this and she'll do that?	I had the same problem in my implementation and I think tool selection directs this to a large extent. I'd still use some online tool (familiar or user-friendly enough so that attention is not taken from the substance… Methods? …Directed "project meetings" like in real teams.

Not all pairs responded to each other in writing; rather questions were handled orally in benchmarking sessions. Of the elements of authentic learning, reflection was considered very difficult to evaluate/observe in online implementation. There was collective discussion on how reflection could be made more evident online (see Leppisaari et al, 2009). Teachers saw advance preparation (self-evaluation, peer review and thinking about questions) prior to actual benchmarking sessions as very valuable. This stage is often considered the most difficult, but also particularly rewarding (cf. Löfström, 2001). The above examples of questions illustrate how benchmarking is a two-way and systematic process of learning from one's self and others. Being in the roles of both reviewer and reviewee, and alternating in these, helps to see things from "the other's" perspective, but allows applications to be made by the actor her/himself (cf. Saari, 2007).

Virtual benchmarking session

The virtual synchronic benchmarking session (see Table 1) was held in ACP. One hour was reserved for each case and the implementations of both benchmarking pair members were dealt with. Participants in the virtual meetings varied from 8 to 21 people. The virtual benchmarking session agenda was: The teacher presented her/his course paying special attention to the questions the reviewer had sent beforehand (20 minutes). The benchmarking pair (reviewer) commented on the course using the criteria and commented on the questions the teacher had sent beforehand (20 min). The benchmarking session continued with a general discussion, in which observers and coordinators participated (20 min), enabling reciprocal collegial support and exchange of ideas (Fullerton, 2003).

The *observors*' spontaneous questions added vigour and strengthened collective reflection. Also, the project's *expert consultant* role was significant as a discussion activator. The latter's task can be encapsulated as discourse partner in the synchronic benchmarking sessions, during which the project coordinators had organisational tasks to take care of, one coordinator functioning as Chair. Open discussion between experts introduces new perspectives and facilitates critical examination of one's practice (Tynjälä et al, 2007). The elements of authentic e-learning and the evaluation tool created from them form a basis for an exchange of experiences, simultaneously ensuring that even in larger participatory groups discussion remains focused on essential questions during virtual sessions.

The *chat discussions* during the benchmarking sessions in ACP supported actual discourse as forums in which knowledge and experiences were shared. Several chat discussions on various themes could be taking place at the one time. Teachers actively shared links to websites significant to the evaluation discussion. The benchmarking sessions were praised for their "open constructive approach" (Liisa in ACP chat discussion 4.4.2008) in sharing experiences and practices . Teachers felt the issues dealt with were strongly connected to everyday work: *The application value of the session was the best!* (Liisa by final survey). Interaction was assessed as follows: *Honesty in feedback and development are after all important elements. It is important to intervene in areas needing development, but genuine praise encourages and rewards a teacher* (Seppo by final survey).

'Post mortem': Ning

One objective in the VBM was a continuation of the synchronic benchmarking session discussion as a so-called 'post mortem' discussion in Ning (see Table 1). Forty-three people logged into Ning, evidence of

the networking nature of social media. Working in Ning was new to several teachers and clearer game rules were wanted. One teacher asked "…who and with what "profile" can participate in this community? Fair play is needed, ie, everyone uses their own name and tells at least a little about their connection to the topic/community. We case presenters are prepared to share quite a bit" (Liisa by initial survey).

Discussion in Ning as a VBM group was not active; it lacked “suction and sinew”. Reasons for this most certainly include teachers’ tight schedules, but also that discussion in open forums is still quite foreign to many teachers, as is the tool itself.

The goal of the benchmarking process is *benchlearning*, to direct teachers towards continuous development (cf. Löfström, 2001). The ‘post mortem’ aims for teachers to give more in-depth consideration to the responses they received to their questions and the content of the sessions, and that they be able to define how they will utilise the feedback and suggestions for development in enhancing their teaching. One set of team teachers drew up a summary of the peer review under all nine elements of authentic learning and reflected on what they had learned from the evaluation of their course and how they could use the peer review to improve it. Teachers felt evaluation work to be an exceptional learning experience and that the authentic learning criteria created a sound logical foundation for the work.

Project conclusion

Concluding the VBM project included drawing up summaries, a final seminar, expert feedback, final survey, reporting, and dissemination of the study and its results (see Table 1). In the summary, the coordinators described the implementation of authentic criteria in the courses submitted for the project. The information was collected from the evaluation forms, questions and responses, and the benchmarking session discussions. The project outcomes were presented in the final seminar and the audience was invited to consider, on the basis of what they had heard, what their dream concerning online teaching is. As part of the final seminar, a meeting combining face-to-face and virtual participants was organized, in which the project’s international expert on authentic learning gave feedback on the authenticity of the project’s virtual implementations to the five participating teachers. The evaluation was informed by the course descriptions and summary drawn up by the coordinators. In particular, the expert addressed the questions in the summary. Case ‘owners’ and other participants were welcome to ask further questions.

The final survey contained information on the VBM project experiences, experiences regarding peer learning, and the effectiveness of the VBM model in developing expertise. This was linked to the Ning environment. The final report and authentic e-learning tool were published in the FOUAS portal and is freely available for use. The tool supports a teacher’s enhancement of teaching practices and is suitable for individual self-assessment, peer review and collective benchmarking.

Reflection, evaluation and further development of the VBM model as support for teacher PD

Operational model

The aim of the project was to promote peer learning in the development of authentic e-learning through virtual benchmarking activity. Overall the participants’ experience of the VBM was quite positive. Participants expected to be better equipped to develop greater authenticity in teaching and many felt the benchmarking process to be refreshing and provide new ideas. Benchmarking was a dynamic method: *Participants included the very experienced and novices in e-learning – expert know-how was, therefore, particularly well modelled* (Maria by final survey).

The VBM clearly promotes teachers’ mutual networking and establishment of contacts between universities of applied sciences in order to develop authentic online pedagogy. Virtual interaction facilitated an exchange of ideas and experiences, mutual ‘eureka’ experiences and sharing, all goals teachers set at the start of the project. Benchmarking is an important tool in creating relationships and cooperation (Löfström, 2001).

An examination of interaction and cooperative work in the VBM shows that there is a need for more collaborative work within the pairs and also the entire benchmarking community. However, those who gave feedback felt they were unable to commit themselves and participate to the degree they would have liked. The VBM community’s collectiveness was realised asynchronously and synchronically. Interaction in the benchmarking pairs’ work fell short of the project objective. One teacher felt: *It was a rewarding learning process, including powerful collective experiences* (Kirsi by final survey). Giving feedback

virtually can be seen as challenging, as due to the danger of misinterpretation there is an attempt to avoid ”differences of opinion”. Teachers feel that negative, courageous criticism and feedback and constructive comparisons must be given so that the evaluation is not too general. Establishing trust in a virtual community requires a climate of belief in people’s ability with space to set goals, and raise problems, and in which members become inspired and create something new together. Selected work forums also affect the establishment of trust. The working environment was new and some teachers were sceptical of its openness. A deeper interaction within pairs can be ensured in future projects by a joint orientation on advance preparations and staging.

The VBM is an open model in that it is possible to participate in the benchmarking process as an observer or monitor. Observers felt they can also be active learners. One teacher illustrates, "I was an active listener in one session. It was interesting and inspiring – I could have been a student on the course! The application value of the session was the best!" (Liisa by final survey). The feedback indicates a need for less intense peer learning opportunities in teacher PD and models applicable to different everyday situations and learning objectives.

Student representatives in the VBM process were named in the descriptions of two UASs, with a student representative present in one online discussion. Teachers were instructed to have students join the Ning discussion, but this objective has not yet been achieved. The student voice is central in authentic e-learning, just as it is in quality development of education (Saari & Leppisaari, 2008). In future benchmarking processes, the student role needs to be modelled and clearer instructions be given to students. It was also hoped that mentors from the corporate world would be involved in the benchmarking process as ‘outside auditors’. Linking labour market experts to the VBM would effectively serve authentic e-learning development objectives (cf. Leppisaari et al, 2008).

A practical problem in the VBM is the difficulty in achieving the creation of a continuity and ‘slipstream’ that motivates busy teachers to commit to the process. The main problem of this year-long project was the everyday timetable obstacles preventing busy teachers from committing to the project. The summer interrupted project momentum and impeded the formation of a collective process. The difficulty with projects implemented during the calendar year is their inability to take into consideration the educational institution’s cycle so that sufficient time remains for collective work. There was an attempt, however, on the basis of experiences from previous years to construct the project in such a way that teachers could participate even though long term commitment may not have been possible. All development requires time (cf. Löfström, 2001), just as reflection requires stopping. Schonfield (2000) comments that the benchmarking process is by nature time consuming, rather than quick and easy.

According to the feedback, it was felt that in a virtually implemented project *the web is an incomparable cooperative environment* (Satu by final survey), even though once again there were examples of the unreliability of technology and communications not working (Bt10). *In my opinion virtual benchmarking all in all worked surprisingly well and makes possible cooperation between people who live far away from each other. Time is scarce and I certainly don’t have time to travel anywhere:-)* (Kaisa in Ning discussion 23.4.2008). According to Leppisaari (2009), the virtual BM concept saves time. The VBM project had an economic dimension in terms of sustainable development: Work time saved during the project was at least 5 hours/participant/meeting as there was no need to travel to meetings, thus resulting in savings in travel costs.

A teacher’s learning: Authentic content

According to our study, teachers considered the VBM process a meaningful learning space: an opportunity to communicate and exchange ideas, knowledge, experiences and emotions in a reflective and authentic way (cf. Boud, 2006; Docherty, 2006; Docherty et al, 2006). Teachers felt that the VBM provided an authentic learning reflection space and supported authentic peer learning. The final survey indicated that the elements of authentic learning opened up to teachers in a new way and they received many new ideas and thoughts on how to improve authenticity in teaching. Translating the evaluation criteria from English to a natural Finnish that captures the different nuances in such a way that they fit our pedagogic culture in UASs also activated pedagogic dialogue.

The elements of authentic learning became clearer through dialogue examining virtual education practices. Teacher PD was supported by self-assessment, elements that structure authentic learning, and especially learning from one’s peers (cf. Slepkov, 2008). Benchmarking generally initiates beneficial examination and evaluation processes of one’s practice (Löfström, 2001, 16). Inter-collegial discourse makes tacit knowledge explicit, that is, articulated knowledge (Tynjälä et al, 2007; Nonaka & Takeuchi,

1995). Deep discussion was created during the process, through which collective knowledge of online pedagogy was constructed and this was also immediately shared with others in one's workplace: "(The project) gave a tool that structured issues related to learning. Thank you. This can be greatly utilised in my work (Niina by final survey)… I can take them further in my work to others" (Laura by final survey). Thus the project was also an authentic learning environment for teachers.

An essential element in this learning is reflection in and on the work being carried out. Docherty et al (2006) call this productive reflection. The VBM network supported participants' reflection on their practices and raised self-confidence through peer support (cf. Tynjälä et al, 2007). Benchmarking is an important tool for recognition and raising self-esteem (Löfström, 2001), supporting an emotional and motivational component in teacher PD (cf. Slepkov, 2008).

According to the study, teachers will improve authenticity in e-learning by increasing and deepening collaborative construction of knowledge, strengthening reflection and employing social media in interaction. They also intend to strengthen ties with the labour market and create opportunities to meet with experts and use senior students as learning resources. They will continue to believe in themselves in real teaching situations and allow people and the subject to lead then in authentic ways.

Conclusion

A five-stage VBM (see Table 1) to develop teachers' online pedagogic skills was created in this project. Sound authentic teaching practices and authentic materials in the UAS network were selected by this method and disseminated. Tools for evaluating authentic e-learning were provided. A learning space in which teachers had the possibility to reflect on the authenticity of their teaching through individual advance reflection, self-critique, peer review, and collective dialogue was formed through the VBM. Benchmarking offered a reciprocal sharing space: feedback was received on one's e-learning practices and one could share ideas with colleagues. A common understanding on authentic e-learning, and sharing of issues and emotions related to teaching were enabled during collective reflection. The project also provided genuine usage access and a possibility to try and test in practice virtual operational environments from a student perspective.

Focused reflection subjects created a common learning framework, activated pedagogic discourse and created an opportunity to expand one's understanding of quality teaching and analyse the methods and good practices of colleagues. Common conceptual tools (authentic learning evaluation tool) and practices (self-assessment, peer review) supported the peer learning process (cf. Tynjälä et al, 2007). According to the study, learning from peers especially supported construction of knowledge thus enabling authentic PD. The process produced concrete examples of how teachers can reflect on their practice and skills and how they can give colleagues constructive and developing feedback. Participants' tacit knowledge was made visible, and through reflection, dialogue and conceptual change many felt online implementation culture genuinely moved in a more authentic direction. There was much progress in reflection, giving of feedback and dialogue even in such a brief project. In the final stages, the evaluation criteria and questions were employed to deal with rather detailed choices a teacher makes and there was critical consideration of the effectiveness of methods. Only in a longer process is it possible to go deeper into this, as a virtual discourse relationship requires a more sustained period of working together.

Participation in this VBM utilising project provided teachers with an authentic learning environment (cf. Slepkov, 2008). Self-assessment, peer review, and collegial evaluation discussions supported reflection, and peer learning broadened perspectives on the phenomena being examined. The model created a collaborative problem-solving space and facilitated development of collective activity with one's colleagues. Observing colleagues' work helped to deepen an understanding of ways to implement the elements of authentic learning in genuine course realisations. Teacher PD occurred in just-in-time situations, that is, problems in online teaching were solved through the review process and new knowledge could be tested and further developed immediately in the context of one's teaching. Slepkov (2008) sees the transfer to everyday teaching work as being pivotal when examining results in teacher PD.

In future, more attention needs to be paid to process instructions and clarifying the roles of different actors in this multistage VBM. Student and labour market representatives are to be integrated more strongly into the model and in similar more sustained projects peer review can be implemented by observing genuine learning and teaching processes, resulting in benchmarking as a continuous process (cf. Schonfield, 2000) being linked more closely to e-learning development in a teacher's organisation. The evaluation tool piloted in this project is appropriate for this purpose. Reflective collegial observation, consultation and feedback can be effective methods in developing teachers' skills and e-learning quality.

Guidelines for effective e-benchmarking were created in this VBM pilot, which, as this paper is being written, are being applied in the 2009 International VBM Project, in which international benchmarking pairs add a new dimension to the model.

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