

A tentative model for sustainable pedagogical digital competence development: Exploring networked learning in an educational development project

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Abstract

This paper addresses one large university initiative for educational development aimed at further developing educations and teacher competence with a focus on technology-enhanced and lifelong learning. The aim of the paper is to describe and problematize the design of an ongoing project for educational development, Higher Education and Digitalisation (HEaD). It focuses on identifying key components of an educational development project for technology enhanced learning as well as how such a project can be organized to sustain in regular university operations. The article discusses how a project for educational development can create over-time durable infrastructures, organization, policy and motivation for maintaining a continual educational development. In the first phase of the project, a model was developed for how competence development can be conducted sustainably. This model contains two perspectives: (1) an organizational perspective that focuses on the key partners to be involved; and (2) a process perspective that focuses on activities and aims in strategic competence development projects. The tentative model with its two perspectives is described and discussed in this article as a preliminary result. The model includes four identified key entities and their roles in pedagogical digital competence development; academic departments and their faculty, educational developers, infrastructure and IT-department and the pedagogical research unit. Further, a process model based on existing support structures, complemented with activities that can be sustained after the HEaD project ends is presented.

Keywords

educational development, lifelong learning, pedagogical digital competence, sustainable teaching and learning, technology enhanced learning

Research Context

The digitalization of university education is resulting in both new opportunities and challenges for teachers and introduces a new dimension of pedagogical skills and competences (From, 2017). The process of digital technologies transforming previous educational traditions are creating substantial demands for universities developing strategies to back new competences needed for high quality teaching and learning (Pettersson, 2018).

Universities often offer pedagogical development activities for teachers including both shorter courses for university teachers as well as more extensive pedagogical development programs. One key issue for the progress of university education, however, concerns the achievement of long-term sustainable development through for example pedagogical development activities. Research shows that teachers' individual and collective empowerment needs to be facilitated and supported by multiple networked and physical resources in

order to succeed with the progress of university education. Not the least the support from institutional leaders is important for teachers to adopt new pedagogical practices (Du & Lundberg, 2021).

Plechova et al. (2012) discuss different ways in which educational development best prepares academics to teach and how to best enhance teaching and learning in universities. One highlighted point is that successful programs for educational development relate to participants' own needs as well as offering rich opportunities for dialogues between colleagues. They also point out that supportive contexts are needed where teachers can experiment with different teaching methods.

Although Mid Sweden University has a long and extensive experience with networked education, the Covid-19 pandemic significantly accelerated the development of pedagogical digital competence as well as helped to identify further development needs. According to Zhu and Liu (2020), the long-term integration of digital technologies to enhance teaching and learning into university curricula however implies further attention to quality.

Research shows that high quality in networked education implies the opportunity to ensure students' participation and presence and teachers' ability to implement their pedagogical digital competence in their teaching (Arbaugh et al., 2008). To create the best possible experience of and quality in learning, the proposed model takes inspiration from the framework Communities of Inquiry (CoI) (Garrison et al. 1999; Garrison et al. 2001; Rourke et al. 1999). CoI is based on a process where the creation of deep and meaningful experiences of learning is central. To achieve this, three different forms of presence are emphasized: teaching, social and cognitive. If there is a high degree of presence in these three forms, the student experience will be stronger and more qualitative. The presence of teaching emphasizes commitment to the goals and forms that the education applies. Social presence affects the engagement with the environment and other participants. The cognitive presence emphasizes the commitment to the content of the education. The expected effect of the proposed model and on is that educations at the university are characterized by a culture where students and teachers, through joint critical thinking and reflection, contribute to personal meaning creation and common understanding. If the proposed model, tested in a project at Mid Sweden University, succeeds in creating good conditions for raising teachers' pedagogical digital competence and thereby contribute to raising the university's general educational quality, it contributes to all students' education since boundaries between campus-based and distance-based education are blurred.

This paper addresses one large university initiative for educational development aimed at further developing educations and teacher competence with a focus on technology-enhanced and lifelong learning. One goal (and challenge) with this project concerns what happens after the project; how can the project create over-time durable infrastructures, organization, policy and motivation for maintaining a continual educational development.

Aims and Research Question

Against this background, the aim of this paper is to describe and problematize the design of an ongoing project for educational development, *Higher Education and Digitalisation (HEaD)*. It focuses on the following research questions:

What are the key components of an educational development project for technology enhanced and lifelong learning?

How can a project for pedagogical digital competence development be organized to sustain in regular university operations?

Methods

In order to address the research questions stated above, Mid Sweden University has in 2021 started a university-wide project with the name Higher Education and Digitalisation (HEaD). The HEaD project supports the fulfillment of the university's strategic goal to be a national and international key-player within technology enhanced learning (TEL) and lifelong learning. It approaches this goal by supporting the faculty's competence development in this domain, as well as the development of university-internal support organizations.

In the first phase of the project, a model was developed for how competence development can be conducted sustainably. This model contains two perspectives: (1) an organizational perspective that focuses on the key

partners to be involved; and (2) a process perspective that focuses on activities and aims in strategic competence development projects.

The preliminary model with its two perspectives is described and discussed in this article as a preliminary result. A more thorough evaluation of the model is planned as a next step in the HEaD project and thus lies outside the scope of this work.

Preliminary findings

To maximize chances for a long-term viable solution, one point of departure for the model is to make use of existing resources. This has been considered both in the organizational perspective, as well as the process perspective of the proposed model. As such, the model is built around organizational units that are typically found in university contexts, as well as activities that may already exist and can be complemented with new activities.

Furthermore, to be viable, it is believed that value must be generated in a nexus and at different levels in the organization. Values should be identifiable for individuals, groups or organizational units, as well as on the university strategic level.

Organizational perspective

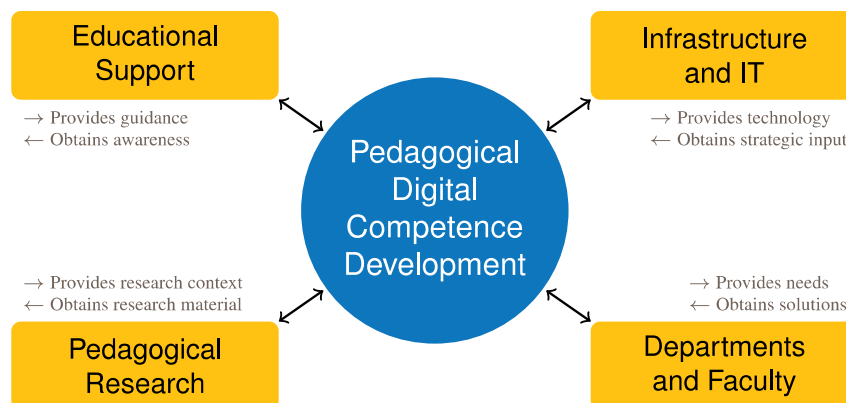


Figure 1: organizational model for Pedagogical Digital Competence Development

Figure 1 depicts an organizational perspective of the proposed model. This perspective includes key entities that are supportive for a strong pedagogical digital competence development. The figure, moreover, includes what each entity provides to the competence development project, as well as what it gains from its participation. This is of particular importance if the proposed project should be viable in the long-term. By identifying intrinsic motivations for each entity, participation can more easily be motivated from existing work plans and budgets, and thus require little – or potentially no – additional funding.

The four identified key entities and their roles in pedagogical digital competence development are:

- Academic departments and their faculty, who have the clearest benefit from a pedagogical digital competence development project, as it addresses the faculty’s competence development needs and supports them to find potential solutions to existing challenges.
- Educational support unit, which has a clear assignment to support the university’s faculty in regards to pedagogical competence development. This entity thus provides guidance and pedagogical expertise, and obtains in return awareness of development needs and timely challenges to be incorporated in other development activities (e.g., staff courses, workshops, etc.).
- Infrastructure and IT unit, which can provide infrastructure and technology, as well as a related competence. For pedagogical digital competence development, this contains inputs on opportunities and limitations of state-of-the-art technology and tools. In return, this entity can obtain input to strategic

decisions on next-generation infrastructure and IT, which are deeply rooted in the faculty's needs and preferences.

- Pedagogical research unit, which contributes with a state-of-the-art pedagogical competence, as well as novel methods and approach. This entity gains in return new material and cases to conduct further research on, and initiates new collaborations with faculty that wants to perform research on their own teaching practices.

Process perspective

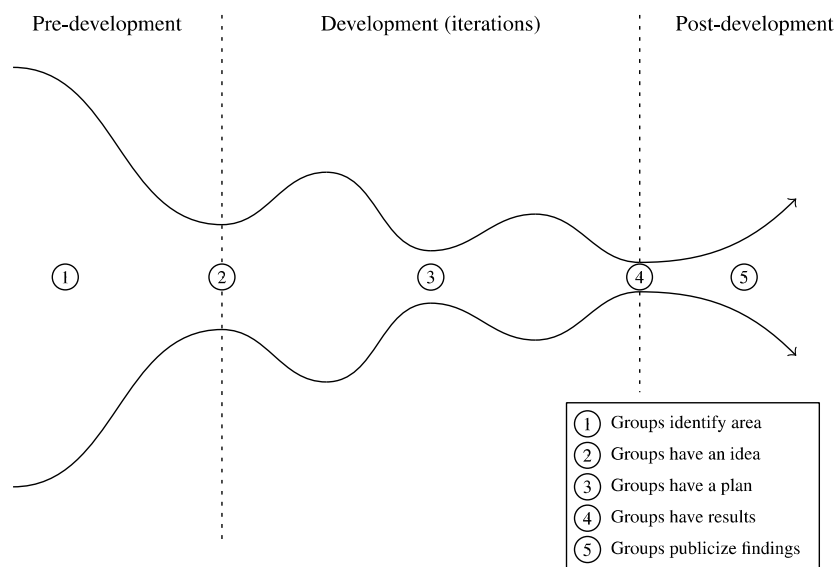


Figure 2: Process model of Digital Pedagogical Competence Development

To provide an additional benefit, the competence development project is organized around concrete pedagogical development projects on TEL-related topics. As such, an inherent motivation exists for participants to be actively involved in the project. Each year, a set number of pedagogical development projects are initiated. These projects are proposed by faculty based on current needs and challenges, which improves chances for a wider participation. In addition, a call for specific development topics may be initiated at the central level of the university based on strategic development needs.

Figure 2 depicts a process model of development projects over time from the perspective of the participants. Again, it is important that the support of faculty undergoing this process is to a large extent based on existing support structures, complemented with activities that can be sustained after the HEaD project ends. Therefore, a large portion of the support provided during the pedagogical development work (i.e., development phase in Figure 2) is given in the context of a course for university faculty. Through this course, a common structure for each development work is provided, and participants are guided through a process from idea to result. Moreover, resources for the support are thus provided through those resources already allocated for staff competence development courses. The process of the proposed course is inspired by the Design Thinking method (Henriksen et al., 2017), and the stages of divergence and convergence that participants undergo during this process are indicated in the figure. Different course activities – that aims at strengthening both individual competence and teachers' professional network– such as study group discussions and work assignments, help the participants to diverge and converge over time.

Figure 2 indicates that support also needs to be provided before and after participants conduct their development work. In the pre-development phase, support is mainly required to help educational environments (e.g., teams of teachers in courses, programs or subjects) to identify relevant areas for their development work. These areas can be selected strategically based on the needs of individuals or collectives, such as groups, subjects or departments. A systematic inventory of development needs can for example be accomplished by self-guided

workshops (e.g., based on backcasting (Robinson, 1990) and seed-thinking methods) or self-assessment exercises, such as those included in the European DigCompEdu framework (Redecker, 2017). In the post-development phase, support in result dissemination is of primary concern. This can deal with networked methods such as university-internal dissemination (e.g., at an internal pedagogical development conference), or a wider dissemination at external conferences and/or in relevant journals. For the support in this phase, the involvement of pedagogical research units is important, and activities could include seminar series or workshops on academic writing.

Conclusions and further directions

In order to facilitate sustainable pedagogical development, it is of great importance that the result of the project remains after the project ends, both when it comes to development initiatives and an infrastructure to support these initiatives. One overarching goal of the HEaD project is to become a glue in nexus of existing structures, efforts, and organizational units.

The HEaD model provides an example of how the interplay between key actors within the university contributes to developing teachers' digital pedagogical competencies. It identifies key components of an organizational model for Digital Pedagogical Competence development. The interplay and the described infrastructure depicted in Figure 1 corresponds well to research on university teachers' learning paths during technical innovation. Van der Rijst et al. (2019) conclude that university teachers mainly learn through doing teaching, experimenting, and reflecting on their teaching and not as much through workshops and training sessions. The HEaD model supports the co-creation of development in collaborative groups of teaching staff, academic developers, researchers, and IT-staff. Each development project constitutes a needs-adapted space where collaborative development takes place in-time and on-the-spot (van der Rijst et al., 2019).

In order to sustain pedagogical development project initiatives in regular operations, making use of existing university infrastructure is essential. The model proposed in this paper is organised to align with existing functions, structures, and networks. Setting up and sustaining this model relies on for example coordination and facilitation capacity, organizational legitimacy, engagement, and organizational support.

The capacity to coordinate the different functions involved in a pedagogical development project and facilitate learning processes is in the model proposed to be allocated to the educational support unit. In a systematic review of team-based professional development interventions in higher education, Gast et al. (2017) mean that an external facilitator of group learning processes is argued for in most research. In the case of the HEaD-project, the unit for educational support constitutes a node in a network that facilitates and coordinates educational development.

Organizational support can be manifested through for example explicit time allocated for participation and recognition for team efforts and achievements (Gast et al., 2017). Hence, a stable financial model for development projects can be translated into "protected time" for participants during the process, which legitimizes work on the projects in relation to colleagues (Bolander Laksov, et al., 2020). Also, the co-existence with the system for teacher accreditation feeds into the recognition of individual achievements and the suggested dissemination of results through internal or external conferences or scientific journals reinforces the recognition of team achievements.

According to Bolander Laksov, et al (2020), the issue of legitimacy for pedagogical development initiatives depends on the explicit support from organizational management. In the case of the HEaD-project, the support from organizational management is proposed to be manifested in the university central quality system where pedagogical development projects are suggested to be an integral part.

One consequence of the suggested way of organizing for pedagogical development is that the project focuses on the long-term development of university education from an organizational perspective. There is a risk that the importance of or the need for individual teacher's competence development is toned down or set aside for the benefit of the strategic needs of the university. Roxå and Mårtensson (2017) propose that an important task for educational developers is to scaffold conversations between academic teachers to make these conversations informed, critical and transformative. Accordingly, conversations will over time grow in frequency and in quality (Roxå & Mårtensson, 2017). In this line of reasoning, the proposed model for the development of digital pedagogical competence encourages such conversations. Throughout the process of each development project,

the model allows for conversations between teachers, academic developers, researchers within the field of TEL and IT-personnel. These conversations are formally organized along the process model (see Figure 2) but conversations beyond the model are also encouraged and facilitated through for example the possibility for teachers interested in a particular development project to follow and interact with the project. When it comes to teacher engagement in development projects, Bolander Laksov et al. (2020) point out that meaning making and motivation is based on the participants' opportunity to choose. The individuals' feeling of autonomy and competence is likely to lead to increased engagement. The proposed model encompasses a large element of individual or team agency when it comes to for example identifying and developing the project, selecting methods or tools, and customizing project pace.

The development projects provide important knowledge, suggestions, and input about the needs of the teacher that for example the IT-department can use for developing services, buying licenses, and providing support. Positive networked synergy effects between support functions and teachers are expected. In this line of argument, circular development, and building of a strong network that enables synergies between support functions, research units and academic teachers, of educational quality can be expected.

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