Elevator to communal scaffold? An analysis of social and pedagogical aspects of VLE use in a Bachelor programme

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Abstract

This article analyses the use of a Virtual Learning Environment (VLE) in a Norwegian institution of higher education, using the model of *communal scaffolding*. It compares the actual use of the VLE to support a Bachelor programme with the guidelines offered in the *communal scaffolding* literature. Interviews conducted with staff and students constitute the main data source. The analysis explores the extent to which the programme follows the *communal scaffolding* recommendations. Areas of improvement are identified in the *communal scaffolding* model and a new model is proposed, based on the original, but with additional elements emerging from the data.

Introduction

The last decades have seen an explosion of distance education and blended learning programmes, for a number of reasons. On the 'supply' side, the methods of course delivery have become increasingly sophisticated and cost-efficient over the years: the traditional correspondence model reliant on postal services has given way to Internet-based delivery modes or, in some parts of the world, to alternative delivery methods such as short message services (Librero et al., 2007) or satellite broadcasting media (Bhattacharya, 2008). On the 'demand' side, the size and the characteristics of the distance education clientele has evolved significantly. For example, there has been a rise in the numbers of professionals taking distance education courses at the postgraduate level (Calvert, 2005).

Although e-learning tools have become a quasi-necessity in distance and blended learning, and have been the focus of a significant amount of research work, there does not seem to be any particular theoretical construct that is prevalent in the literature. Instead, there is a wealth of conceptual models that may be used to shed light on existing e-learning practices and inform future development of those practices (as in Shu-Sheng, 2008; Oubenaïssa-Giardina and Bhattacharya, 2007, to give only two recent examples). The communal scaffolding model—as presented in Baker and Woods (2005) and Woods and Ebersole (2003a, 2003b)—provides one possible conceptual approach to the study of learning processes in educational programmes that are supported by e-learning tools.

This article first introduces the philosophy behind the communal scaffolding model, inspired by the idea that affective and cognitive learning are intimately related, and that technical and pedagogical artefacts meant to support learning should be developed so as to enhance both aspects of learning (section 2). It then uses the communal scaffolding model to shed light on a real-life case study from a Norwegian institution of higher education—called Eris University College (EUC) for the purpose of preserving anonymity (section 3). Section 4 identifies a number of new elements that may be taken into account when introducing and implementing a VLE, proposes to incorporate those elements into the original model of communal scaffolding, and suggests ways to link them with the original elements of the model. A conclusion with suggestions for future research is provided in section 5. It may be noted that the communal scaffolding model was not used to inform the original development of the course. However, it was used as a basis for data analysis, and may in the future be useful for further pedagogical development of the course.

Communal scaffolding for distance and blended learning

Scaffolding has been used in the literature as a metaphor to illustrate the process of building a support system that would 'raise' the level of the learners to a 'higher' plane. The early uses of the term referred to the processes that come into play when a person that is more knowledgeable than the learner provides help that allows the learner to achieve goals that would otherwise be beyond her or his reach (Wood et al., 1976). Stone (1996) pinpoints that the notion of scaffolding relates both to an assessment of the learner's requirements in order to achieve his or her potential for new learning and to a means of helping the learner to achieve this potential. She also highlights a shift from an original focus on an asymmetrical relation between adult and child towards a new focus on the mutuality of the scaffolding process, whereby both learner and teacher support each other, as in Rogoff's (1990; 1995) concept of 'guided participation'.

The concept of scaffolding is closely related to the notion of Zone of Proximal Development (ZPD), which is central to Vygotsky's work on interaction between learning and development. The concept of ZPD is defined as:

'the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers' (Vygotsky, 1978, pp. 86).

The concept of ZPD is itself intimately connected to the collaborative aspects of learning, whereby the focus is on the participation in sociocultural practices. Sociocultural approaches have been found to be helpful when trying to understand situations characterised by complexity and unpredictability, and the multiplicity of interactions (Spouse, 2001; Lerman, 2001; Lemke, 2000), which suggests that they may be relevant to the study of e-learning systems, which are themselves often considered complex and multifaceted (Chandra and Lloyd, 2008).

The contribution of the scaffold is primarily the building of a bridge between cognitive knowledge and practical skills (Greenfield, 1984; Harley, 1993). In later years, with the rise of educational technology, the notion of scaffolding has been broadened so as to include 'ways the software tool itself can support learners rather than only teachers or peers' (Reiser, 2004, pp. 275). In this paper, we choose to focus not on the notion of software scaffolding, but on the interpersonal processes that take place to support student learning.

Communal scaffolding is derived from the scaffolding notion above, and has its roots in a social cognitive way of conceptualising learning. It makes sense to talk about communal scaffolding because the workings of the scaffold are highly dependent on interpersonal communication. Achieving a broad sense of belonging to a learning community is at the core of communal scaffolding thinking. Members of the teaching staff can thereby be seen as 'communal architects', whose main goal is to enable and support constructive interpersonal dynamics. It is to be noted that communication between students is at least as important as communication between teachers and students, and that students therefore play a central role in the process of building a communal scaffold. This focus on multilateral learning relations with a variety of actors playing a role in the learning process seemed to us particularly relevant to the study of a VLE-based programme. Our experience with VLEs had shown that in an

online learning environment, the various actors draw from each others' knowledge and skills—not only in 'traditional' teacher–student relations, but also in the interactions that happen among staff members, among students, and in situations where staff members get new knowledge from students. A model that emphasised the communality of scaffolding seemed to us an adequate way to capture this complexity.

Woods and Ebersole (2003a) provide two different representations of the notion of communal scaffolding. The first representation (Figure 1) consists of a visual overview of the functions of the communal scaffold. This overview illustrates how interpersonal dynamics are fitted into the existing scaffold structures through online and offline strategies so that learners are able to extend their range of learning opportunities by cooperating with others (Woods and Ebersole, 2003a). Woods and Ebersole (2003a) describe teachers and learners in such a system as 'communal architects', as they participate in building a communal scaffold for the purpose of community building.
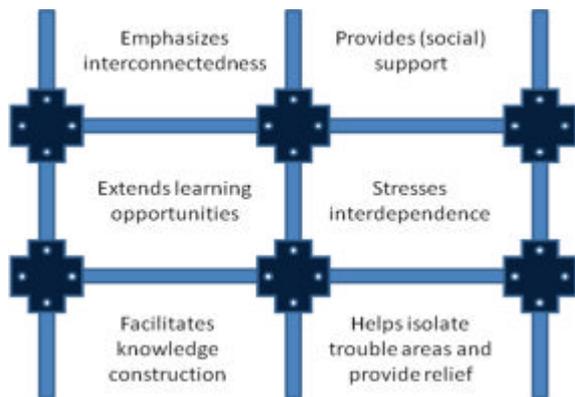

Figure 1: Functions of the communal scaffold (from Woods and Ebersole, 2003a)

The second representation (Figure 2) is a visual overview of the web of communal scaffolding, and is meant to demonstrate how the scaffold facilitates interconnectedness and shared responsibility for learning outcomes and the interaction between cognitive and affective aspects of online learning (Woods and Ebersole, 2003a).
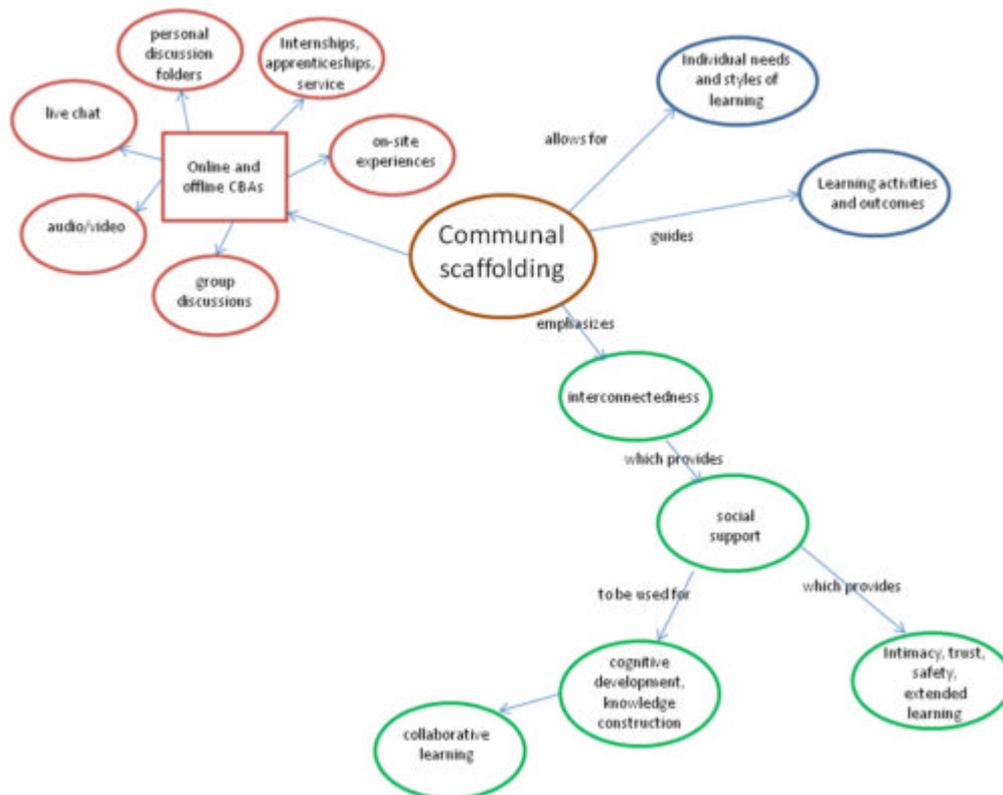
Figure 2: The web of communal scaffolding (from Woods and Ebersole, 2003a)

Woods and Ebersole (2003a) focus on how to achieve successful communal scaffolding through online and offline strategies and communication tools, called Community Building Activities (CBA). They mention the following CBAs, which can be used by instructors to build a so-called scaffold: create personal discussion folders for students, immediacy, live chat, personalised e-mails, audio/video, regular updates and feedback, group discussions and private places. Offline scaffolding can occur through on-site experiences, field trips, group meetings and phone calls. In a later article, Baker and Woods (2005) highlight the instructors' responsibility in fostering a communication-rich learning environment, but also encourage students to engage in the same community building activities.

Description and analysis of the case study
Overview
The study is carried out on a part-time programme, which totals 200 students and is run by a group of 25 staff members, 5 of whom are particularly involved in the part-time study programme. The programme involves long periods of self-study, and relies heavily on the use of a commercial VLE. The VLE, that we will call Enceladus to preserve the anonymity of the case study, has contributed to shaping the learning environment of the students. Enceladus is a pivotal tool for the programme as it allows the EUC students to access information from the university, to perform group activities when away from the campus, and to hand in their written assignments.

The methodological approach of the study is broadly interpretative, with a focus on achieving in-depth descriptions of a complex reality. The empirical data presented in the paper was gathered primarily through a series of qualitative interviews with students and members of staff. The course under investigation is part of a four-year part-time bachelor programme. The student group is rather heterogeneous, with students between 20 and 50 years of age and from very different professional and educational backgrounds. A common characteristic of the students is that they are all working in parallel with their studies.

Our study is based on four one-hour focus group interviews with 4 staff members and 16 students from two different years (2nd year and 3rd year), in addition to an individual interview with a member of the academic staff. The group of student interviewees reflects the student group in terms of age and gender proportions. It may also be noted that the interviewee group covered the whole spectrum of computing skills found in the total population, from moderate computer knowledge and awareness to extreme curiosity and interest for all forms of technology. The group of staff interviewees consisted of the staff members who were most engaged in the part-time study programme, more specifically one administrative staff member and four academics.

Communal scaffolding recommendations in practice

In the part-time bachelor program, the VLE is important in shaping the students' school experience. The institution does implement most of the *online CBAs* advocated by Baker and Woods (2005) and Woods and Ebersole (2003a; 2003b).

Woods and Ebersole (2003a) describe *personal discussion folders* as places where students can create a personal profile, as well as initiate and participate in personalised threaded discussions. The students of EUC can create personal profiles and upload pictures, although the VLE does not allow for threaded discussions directly related to those personal profiles. However, the students meet on campus several times a year, and therefore have the opportunity to get to know each other in person, which perhaps reduces the need for personalised discussion boards.

Immediacy refers to the set of verbal and non-verbal behaviours that reduce the perceived physical or psychological distance in interpersonal communication (Mehrabian, 1967; Thweatt and McCroskey, 1996). Instructor immediacy is described as important in creating a sense of classroom community among the learners. Responding to e-mails and threaded discussions in what Ebersole (2003) refers to as a 'timely manner' is one way to be immediate. Another may consist of coming up with questions that may instigate dialogue, initiating online discussions or using emoticons. At EUC, the members of staff work towards spreading a feeling of immediacy in a number of ways: they publish regular updates of the information available on the VLE, answer personal messages and e-mails from students, and participate actively in online discussions. Yet, some of the students interviewed express that they feel the staff could be more present on Enceladus. 'I think the teachers should be more present. We are their class, even though we are part-time students' [Extract from a focus group interview with students].

The students also express that they wish their teachers would 'just write something [on Enceladus], like "how are you"?' [Extract from a focus group interview with students]

Group discussions and threaded dialogues are presented as central elements that can help establish a foundation upon which a more elaborate social network or communal structure can be built (Woods and Ebersole, 2003a; 2003b; Baker and Woods, 2005). Planned threaded discussions can also help students feel safer expressing their views, which is an important element in the community-building process.

Group discussions are an integral part of several courses at EUC, and both students and staff members have the opportunity to initiate threaded discussions on the VLE. EUC has created two different spaces for threaded discussions on Enceladus, one for social interaction—which does not normally involve members of the academic staff—and one for academic discussion—where the students can expect members of the academic staff to read all the posts and answer questions on a regular basis. Most of the students are frequent users of those discussion boards, but many of them do so in a rather passive manner, i.e., they do read others' postings, but they generally avoid contributing to the discussion themselves. When asked about the reasons for this passivity, some students explain that they lack confidence in their own academic knowledge, and therefore avoid asking questions or expressing opinions that might be seen by others as 'stupid'. They also express a certain reluctance to expose their ignorance to their fellow students, especially if they do not know them well. As one student expresses it:

And I know why I don't use the discussion boards more if I'm wondering about something. Because I don't have...since we're spending so little time together with the rest of the class, then one doesn't have enough confidence to ask questions that one perhaps wonders about but which are perhaps a bit stupid. If I have [such questions], I'd rather send a mail, or a message on Enceladus, directly to the teacher. [...] Those questions I don't throw in on the discussion board, because I think that: "oh yes, you haven't understood that yet", and then it feels safer to send a message to the teacher. [Extract from a focus group interview with students]

Live chat: Virtual office hours or scheduled live chats related to courses may help instructors connect with students in a synchronous manner, and can be a useful complement to asynchronous tools such as e-mail and discussion boards. Live chats can also be archived and reviewed by other students at a later stage. One of the advantages of live chats is that they allow for an almost instant response, which adds strength to the feeling of immediacy (Woods and Ebersole, 2003a). At EUC, live chats are sometimes used as part of courses, and the students report that they appreciate the propinquity they provide. However, the chat function appears to be technically challenging for some students. Also, many students report that chats can become confusing when they are attended by a large number of participants, as described in one of the interviews:

We have tried such a [chat function], when we have had the big online live discussion. To me, this [function] is completely useless, because you write something, and then ten other people write something else at the same time. And then what you've written about ends up way down in the text, and that I find very irritating. [Extract from a focus group interview with students]

Audio/video can be used as a supplement to text to build student/faculty relationships and a sense of online community (Woods and Ebersole, 2003a), and can promote intimacy (Baker and Woods, 2005). EUC does not use audio or video as part of the online communication with students.

Personalised e-mail is another way of communicating with students outside of regular class time or required course discussions. Personalised e-mails are 'pro-social behaviours that help to create the impression that we are expressive and generally involved' (Woods and Ebersole, 2003a). The EUC lecturers use personalised e-mail regularly, and such e-mails can enhance the students' sense of belonging to an online community as well as their overall satisfaction with the online learning experience (Woods and Ebersole, 2003a). During the interviews, some students mention the importance of e-mails from the staff to remind them of assignments and deadlines that they may have forgotten.

Regular updates on courses and *feedback* on student work are mentioned by Woods and Ebersole (2003a, 2003b) as important in enhancing intimacy and augmenting learning opportunities. They suggest that detailed feedback on assignments creates immediacy and enhances cognitive learning. At EUC, the VLE is the primary focus of academic activity, as students hand in all their written assignments on the VLE, and get feedback from instructors through the VLE. This feedback is important to the students, and many of the threaded discussions on the VLE relate to the feedback given by lecturers on student work. Woods and Ebersole (2003b) also encourage teachers to send weekly updates to guide the students' time and study, as well as include PowerPoint slides and audio files. At EUC, the students receive a study plan for the whole year at the beginning of the academic year, and some of the lecturers also upload PowerPoint slides on the VLE, either before or after they are used in class:

I also think it is very nice when the teacher goes in and publishes the lecture notes for the next meeting. This I think is very, very positive, and it also helps me being more structured. So then I realise that I actually have something I have to deliver. [Extract from a focus group interview with students]

The last element mentioned in the model of communal scaffolding is *private discussion folders*. These are specific areas on the VLE that are separate from the general class discussion, are intended to be used exclusively by students and are therefore inaccessible to academic staff members unless they

have been specifically invited. Such private student areas provide an opportunity for relationship building (Woods and Ebersole, 2003a). The VLE used by EUC allows students to create personal spaces where they can invite other students or staff. The students also engage in threaded discussions in smaller groups, divided by the university during the first year of the bachelor degree. The staff does, however, have access to these spaces, although they will not usually enter them without having been explicitly invited in by the students. The students that we have interviewed report that they feel safer in threaded discussions in smaller groups than in threaded discussions involving the whole class. They also engage more in academic discussions in these spaces.

There [on the private discussion board], we discuss academic topics. Not just who is going to meet up with whom and when, but also things that have to do with the study subject. [Extract from a focus group interview with students]

Woods and Ebersole (2003 a; 2003 b) also mention the importance of *offline CBAs* for communal scaffolding, such as field trips, on-site experiences, internships and phone calls. EUC staff meet the students on campus four times every year, and keep in touch with the students through telephone calls during the first years of study.

Other elements

The findings from the case study provide a picture of a programme that scrupulously adheres to the guidelines of the communal scaffolding model. However, it is to be noted that a general feeling of discontent seems to transpire from the data. The data gathered in this case study point towards a number of important elements that fall outside the model.

Misguided expectations about the VLE

The empirical data suggests that, because most of the information necessary for the course is posted on Enceladus, some students have developed an inaccurate image of the VLE as the only information point for the course. This misguided belief has been the source of some confusion, especially because some of the information relevant to the course has only been available from other systems, for example on the web pages of EUC.

I think it sometimes gets a bit confusing [when trying to figure out] what is available on Enceladus and what is available on EUC's web pages. [Extract from a focus group interview with students]

The students' confusion towards EUC's use of Enceladus is not only due to the existence of alternative channels conveying information from the teachers to the students. It is also related to the fact that communication among students and between students and teachers sometimes happens via tools that do not pertain to Enceladus, for example the EUC e-mail system:

Why do we need to have both messages [on Enceladus] and email? I don't really understand the difference between the two. […] I think that it is only making things more cumbersome, to spend time logging into the system and check what is on. So for me it is superfluous: [it just means] extra work. [Extract from a focus group interview with students]

Having to relate to two or more different systems requiring different usernames and passwords is also considered unduly time-consuming.

Differentiating between Enceladus and the student e-mail system can be a bit difficult. Our school has in addition arranged things in such a way that the passwords are different, and it has an IT department that doesn't function properly. [Extract from a focus group interview with students]

Technical requirements and technological knowledge

It appears from the data that two of the prerequisites for a satisfactory use of the VLE and the other online information and communication systems are:

1. access to technical equipment that supports all the functions necessary for downloading information, carrying out communication activities and performing individual assignments, and
2. sufficient technological knowledge to navigate easily through the VLE and the other necessary technical platforms

Although those requirements might sound trivial, they do deserve mentioning because pedagogical VLE use quickly comes to a stop when they are not fulfilled. The data gathered in our case study points towards both a lack of access to suitable hardware and software and a lack of technical skills and confidence among the VLE users.

In particular, PCs and Internet connections in the home sometimes seem to be outdated, at least as far as VLE use is concerned.

We have an analogue modem, and then one doesn't use the Internet more than one needs to, because everything takes so long. And this is actually also the case of the web pages of EUC (…). Therefore I got so angry when they made changes to the EUC web pages and didn't inform us about it on Enceladus. Because I don't come in an EUC webpage unless I absolutely have to, because it takes so long. I often have to log in and out of the net two or three times and have to log in again before I manage to download the pages and the pictures I need. [Extract from a focus group interview with students]

I have also experienced that the line between Enceladus and my PC is less stable [at home], and that [it has happened that] I have written a long message to a student, and I suddenly I have lost the connection. [Extract from a focus group interview with members of the academic staff]

Also, some users mention their lack of technological proficiency as a major hurdle to overcome when having to use a VLE or other computer-based tools.

I had a minimal amount of computer knowledge before I started [at EUC] and I presumed that this would be a major obstacle considering that we had to use Enceladus. I almost had a panicky feeling towards it. I took maths […] about two years before I started [at EUC], and there we used something that was called Sycorax and that I just didn't manage. I couldn't understand how I was supposed to hand in assignments online, so I always ended up… I didn't manage to upload the files and put them in the right place. I usually ended up printing out the assignment and sending it to the teacher via the postal services. [Extract from a focus group interview with students]

Temporal issues

One of the major sources of discontent among students is the fact that the lecturers are too infrequently online at the same time they are, and that they take too much time to provide answers to the questions posted on the various discussion boards on Enceladus. One of the explanations for the fact that students and teachers 'miss' each other online is that students of the part-time bachelor course are typically working during office hours and end up being on the Enceladus system during evenings and week-ends, i.e., at times when teachers are generally not available online.

The lack of immediacy in the feedback writing process seems to be partly due to the fact that academic members of staff have to relate to several other classes in addition to their distance education class. Some of the staff members consider the students' expectation of immediacy to be unrealistic.

Normal [full-time] students who are on campus can't […] expect their lecturers to be in their office every single time they need help [interview with a lecturer].

The students are very keen about us [the lecturers] being attentive. That if they put in some of their gems of wisdom, then we will welcome them and then give them feedback, and preferably we should have given them the feedback almost even before they have managed to post it. So there we sometimes get criticised [interview with a lecturer].

The findings from the case study are an echo of research work reporting that frequently tutors spend more time teaching e-learning-based courses that they would in a face-to-face situation (Fox and MacKeogh, 2003).

A tentative new communal scaffolding framework

We would like to propose a new framework that is based on Woods and Ebersole's (2003a) framework, but that includes two new elements that embrace several of the issues that have shown to be problematic for communal scaffolding in our case study: temporal issues and technical issues.

Temporal issues

Our case study shows that temporal issues such as scheduling, online presence frequency, and the amount of time dedicated to online presence are of central importance to both students and academic staff members. While the students at EUC appear to have clear expectations as to when and how often academic staff should be available online, those expectations are not always met. This suggests that there is a need for a clarification and perhaps a formalisation involving, for example, a general agreement or 'contract' between faculty members and students specifying what can be expected of whom in terms of online presence and activity.

Technical issues

The data from the case study points towards a large number of issues related to the technological artefacts themselves as well as the students' and staff members' knowledge of technology and confidence in their own technological skills. We therefore choose to represent technological issues as a new central element in the model.

Technical reliability has been mentioned in the distance education literature as one of the key elements in the success of distance learning processes (Burge, 2008). In the case study, the lack of adequate equipment appears to be a substantial hurdle to the completion of some of the VLE-dependent pedagogical activities. We can therefore suggest that access to appropriate and up-to-date equipment to VLE users is an element that deserves a place in a conceptual model of communal scaffolding. In addition, the users' proficiency with technological tools and their level of self-confidence in their ability to use VLEs seem to play a significant role in the process of initiating and carrying out VLE-based cognitive and social activities.
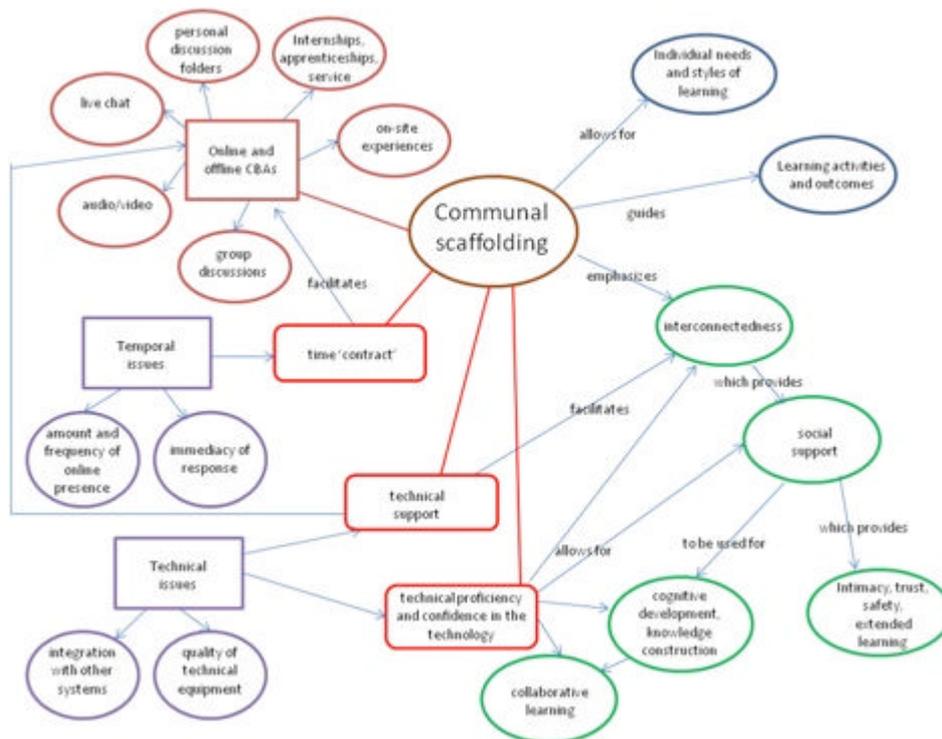
Figure 3: An extended communal scaffolding model

Figure 3 shows an extended model of communal scaffolding that includes several new elements. We believe that this model can be useful in reflecting more closely the kind of issues that are related to the establishment and development of communal scaffolding in VLE-supported study programmes. We also believe that our main contribution to the initial communal scaffolding model is not the addition of new elements, but the fact that we introduce some of the potential problems that can arise if some of the prerequisites for communal scaffolding are not fulfilled.

Conclusion

This article aimed at developing further an existing conceptual model, based on empirical data gathered from the field. The original model proved to be useful to provide a picture of the pedagogical processes within a study programme. However, the empirical data gathered in our study describes a situation that, according to the model, should have been a virtually ideal state of affairs, but that in reality only was a partial success.

In order to explore further the question of whether communal scaffolding actually was achieved in our case study, we set out to highlight new elements that seemed to play a role in the building of a communal scaffold. Those elements easily found a place in the original model and, we would argue, have contributed to making it more comprehensive.

We believe that this model can benefit from further development, which may, for example, consist of the introduction of new elements, the elimination of others, or a reshuffling of existing elements or relations. It is our belief that empirical evidence can provide a solid basis for those potential developments of the model. Possible arenas for data gathering may include other types of study programmes, other institutions, as well as other groups of students and staff. We are naturally aware of the fact that a total comprehensiveness cannot realistically be achieved with a model and that the richness of real-life situation will always brim over the categories proposed in the model. We would advocate more ethnographic-style studies in further research into such a complex topic as learning with VLEs.

On a final note, we would like to make a case for the use of empirical data based on both the learners' and the teachers' experience when developing conceptual models about the use of e-learning tools. Rich data captured via in-depth interviews with key actors such as teachers, administrators and learners have, in this study, helped uncover a number of areas of concern to all actors. We would suggest that further studies aiming at building or refining conceptual models of e-learning may benefit from taking a similar exploratory and data-near approach to the model-building process.

Acknowledgements

Biography

Laurence Habib was awarded her PhD at the Department of Information Systems at the London School of Economics in 2000. She has been involved in research, teaching and consultancy within and outside academia, and is now an Associate Professor at the Centre for Educational Research and Development at Oslo University College. She is currently the head of the GOLEM project (Generating learning using an Online Learning Environment as a Medium), which explores the consequences of the use of virtual learning environments on teaching and learning in Higher Education.

Anne Margrethe Sønneland is a sociologist, and is currently an Associate Professor at the Department of Social Work at Diakonhjemmet University College in Oslo. She has conducted research on democratization processes, human rights and social movements in Latin America, on comparative social policy and on linguistics. She has been active as an e-learning practitioner for more than 10 years, and is currently involved in several research projects on the use of e-learning in Higher Education.

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