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INTERACTION AND eEDUCATION: WHAT KIND OF SUPPORT IS NEEDED TO DEVELOP UNIVERSITY TEACHING?

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Abstract

Higher education institutions are facing an on-going pressure to develop pedagogy which promotes high-quality learning, supports studying in various learning circumstances, and integrates technology. Flexible and meaningful learning possibilities which develop skills for the world of work, like active agency, collaboration and construction of knowledge through interaction with others, are needed in university education.

To address these needs, a multidisciplinary network for developing university teaching was introduced at the University of Jyväskylä, Finland in 2011. Even though the main focus of the developmental work is based on the strategy of the university jointly shared among teachers, a bottom-up policy with respect to teachers' expertise and autonomy directs the whole activity. Interactivity in teaching and learning, as well as flexible and Information and Communication Technologies (ICT)-supported opportunities to study, have been defined as the main developmental themes so far. In addition, developing pedagogy together with other teachers in a multidisciplinary network and sharing teaching experiences in the university community have been the central courses of action in the project.

Developing university teaching is challenging and we supposed that teachers experience several phenomena that could be either very helpful or very hindering. In this article, we analysed the teachers' experiences of teaching development and their support needs while working on the network project. The following research questions were addressed:

1) What factors did the university teachers consider to be supportive or constraining in the development of teaching in general?

2) What kinds of supportive or constraining factors are emphasised when the development of teaching is focused particularly on eEducation?

The data were collected by interviewing 51 teachers who participated in the multidisciplinary network during 2011–2014 and enhanced interactive and ICT-based initiatives in their teaching. Qualitative content analysis was used to analyse the teacher interviews.

The results of the study revealed that the supportive factors in the development of teaching arose from the nature of the development itself, i.e., from the teachers' opportunities to act as active agents in an authentic process of development. Furthermore, the circumstances of the developmental work also have an essential supportive or constraining role in the development of teaching. The support, at its best, would be when the development of teaching in a university context is recognised as valuable and rewarding, and is also encouraged by the management. However, on the constraining side, utilising ICT challenges both the teachers' competences in the pedagogical-technological field and the operational environment, including tools and equipment for ICT-based teaching and ICT services of the university.

Keywords: teaching development, higher education, multidisciplinary network, interactivity, eEducation

1 INTRODUCTION

Higher education institutions have been challenged by the new demands of working life and society as a whole. It is expected that the future employees and citizens of our rapidly changing learning society need so-called 21st-century skills or future competences [1, 2]. These skills include critical thinking, creativity, problem solving, collaboration and the ability to utilise Information and Communication Technologies (ICT). The context of university teaching is challenged also by the fact that the current student generation has been called 'digital natives' and/or the 'net generation students' due to the skills they are assumed to possess [3, 4]. It can be argued that net generation students are ready and willing to adopt discovery-based and collaborative learning methods with ICT [4, 5]. These students are skilled users of ICT and are interested in it, especially Web 2.0, but mainly their interests are in meeting their personal needs. The challenge is to integrate these technologies into future teaching and learning [6].

Also, recent research on learning and teaching emphasises flexible and meaningful learning arrangements that facilitate active agency, complex problem solving and collaborative knowledge construction so that deep learning can take place [7]. However, there are also critical stances toward learner-centred and minimally structured approaches [8]. Hence, there is an ongoing pressure to develop university teaching in order to promote high-quality learning, necessary skills among students and instructional support built into the learning environments of higher education.

However, the critical question is whether the learning environments of the current university teaching respond to these needs. It can be claimed that university teaching is 'a castle' of traditional pedagogy, including a lot of one-to-many lecturing, which is not preferred among the current pedagogical trends. Also, the utilisation of new technologies to support learning and teaching varies a lot and has not been harnessed to serve pedagogically meaningful practices [9]. The focus in the teaching development of higher education has fallen upon contents produced by current research in each discipline [10]. Furthermore, the development of university teaching has been traditionally seen as an individual endeavour; good practices are not shared, and approaches are often reinvented due to lack of support among higher education colleagues. The lack of peer support or possibilities to share teaching experiences among colleagues are barriers to developing teaching in higher education [11], as well as to applying new methods [12].

To address the needs described above, a multidisciplinary network for developing university teaching was introduced at the University of Jyväskylä, Finland in 2011 (described in more detail in the next chapter). The main focus is on the development of interaction and eEducation initiatives contributing to reform of the university teaching and learning in the 21st century. Although clear arguments for the development of university teaching arise from societal needs and recent theories of learning, the changes in teaching and learning practices are slow to follow. Our approach focuses on teachers as developers of their own teaching, and particularly on their experiences of the teaching development. In this paper, the main focus is on presenting the results of teachers' experiences of supporting or constraining factors during this process. Furthermore, we describe what kind of aspects teachers see as challenging when they utilise ICT in their teaching. Preliminary notions and next steps to support the development of teaching will be presented.

1.1 The multidisciplinary network model at the University of Jyväskylä

The multidisciplinary network at the University of Jyväskylä, Finland, calls annually for university teachers who are interested in developing the teaching of a focused theme to work together and support each other during a project lasting one year (Fig. 1.). The foci of the network model arise from the university's overall strategy to develop education to be more interactive. The network aims to: 1) develop pedagogically high-quality learning possibilities for students and support their activities as learners, 2) support teachers in their continuous pedagogical developmental work, 3) facilitate pedagogically meaningful ways of using ICT for learning and 4) produce evidence-based knowledge on the experiences of teachers and students during developmental interventions.

From the start of the network through 2013, "Interactivity in Teaching and Learning" was the common theme of the development of all the participating teachers. At that point, the network involved 32 teachers. From the beginning of the year 2014, 19 new participants have been involved in the third round of the network. This network aims to develop learner-centred ways of utilising ICT in education. Both the facilitation of meaningful learning and improving the availability of studies are core goals of the network.

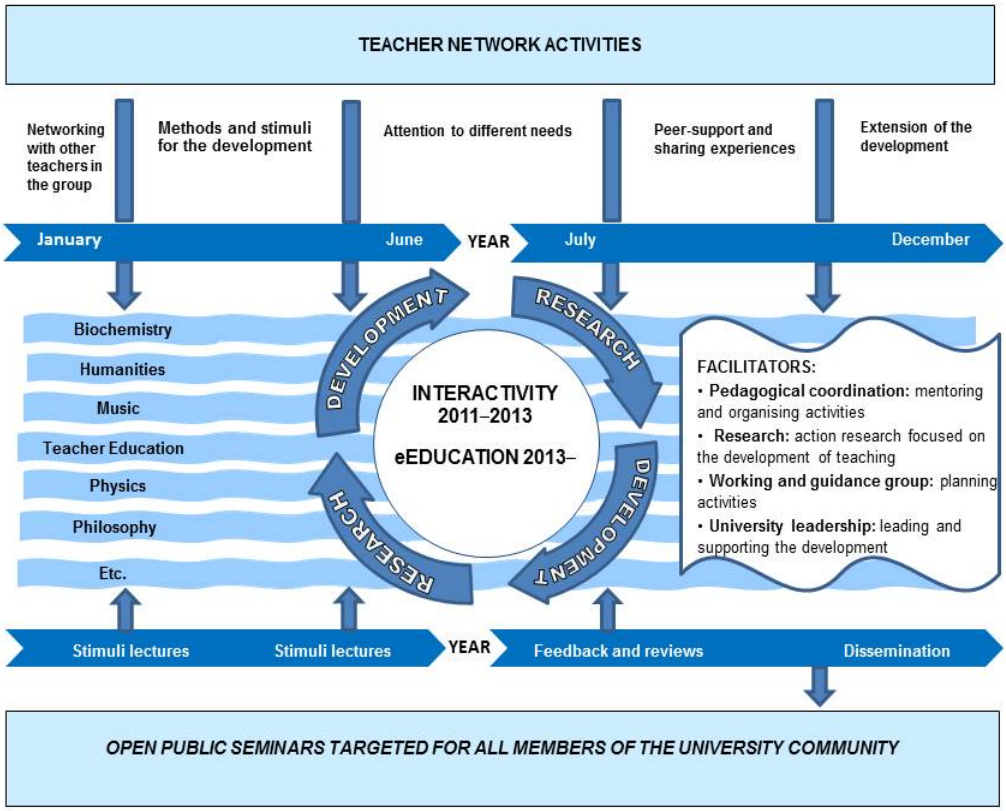

Figure 1. Model of the multidisciplinary network [12]

Even though the main focus of the development of teaching is based on the strategy of the university jointly shared among teachers, a bottom-up policy with respect to teachers' expertise and autonomy directs the whole activity. The teachers themselves formulate, under the broad umbrella of the common theme, the final aims and methods of their own developmental work. They are supported in their work by peer-support-oriented network activities, dialogic and need-based mentoring, and evidence-based knowledge from the experiences of teachers and students during developmental interventions. The whole network is led and supported by the university head.

Dissemination of knowledge and experiences, as well as extension of the development, are central courses of action in the network. Teachers participate in the network often as pairs or groups (from 3 to 6 persons per same subject or discipline). They enrich their thinking and actions as developers with the help of network activities and open seminars during the project. Seminars also function as forums where the teachers make their developmental work visible in a university community, and get reviews and feedback from experts and other colleagues about the work. In addition, the one-year length of the project offers time for the teachers to make changes in their teaching practices. After the project, the development of teaching is expected to continue further and to take root in departments.

2 THE AIMS OF THE STUDY

The aims of the study presented here were to get evidence-based knowledge about factors that support or constrain the development of teaching in higher education. The university teachers, as developers, were the key informants. The final purpose of the study is to develop structures that support continuous learner-centred pedagogical development in the whole university. Thus, the following research questions were addressed:

1) What factors do the university teachers consider to be supportive or constraining in the development of teaching?

2) What kinds of supportive or constraining factors are emphasised when the development of teaching is particularly focused on eEducation?

3 METHODOLOGY

The data were collected by interviewing 51 university teachers who participated in the multidisciplinary network from 2011–2014, and who enhanced interactive and ICT-based initiatives in their teaching. The interviews have been implemented and analysed in various stages of the study. Preliminary results of the first interviews of the teachers (n=17) have been presented by Klemola, Jääskelä and Valleala (2012) [13].

The interviews dealt with the following questions: teaching development as a part of work, factors supporting the development of teaching in one's own work, prerequisites and barriers of the developmental work, attitude and support of the department head, needs for support, factors supporting continuous teaching development in university level, and experiences of the support offered by the network.

Data from the interviews were analysed in a data-based and code-oriented way by utilising the procedures for qualitative thematic analysis [14] and the qualitative software Atlas. Before that, the digital interview recordings were transcribed verbatim. The analysis was carried out according to the following steps:

1. Familiarising with the data. The data were read in an active way by searching contents for various meanings related to the research question and by noting down initial ideas.

2. Generation of initial codes. The data were read intensively by coding and organisation into meaningful groups. The length of a unit of the analysis varied from one to several clauses. The data were coded into as many potential groups as possible by trying to keep various meanings. This meant that an extract could be coded as many times as relevant. At this stage, the initial codes were labelled with a few words.

3. Classification of relevant information. At the next stage, different codes were sorted into potential themes by thinking about the relationships between codes and between themes. The classification was also made in relation to the research questions of this study.

4 RESULTS

In order to answer the first research question, we asked the teachers about their experiences while enhancing interactive and ICT-based initiatives in their teaching. The factors in this process, which could be experienced as either supportive or constrained, arose thematically in two ways. On the one hand, they grew from *the authenticity of development* (see Table 1.): as targets that were aspired to; as ways of both assessing the work and getting support; and as opportunities for constructing continuity for the developmental work. On the other hand, *circumstances of the developmental work* influenced the teachers*,* consisting of: the operational environment with its reward system and relevant equipment and tools; time resources for the development process; networking with other teachers; and the management and leadership of the university. All these items were seen as important supportive or constrained determinants in the development influencing the teachers' aspirations and motivations to develop.

Table 1. Supportive and constraining factors in the development of teaching

FACTOR		Supports when...?	Constrains when...?
THE AUTHENTICITY OF THE DEVELOPMENT	**Definition of development target**	• Is integrated into the teachers' everyday work • Supports the teachers' active agency	• Is defined without the teachers' own contribution
	Assessment of the development	• Supports the teachers during the process of development • Is implemented by an outsider/s • Offers both practical guidance and evidence-based knowledge	• The manner of the assessment does not support the aims of the development
	Dissemination/ continuity	• Offers opportunities for sharing ideas and extends the developmental work • Is rewarding	• Is implemented in artificial ways • Is not rewarding or worth doing
THE CIRCUMSTANCIES OF THE DEVELOPMENT	**Time resources**	• Enough have been allocated in relation to the aim of the development, to either improve the present implementation or to create new implementations	• Have not been allocated at all for development • Have been allocated unrealistically
	Operational environment	• Up-to-date equipment and tools are available both to teachers and students • Pedagogical and/or technological support is available to the teacher	• Offers limited options for using equipment and tools • Financial and reward system in the university supports research, but not teaching
	Working with other teachers	• Is based on sharing knowledge, experiences and/or expertise • Is based on trust: allows multiple views and voices from various disciplines • Is voluntary for participators	• Has artificial aims and reasons • Relationships between peers do not work
	Management	• Legitimises, gives "permission" to develop teaching • Is actively engaged in development by encouraging, supporting and showing interest in the teachers' work • Jointly shared views of the aims of development with the teachers	• Controls the work • Orders teachers to develop

4.1 The authenticity of the development

Authenticity of the development was a meaningful factor for the teachers in the whole process. First, it was related to the definition of development target, and the teachers' initiative role in that. The teachers thought that the real needs and aims of the developmental work arose from one's own work. In order to change teaching practices, development should be integrated into the teachers' daily work. In this way, the teachers can act as active agents and enhance the authentic development of teaching and, thus engage in that work. One teacher group described this kind of authentic base for their work as follows:

> *"This kind of way of promoting things and enhancing the development of teaching is quite good…all teachers are doing what they had to do any way; however, [now they are] trying to*

include new ideas into their own work. Doing is in the core of action. It is better than the alternative way of sitting everybody down and making them listen to a person from another discipline telling us how we should teach in our own field. It doesn't work." (An extract of the interview with three teachers)

Second, authenticity, as a supportive factor of the development, emerged in how the teachers could construct continuity for developmental work with the help of evidence-based assessment knowledge, and also with the possibilities for dissemination and extension of the development. The teachers observed that this research, designed with the aim of offering knowledge about the development process from the perspective of both teachers and students, supported their work. Although the final results of the analyses will be finished afterward, the teachers highlighted the research activities as essential to their future development of teaching. They also saw the preliminary notions, observations and results made by the researchers during the developmental process as useful. As one teacher group from the natural sciences describes, as follows, the fact that the research was implemented by an outsider offers the teachers views for development that are difficult to see from inside the teacher group; in exchange, they are free to concentrate on their development goals.

"The other ones study here, we don't need to try to do that. We get the knowledge, and this is positive and supportive. … [As are] these observations, when the outside researchers make observations that the teacher couldn't make by him-/herself. And it [knowledge] doesn't come in the form of student feedback that is often focused on the more practical questions. It is interesting to hear about these results of the research."

Although the development of teaching was implemented in the teachers' single courses, several teachers felt that the interventions of enhancing interactivity should extend into other courses or even the whole programme. They analysed their developing work as a continuum and as a part of the broader development of curriculum and pedagogical thinking as departments and units. From this view, opportunities for sharing ideas and extending the developmental work into other courses arose as important factors that support or constrain the authentic and continuing development. One teacher described her aspiration as follows:

"What I think and ask for:…instead of piloting [a] single course, I would ask more for discussion about the principles; what are our aspirations [of] development concerning [a] specific topic in the whole education. It is really important to me that…you have the way to go ahead with your development and you can bring out a change in a programme level."

The support given to the teachers by both the research and the nearby mentoring during the network project was seen as helpful in extending the developmental work throughout departments. The dissemination of knowledge of the pedagogical development was not always experienced as an easy task for the teachers. One teacher characterised the need for help of outsiders by saying:

"No man is a prophet in his own land and it is hard to do changes. An outside support makes it easier [at the department level]."

4.2 The circumstances of the development

Based on the interviews, the teachers brought out various factors in their circumstances of work which they experienced as either supportive or constraining in the development of teaching. The development of teaching was considered as a part of their academic work. The development of teaching was experienced partly as a contradiction, arising from the pressure of allocating time between teaching and research, and the lack of equal reward systems between these two things.

Teacher 1 … The development of teaching has not a mandate in the university now.

Teacher 2: No, it has not.

Teacher 1: This is strongly related to [the emphasis on] research…and to the point that you qualify yourself as a teacher by acting as a good researcher.

Teacher 2: A researcher, yes.

Teacher 1: ... I see [this] as a big structural question: that [if] we would have as legitimate [a] path [as researchers do] to…proceed to the teaching-based tasks and also to get [a] higher salary…and to get as valuable [a] position by developing teaching as by doing research. Now this is finally [a] hovering and indefinable thing when you like to be qualified to a university teaching vacancy.

The teachers felt that the development of teaching is demanding and takes time, especially in the case when it aims at changing practices and renewing pedagogy. However, enough time was often not allocated for this development. However, to cite one teacher's statement, time management seems to be an individually resolved question of which task is preferred:

> *"You simply take time for the development of [your] teaching from somewhere!"*

Moreover, the teachers viewed opportunities for getting pedagogical and/or technological guidance for renewing pedagogy, or for getting appropriate space, equipment, tools or applications for interactive teaching as meaningful in their developmental work.

The majority of the interviewed teachers experienced the network with other teachers as supportive, since it was based on voluntary participation and trust among participators; this resulted in sharing knowledge, experiences or expertise. The general attitude toward networking with other teachers from different disciplines was responsive and open. Peer support empowered the teachers to aspire to aims that they couldn't have accomplished alone, like one teacher described:

> *"I have jumped into [the] unknown – I don't know if I could have made it without colleagues."*

Meetings with other teachers from various departments also gave concrete ideas of how to teach in a different way:

> *"When I heard about the other teachers' experiences of the demonstrations in their courses, it opened my eyes to see that it is possible also to teach in that way…It was a positive surprise to me…I started to think about if it could work in my own teaching too."*

The supportive work with other teachers manifested in a wide range, varying from the voluntarily based collaborative co-teaching with colleagues to forums, offering possibilities to have discussions with teachers from different disciplines. In the cases of co-teaching, jointly shared views and trust in each other appeared to be important supportive factors in the development. The next extracts of the interviews showed how some teachers took considerable steps in networking with other teachers in co-teaching situations by estimating the possible quality of the relationship and its meaning for future work together.

> *"I knew that [this] teacher is the one with whom I dared to start toward [the] unknown."*

> *"We are on the same wavelength with each other…[as far as] humour and views on development… that we will not end up [on a] collision course."*

The teachers also mentioned the support of the university head on all levels as important to the development of teaching. The encouragement and interest of the head was experienced as worthwhile. It also legitimised, somehow, the task of development. The interviewed teachers had faced various attitudes of the head to their developmental work of teaching. Several teachers characterised the general attitude of the head to developmental work as positive. A few teachers, however, felt that the head doesn't support their developmental teaching work. They said, as follows:

> *Teacher 1: "In our department, the attitude to development of all teaching is quite negative."*

> *Interviewer: "How does it appear?"*

> *Teacher 2: "Well, the development of teaching is not valued at all. It is like…saying that it is fine that you develop, but how about you…do research [instead]?"*

4.3. Supporting and constraining factors in the eEducation context

In this chapter, we describe what kinds of things were emphasised when the teachers developed their teaching by utilising ICT. In general, the teachers' views of the supportive and constraining factors in the development of teaching were quite parallel in various network periods. The views dealt with the main themes: the authenticity of the development, and the circumstances of the development.

In interviews, the teachers described that they highly valued the bottom-up policy. This meant that the aims and concrete actions toward the development of eEducation were based on the teachers' own initiatives, and the development was thus authentic in nature. The developmental projects that the teachers had decided to implement during the network period often constituted a continuum to the work which had been started before the network period. The network offered an extra resource and the power to promote the developmental work further. Even though the teachers emphasised their own active roles as necessary for development, various teachers felt that eEducation, as a broad

theme of development in university education, would need more systematic and strategic definition at a university level.

Furthermore, the teachers brought out the authenticity of the development process through specific questions about dissemination, continuity and participation in the development of eEducation. First, the teachers emphasised the need for opening the network activities to all teachers in a university community by sharing thoughts, ideas and good practices about eEducation implementations. The interviewees supposed that there were several teachers in the university who actively use ICT-based learning environments in their work, and the network itself represented only a restricted group of the development of eEducation. Second, the interviewed teachers underlined the sustainability of the development efforts and, thus, the meaning of continuity as a supportive factor of development. Third, the questions about dissemination and continuity of the development of eEducation were considered also as a question about the opportunities of other teachers to participate in the development. Some of the interviewees identified the "foot soldiers" in their departments who actively develop their teaching practices, but for some reason, see the opportunities to gravitate to network activities as minimal.

The meaning of the operational environment was emphasised in a specific way when the teaching development focused on eEducation. In general, the teachers felt that the present operational environment should be developed by taking account of the specific nature of eEducation. For example, the teachers hoped that the present activities of the university's ICT services, including technological support, would be developed further to answer multifaceted needs for future learning with ICT. The interviewed teachers constituted quite a heterogeneous group in their aspirations, expectations and demands concerning the planning of the ICT-based learning environment. On one hand, some of the teachers felt that equipment, tools and applications needed in the ICT-based teaching were not available, and this restricted the developmental work. On the other hand, other teachers thought that the present operational environment offered good opportunities for using ICT in a pedagogically meaningful way. In addition, some teachers felt that nothing hindered them from taking an active role and acquiring the appropriate tools. These teachers felt that the ICT services of the university did not offer the support they needed; in order to develop ICT-based learning in a meaningful way in their disciplines, they feel forced to act independently. However, quite a shared view among teachers in developing eEducation was the need for pedagogical-technological mentoring and education relating to using the ICT in teaching, and for sharing experiences of ICT-based development of teaching.

Furthermore, the teachers considered the resources of the development as a question of time, money and their own capacity. Changes in teaching practices from traditional teaching toward utilising ICT in education were often viewed to require a notable allocation of time for planning and designing. These teachers viewed financial resources as a precondition to whether the development could happen or not.

The interviewees also had various attitudes toward networking with other teachers who had an interest in the development of eEducation. Some teachers were anxious to network with other teachers who develop ICT-based teaching. A few teachers emphasised that networking with other teachers must be considered and assessed carefully by asking whether the collaboration increases the effectiveness of the work, especially measured as research outcomes (e.g. publications).

The role of the university management was experienced as supportive, especially in that it takes into account the specific nature of eLearning. The role of the management was also emphasised through the encouragement of the department leaders to support development.

5 CONCLUSIONS AND REFLECTIONS ON THE SUPPORTIVE AND CONSTRAINING FACTORS IN THE DEVELOPMENT OF TEACHING

The results of the study revealed that the supportive factors in the development of teaching arose from the nature of the development itself, i.e., from the teachers' opportunities to act as active agents in an authentic process of development. From the viewpoint of authenticity, the following questions were regarded as important to further development: What is going to develop and how is the developmental work going to be integrated into the teachers' daily work? What are the teachers' opportunities to get involved in the definition of the goals and methods of development? How can need-based support be acquired? And how can the teachers construct continuity of the developmental work?

Based on the interviews of the teachers, the circumstances of the developmental work also have an essential supportive or constraining role in the development of teaching. The support, at its best,

would be when the development of teaching, in a university context, is recognised as valuable and rewarding, and when it is also encouraged by the management. In the teachers' daily work, the support or the lack of it manifested as the ability to allocate time to development, as opportunities in the operational environment, and as possibilities to construct an eligible career path as teachers—instead of just researchers.

One of the next steps of the approach is to more tightly support the development initiatives between different groups, departments and faculties. A part of this could be jointly internally funded or non-funded actions, but groups could also apply together for external funding for the development work. The support and expertise on eEducation at the level of the network initiative is offered as a boost for this. Furthermore, one of the guidelines is that the outcomes are shared locally, and bridges are built between the universities in developing teaching. A part of this process could be having a national and international status for excellence in the development of teaching.

The role of research is important, as it gives evidence-based knowledge to teachers on what is going well and what needs to be developed further. Teachers emphasised the importance of studying the process of developmental work, as the feedback gives them possibilities to make changes, if needed.

An essential issue is the continuation of the development: the sub-projects presented here are most often one-year long, although, most often, they continue independently. We have found that we need at least one-and-a-half years to realise changes in our developed courses. It would also be beneficial to have longer periods than one year for intensive support of each project. This could also offer more opportunities for progressive cyclic development, design and development [14], and sharing of good practices.

One of the core prerequisites for reaching these goals is the need-based mentoring of the support people in the network initiative. Mentoring and support covers a wide range of topics, such as ICT and pedagogy. Altogether, it can be concluded that the success of the development of teaching is dependent on multiple intertwining factors of epistemological, pedagogical, social and technological questions and support structures. Future studies are needed in order to understand the prerequisites of developing innovative learning environments with rich utilisation of ICT and the inherent challenges for teachers.

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