Building blocks for effective professional development for lecturers in higher education aimed at educational innovation with ICT

Literature study





Facilitating professional development of lecturers



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IXPERIUM

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Note from the zone Facilitating professional development for lecturers

At the time of this publication (August 2020), we are experiencing special times. A global pandemic is having a major impact on higher education and thus on the professional development of lecturers and by extension, the work in our zone. The publication of this literature study has therefore been delayed. However, we haven't sat on our hands and this summer, we have already used our building blocks for professional development of lecturers*. We have delved even further into the scientific literature and have listed all reviews in the field of professional development that have been published in the past ten years. We have also used the building blocks to design a living lab for Formative testing.

The report is very helpful and we notice the building blocks and the underlying model are relevant, useful, and welcome. However, we have also discovered that some building blocks require further refinement and that other building blocks could be combined for usability reasons. Based on these findings, we expect to publish an addendum to this report in the coming months that will benefit the practical application of the building blocks.

*Schildkamp, K., Wopereis, I., Kat-de Jong, M., Peet, A. and Hoetjes, I. (2020), "Building blocks of instructor professional development for innovative ICT use during a pandemic", Journal of Professional Capital and Community, Vol. ahead-of-print No. ahead-of-print. doi.org/10.1108/JPCC-06-2020-0034

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Introduction

Information technology is pervading society faster and deeper than ever before. The possibilities that ICT offers are growing at a pace not yet seen. This has major consequences for how we all live, work and learn. No one can predict how the digital transformation will have changed higher education in ten years' time, but we know for sure that the digital transformation will have a major impact. The national measures taken in the early part of 2020 to combat the spread of the coronavirus (the cause of COVID-19) have meant that higher education institutions have had to make an overnight transition to online education. This means that many lecturers have gained experience in using ICT in their teaching practice and, in all likelihood, have further developed many of their digital competencies. The effect of this on the ultimate need for professional development is still difficult to predict. It is expected, however, that the urgency for professional development and the deepening of skills will remain. Even in a post-coronavirus world, attention will still need to be paid more than ever to how lecturers can develop their professional competencies in the field of educational innovation with ICT, so that the acceleration we experienced in 2020 will become embedded in higher education and continue into the future.

The Acceleration Plan – Education Innovation with ICT (www.versnellingsplan.nl/english) is a collaborative venture between the Association of Universities in the Netherlands, the Association of Universities of Applied Sciences, and SURF. The Acceleration Plan (2019-2022) works on the opportunities that the digital transformation offers higher education, and is based on three ambitions relating to educational innovation with ICT:

- 1. Improving gearing to the labour market
- 2. Improving the flexibility of education
- 3. Leveraging technology to learn smarter and better

The Facilitating Professional Development for Lecturers Zone ("Professional Development") is working to help institutions effectively assist lecturers in their institutions with professional development in the area of educational innovation with ICT. On the basis of the collection of professional development strategies developed by the Zone and which have proven to be effective, institutions can start a process of improvement in order to achieve the desired acceleration in the field of educational innovation with ICT within their own institution.

The Professional Development Zone is working on five themes at the sectoral level, the institutional level and the individual level, all of which are represented in a pyramid model (see Figure 1). One of these themes is 'Effective professional development for lecturers',

in which the Zone is investigating how to organise professional development activities for lecturers as effectively as possible. Institutions can build on the insights gained when designing their own professional development policies and activities.



Figure 1. The pyramid model of the Facilitating Professional Development for Lecturers Zone..

Background and purpose of this literature study

The Professional Development Zone has carried out research in order to arrive at a set of building blocks, supported by literature and practice, which institutions can use to design and evaluate effective professional development activities in the field of educational innovation with ICT.

A lot of research has been carried out in recent years on the professional development of teachers and lecturers across all sectors of education. Recent studies have identified several effective components in the professional development of lecturers ^{1,3}. Furthermore, the scientific literature in this field is increasingly focused on educational innovation with ICT and how lecturers can be supported with this ⁴⁻⁹. Literature on the specific effective characteristics of professional development in higher education is scarce, and there are very few studies that combine all three elements: 1) professional development of lecturers, 2) educational innovation with ICT and 3) the context of higher education. This resulted within the Professional development zone to the following research question:



Which elements (building blocks) can be identified in the scientific literature and on the basis of expertise among educational practitioners when it comes to the effective professional development of higher education lecturers in relation to educational innovation with ICT?

Research design

Before attempting to answer this question, an exploratory literature study was carried out. This study focused on combinations of the aforementioned three domains:

- a. Characteristics of professional development of lecturers in higher education;
- b. Characteristics of professional development of lecturers in relation to educational innovation with ICT;
- c. Characteristics of the professional development of lecturers in general.

The first survey of the literature to be studied and survey studies was provided by the members of the Acceleration Plan. This forms the basis of the literature survey. By means of the snowball method¹ relevant literature was gradually added, after which 26 articles relating to one or more of the three domains were included in the final literature review (see references list).

In the literature review, we found 89 effective elements of professional development. These elements were presented to six experts in the professional development of lecturers and in educational innovation with ICT in higher education^{II}. The experts made suggestions to merge certain elements to create a workable number of building blocks. This resulted in the emergence of a model with 37 building blocks for the effective professional development of lecturers in the field of educational innovation with ICT.

¹ The snowball method provides a way of obtaining a good impression of the literature in a certain field. Key publications cited within the originally selected literature titles are sought and added to the selection via the aforementioned literature references.

[&]quot; A list of the experts consulted is included in the list of references..



Figure 2. Model including building blocks for the effective professional development of lecturers

The model distinguishes building blocks in three domains: professional development, facilitation and lecturer characteristics. The domains in the model have been positioned on the basis of the literature and interviews with experts. Facilitation forms the foundation of the model because it is a prerequisite for professional development. Ideally, the context and outline conditions should be right before professional development can begin. This corresponds to the sectoral and institutional levels in the pyramid model shown in Figure 1. The lecturer characteristics form the hub of the model, because these not only represent the starting point for professional development, but they are also key in terms of the content and purpose of the professional development process. Professional development for lecturers has been found to be more effective if the characteristics that lecturers start out with are taken into account, so that provision can be tailor-made. This is why it is important to have an overview of these characteristics right from the outset of the professional development process. At the same time, the aim of professional development is often to develop these same characteristics, which in turn will form the starting point for a subsequent professional development process. As a result, lecturer characteristics actually constitute the hub of the entire professional development process. This is illustrated in the model by an infinity loop. Figure 1 shows the lecturer characteristics at the individual level. The focus of the model, however, is at the top, in the professional development itself. In Figure 1, this corresponds with the institutional level.

The domains are divided into subdomains. Professional development is divided into the subdomains *form* and *content* of the professional development processes. Facilitation is divided into the subdomains *context* and *necessary conditions*. Each domain and subdomain comprises several building blocks. Some building blocks are merged into clusters (shown in white in the figure). For example, active learning is a cluster of building blocks in the form subdomain and includes the building blocks of participation, learning through experimentation as well as a mix of learning and working methods.

In the remainder of this report, we will discuss the various domains shown in Figure 2, starting with the central hub in the model: the characteristics of the lecturers. We will then go on to discuss the professional development of lecturers. Finally, we look at the facilitation that can be considered to be an outline condition for professional development.



Lecturer characteristics

The first domain, *lecturer characteristics*, relates to the various competences of lecturers, such as knowledge, skills and attitudes with regard to educational innovation with ICT (and more specifically, professional development in this field). It is therefore not about the background characteristics of lecturers (such as age or number of years of work experience), but about what lecturers think, what they know and what they are able to do. It is important to link up with these lecturer characteristics in the professional development process to enable tailor-made provision. At the same time, these characteristics can also be developed or further developed in the professional development process. It is then relevant to take the following building blocks into account:



Individual needs and interests

It is effective to tailor professional development programmes as far as possible to the personal, individual needs and interests of participating lecturers in terms of what they want to learn and how they want to learn it¹. Make sure you take into account the differences between lecturers¹. When it comes to the professional development of lecturers, customisation has been found to be more effective and more motivating than a generic training offering in which lecturers follow a mandatory fixed learning pathway.



Prior knowledge

Professional development can be better tailored by identifying the baseline knowledge of lecturers before they take part in the professional development exercise. Within this context, their prior knowledge in the field of educational innovation with ICT is especially important. The professional development process should then build on this knowledge base of the lecturers². At the same time, the aim of the professional development process is to expand the practical knowledge base of lecturers in this field.



Self-efficacy

Self-efficacy is the lecturers' belief in their own abilities, in this case specifically in relation to educational innovation with ICT. Self-efficacy plays a role in the professional development of lecturers in a variety of ways¹⁰. For example, if lecturers initially assess their own skills as being low, the professional development exercise relating to educational innovation with ICT will have to be designed in a different way than for lecturers who assess their own expertise as being at a higher level. Research does not yet offer us a definitive answer as to which forms are most suitable for which target groups. Nevertheless, targeted lecturer professional development can influence the degree of self-efficacy. When lecturers experience a newly acquired skill working well in their own teaching practice, their belief in their own abilities in this area will increase.

Motivation

Motivation includes both the intrinsic and extrinsic motivation of lecturers. Intrinsic motivation is about the personal motivations of lecturers to participate in a professional development exercise and to take part in their own growth in the field of educational innovation with ICT. Lack of motivation can lead to adverse consequences and should therefore be put up for open discussion prior to the professional development process¹. Extrinsic motivation is the motivation that is influenced by external factors. Appreciation by the institution can be made into a stimulus, for example, by tying professional development of teaching skills into the HR cycle in the form of an evaluation mechanism¹¹. Motivation can also be the goal or outcome of professional development. When professional development is perceived as successful or valuable, lecturers are likely to be more motivated to continue their own development in this area in the future.

Professional identity

Professional identity includes the core beliefs a lecturer has about what constitutes good teaching. How should a lecturer behave, what is his/her role, and which activities are appropriate for them to engage in? One of the aims of lecturer professional development should be to ensure alignment with these views and to influence them in such a way that lecturers start to use what they have learned in their own teaching practice¹¹. This is particularly important in educational innovation with ICT, where a change in working methods is key. Lecturers should regularly reflect critically on their own professional identity. This building block is of specific importance in higher education, as lecturers often combine two different roles (that of researcher and teacher) in this context. The development of the professional identity of lecturers can be supported by the institutions, for example, by allocating lecturers extra time for this or by rewarding or recognising their efforts¹.



Teacher beliefs

'Teacher beliefs' refers to the beliefs of lecturers about what good teaching is and how students learn. It is important to clarify these views of lecturers more and to use them as a starting point or as a central subject within the professional development activity. The professional development activity must be arranged in such a way that lecturers become aware of their own teacher beliefs, reflect critically on them and refocus them where necessary. This is certainly true for educational innovation with ICT4⁴.

These building blocks only come within the domain of lecturer characteristics. There are also building blocks that cross several domains. For example, there are characteristics and/or attitudes of lecturers that should be taken into account in the professional development process, but which nevertheless also require targeted facilitation from the institution. These therefore lie at the crossroads between lecturer characteristics and facilitation. The *engagement, responsibility* and *participation* of lecturers are important for effective professional development^{III}.



esponsibility

Engagement

It is crucial that lecturers are engaged in their professional development activities. If lecturers experience the added value of professional development for education, this will increase the chance that they will actually implement the relevant educational innovation with ICT in their own teaching practice¹². This is particularly important in the case of lecturer professional development when working as a team, where lecturers are dependent on each other and the commitment of each lecturer matters².



Responsibility

The extent to which lecturers are attentive to and feel responsible for developing their own teaching practice, and achieving an impact among students is a key factor in the effectiveness of the professional development process². Professional development should therefore always focus on the desired impact on the teaching practice and not just on the acquisition of new knowledge and skills for lecturers.

The description of these three building blocks from the institution's perspective can be found on page 28



Participation

Lecturers who actively participate in professional development on the basis of their own motivation are lecturers who share their own experiences and invite open discussion of these¹³. Furthermore, you could also consider performing assignments, preparing sessions and implementing what you have learned in your own practice. Participation is particularly relevant when professional development takes place in a learning community, where the absence of a lecturer (even if only temporary) affects the processes of the team¹.

Finally, there are three other building blocks that lie at the crossroads between lecturer characteristics and the content of professional development: *ICT literacy, reasoning chains* and *micro-meso perspective*. In the context of the lecturer characteristics, this is about finding the starting point at which lecturers begin their professional development and develop the attributes mentioned by taking part in a professional development activity^{IV}.

ICT literacy

When designing a professional development activity, it is important to take the ICT literacy of lecturers into account. This refers to the technological know-how and skills that lecturers have in using ICT in education in a well-considered way^{4,6}. ICT literacy refers to the skills needed to use ICT in education in a way that benefits the learning process. These include instrumental skills, information skills, media skills and computational thinking.



Reasoning chains

In lecturer professional development, attention should be devoted to the reasoning chains of lecturers^{14,15}. Lecturers should be able to substantiate in terms of educational value why, depending on the learning objective and subject-matter content, the use of certain technologies in a specific educational context would produce the desired learning outcomes for specific target groups (what works where, how, with whom and why?). They need to be able to explain step-by-step why they make the choices they make. During the professional development process, they will expound these reasoning chains, although this process itself can also influence the reasoning chains.



Micro-meso perspective

The professional development activity should generate insight into the different levels that play a role in educational innovation with ICT, especially the importance of ensuring there is a degree of coordination between them. We distinguish between the micro level – the educational learning situation and the interaction between student and lecturer – and the meso level – the teaching team within the institution. In order to achieve educational innovation with ICT, it is important that lecturers familiarise themselves with the mutual dependency between the two levels¹⁶. This means that they must realise that changes in their own teaching practice (micro level) must be accompanied by appropriate changes in the teaching organisation (meso level). The lecturer's view may also change while he or she is following a professional development programme⁴.

^{IV} The description of these three building blocks from the perspective of the content of professional development activities can be found on page 22



Professional development

The second domain, *professional development*, clearly covers the professional development process itself. A distinction is made between the subdomains of *form* and *content* of the professional development activity. There are clusters of building blocks within each subdomain.

Form

The **form** subdomain is about how the professional process development is designed. Four clusters of building blocks can be distinguished within this subdomain: *active learning*, *working towards a goal, focus on the teachers' own practice* and *learning together*.

Active learning

Active learning means being actively involved in what you are learning, for example, by contributing your own experiences, looking for underlying explanations for the subject matter and engaging in discussions³. Active learning consists of three building blocks:



Active participation

It is more effective when lecturers actively participate in their own professional development than when they only participate passively. For example, it is better to observe experts or to be observed yourself, followed by an interactive feedback and discussion session, than it is to just listen passively to a lecture^{2,17}.



Learning by experimentation

Learning by experimentation means that there is scope for lecturers to practice new skills and try out tools. In order to allow for their transposition to your own practice, it is important that there is the scope to experiment in your own context⁴. To do that safely, you sometimes need the physical space to try things out. In gamification literature, this is described as the *sandbox* concept^{18,19}. In the sandbox, players are not at risk of making mistakes, giving them scope to experiment²⁰.



Mix of learning and working forms

Effective professional development requires a mix of learning and working forms²¹. This appears to be particularly true in the case of educational innovation with ICT⁴. Each lecturer has different characteristics to which the

professional development must be adapted. A mix of learning and working forms can contribute to the tailor-made provision (see also lecturer characteristics). Within this mix of learning and working forms, it is important to alternate between formal and informal learning^{4,22,23}. It is important to alternate in professional development between learning in a structured and guided setting and learning in a spontaneous and unconscious way.

Working towards a goal

A professional development activity must always work towards a goal (goal-oriented working). In order to make this happen, lecturers must have a say when the goals and are formulated and the common goals must also be in line with the individual goals of the lecturers themselves^{2,24}. However, lecturers do need support in formulating this goal, for example, by articulating the right questions to help them identify and recognise the practical question.



Clearly defined goals

It is important that the goal for every lecturer who participates in the professional development activity is clear; the goal must be clearly formulated. The goals will preferably be aimed primarily at student learning. This is also important when a professional development activity takes place in team sessions; setting a clear, common goal will have a positive impact on the effectiveness of the professional development activity^{1,3}.

Focus on the teachers' own practice

Professional development should focus on the lecturers' own teaching practice in order to ensure that what they have learned is transposed^{2,4}. We can distinguish three building blocks here:



Authentic learning situations

Authentic learning situations link the theoretical knowledge learned to teaching practice, and are therefore meaningful. The application of authentic learning situations also works well for educational innovation with ICT⁶. Solving practical problems within your own educational context is an essential part of professional development.



Workplace learning

Workplace learning ensures that lecturers can directly apply what they have learned through the professional development process in their own teaching practice²². Workplace learning is not only learning at work,

but also includes learning for work and from work²⁵. This means that the professional development process should be focused on your own teaching practice.



Sharing success experiences

Sharing success experiences from your teaching practice is inspiring and lowers the threshold for lecturers^{5,11}. In addition to success experiences, this activity is also about sharing experiences that have actually been less successful. Lecturers can, for example, use error-based examples to identify when something is going wrong, and then turn things round to create a success experience². Compiling a compendium of best practices also has a positive influence on the learning of lecturers¹¹.

Learning together

Learning together means collaborating with others and working with them on the learning process. This often involves the lecturers' own teaching practice. Learning together includes the following three building blocks:



Collaborative learning.

Collaborative learning is an important building block in professional development^{5,13} because it contributes to behavioural change, a change in the mental models of lecturers²³. While collaborating with others, lecturers can contribute their own experiences from their own teaching context³. When collaborating, it is important that there is support for the collaborative process from within the organisation¹². One form of collaborative learning is peer learning, in which teams of colleagues (peers) take a critical look at their own teaching practice.



Design-based learning

Design-based learning (including design thinking) is an effective way to shape a professional development process. It focuses on problemsolving by using activating work forms to produce a product²⁶. Design thinking encourages lecturers to think outside the box, to focus on their own practice and to design a teaching process together with their learners for the learners⁷.



Experiential learning

Experiential learning focuses on the lecturers' own experiences. Reflecting on these experiences is also an important part of this^{17,21,22}. In teams, lecturers can work on their own experiences by reviewing video material obtained from the teaching practice of themselves and others in the group. Experiential learning is a form of inquiry-based learning. This involves learning new skills and discovering new tools through experimentation⁴. What is important here is to be able to investigate what works well in your own teaching practice^{5,22}.

Transformative learning

Educational innovation with ICT is a complex process that requires different (often deeper) ways of learning. It calls for a change in lecturers' mental models, i.e. transformative learning⁴. What is important in educational innovation with ICT is that lecturers learn to view things from a different perspective and look at learning situations and their own role in them in a different way^{27,28}. Transformative learning consists of two building blocks:



Cross-border learning

Transformative learning includes cross-border learning. In cross-border learning, people with different frames of reference and perspectives are involved in the professional development process, revealing differences in mental models. This creates scope for development and growth⁴.



Multidisciplinary teams

Transformative learning can be achieved by forming multidisciplinary teams in which lecturers and others (ICT specialists, subject-matter experts and content specialists) from different disciplines work together to strengthen each other^{4,11}.

Content

The **content** subdomain consists of building blocks that determine the content of the professional development activity. This domain consists of seven building blocks. These are content knowledge, pedagogical *content knowledge*, *improving your own teaching*, *ethics*, *ICT literacy*, *reasoning chains*, *micro-meso perspectives* and *duration and intensity*.



Content knowledge

It is important to start professional development from the premise of content knowledge. This is the content relating to the subject that lecturers teach day-to-day^{2,3}. It is important that the learning process of students in this subject is not forgotten³.



Pedagogical content knowledge

The content offered during professional development must also address pedagogical content knowledge. 'Teaching skills' refers to how knowledge is transferred, learning skills, gaining insight into teaching and supporting students in their own development. 'Subject-related teaching skills' refers to the specific teaching skills required for the subject content which the lecturer teaches²³.



Improving your own teaching

Professional development must focus on improving your own teaching practice¹⁰. This means that professional development is about the teaching environment in which the lecturer works¹⁷. It is also important that the process addresses any questions that a lecturer has from their own practice⁴. The lecturer can then immediately use the answers in their own teaching practice, contributing to a better transfer of what they have learned^{2,21}. Improving your own teaching includes a focus on the learning of students. It is important to focus on the learning of students from the perspective of the lecturers' own teaching practice¹³. A common goal of professional development should be that lecturers collectively focus on the learning success and learning processes of students, for example, by evaluating the learning outcomes during or after the professional development activity^{2,3,13}.



Ethics

Lecturers should be able to educate students on the ethical dilemmas that technology can present and support students in developing metacognitive skills so that they can learn to ask ethical questions themselves²⁹. It is important that lecturers know what ethical questions technology can raise in the education setting. Professional development should therefore address this issue³⁰. The following building blocks have previously been referred to under the heading lecturer characteristics, but are now being defined from the perspective of the content of professional development^v.



ICT literacy

It is important to consider the ICT literacy of lecturers in the content of a professional development exercise. During the professional development exercise, instrumental skills, information skills, media skills and computational thinking should be taught in a way that matches the level of the lecturers. What is important here is the technology know-how and skills that lecturers should have in order to deploy ICT in a well-founded way in their teaching practice^{4,6}.

Reasoning chains

Lecturers' reasoning chains should be highlighted in the content of professional development¹⁴. Lecturers should be able to substantiate in terms of educational value why, depending on the learning objective and subject-matter content, the use of certain technologies in a specific educational context would produce the desired learning outcomes for specific target groups (what works where, how, with whom and why?). They need to be able to explain step-by-step why they make the choices they make. In the content of professional development, it is important that lecturers are taught how to articulate these reasoning chains and improve them¹⁵.



Micro-meso perspective

The professional development activity should generate insight into the different levels that play a role in educational innovation with ICT, especially the importance of ensuring there is a degree of coordination between them. We distinguish between the micro level – the educational learning situation and the interaction between student and lecturer – and the meso level – the teaching team and the institution. In order to achieve educational innovation with ICT, it is important that lecturers familiarise themselves with the mutual dependency between the two levels¹⁶. This means that they must realise that changes in their own teaching practice (micro level) must be accompanied by appropriate changes in the teaching organisation (meso level). The lecturer's view may also change while he or she is following a professional development programme4⁴.

The building block of long-term and continuous professional development lies at the crossroads between professional development and facilitation. Below we describe what this building block means for the design of professional development^{VI}.

Duration and intensity

Duration and intensity

Professional development should be both long-term and continuous². In that case, the content of the professional development will be about creating scope for lecturers to experiment and to make the transposition to professional practice².

^v The description of these three building blocks from the perspective of lecturer characteristics can be found on page 14 and 15

 $^{^{}_{\rm M}}$ The description of these building blocks from the perspective of facilitation can be found on page 28

Facilitation

The third domain, *Facilitation*, relates to support from the institution and the government to promote the professional development of lecturers. This domain can be divided into two sub-domains: *context* and *necessary conditions*.

Context

The **context** subdomain relates to the environment in which the professional development activity is offered. Within this subdomain, two clusters of building blocks can be distinguished: the *institutional level* and the *national level*.

Institutional level

Vision

Policy

The professional development of lecturers takes place in and is coloured by their own institution. At the institutional level, the following building blocks provide support for professional development: *vision, policy, learning culture* and *ICT infrastructure*.

Vision

A clear vision forms a unifying and inspiring link between the different faculties and teams at all levels⁵. Within educational institutions, educational innovation with ICT should have a clear place in the institution's policies ^{7,12}. If the parties involved – managers, supporters, lecturers, students – can make a contribution to the vision, a shared vision will be created and educational innovation with ICT will receive an even greater stimulus^{7,8,31}. Especially within universities, this requires explicit attention because the focus in universities is often on the importance of research¹.

Policy

The vision on educational innovation with ICT is made visible in the institution's policies. This will include the objectives that the institution aims to achieve through its efforts towards educational innovation with ICT. It is important that professional development in the field of educational innovation with ICT is embedded in these policies^{3,5}. This can be done, for example, through the BKO Basic Teaching Qualification (at research universities) or the BDB Basic Teaching Qualification (at universities of applied sciences) which lead to the award of a certificate of teaching competence. Educational innovation with ICT is not yet a mandatory part of these existing programmes. What's more, these programmes



are primarily aimed at new lecturers and there is therefore less focus on the lifelong learning of existing lecturers. Attention is therefore needed in order to embed the professional development of all lecturers in the institution's policies..

Learning culture

A learning culture offers space for critical reflection, peer-group feedback among staff, collaboration, mutual trust and time to experiment and share experiences^{3,9}. The presence of this culture will have a positive impact on the extent to which professional development is successful and enduring³.



Learning culture

ICT infrastructure

A good ICT infrastructure is a prerequisite for the integration of ICT in the education process²⁴. This is about the availability, accessibility and quality of the latest software and hardware, including appropriate programs and digital learning materials that support learning and teaching^{7,32,33}. Furthermore, a good ICT infrastructure also includes access to permanent ICT and educational support^{7,8,24,32-34}.

National level

The institution where professional development takes place is in a national context. It is important that professional development is supported by the national government^{2,11}. This can be done by creating close cooperation between government authorities and higher education institutions to define national measures relating to educational innovation with ICT. One example of this is the Comenius programme, which offers lecturers and other education professionals the opportunity to apply for a grant to implement an educational innovation activity within a subject or course. The focus of this programme will be on stimulating educational innovation in general, and not specifically on educational innovation with ICT.

Necessary conditions

The facilitation domain includes a second subdomain: **necessary conditions**. These are attributes that must be focused on by the institution, where it is clear that these are a necessary condition in order for professional development to take place and/or succeed. Ideally, this part should precede the professional development process itself.

Support from the executive board and senior management

Support from the executive board and senior management is a necessary condition for professional development in the field of ICT innovation. Without active support, it will be very difficult to create any sustainable professional development processes. Support from the executive board and senior management includes the following building blocks: *leadership* and *time*.



Leadership

Managers have a pivotal role in initiating and maintaining professional development activities relating to educational innovation with ICT³. For instance, managers can contribute to the creation of a learning culture within the institution⁹ and ensure that there is a degree of coherence between the educational vision and the day-to-day teaching practice³⁵⁻³⁹. Furthermore, it is important that managers act as role models for their staff. If managers promote the importance of educational innovation with ICT and make the development of their own competences in this field visible, this will act as a stimulus for the use of ICT for educational innovation by lecturers^{3,7,32,33}.

Time

The executive board and senior management should make sufficient time available for the professional development of lecturers, given that a lack of time is often one of the major obstacles^{3,23}. Time must be made available not just in lecturers' timetables, but also in the range of tasks that lecturers perform so that there is space for professional development without increasing the workload². This time will be used on the one hand for participation in (long-term) professional development activities and, on the other hand, it will be needed for experimentation by lecturers with what they have learned and for implementation of what they have learned in their own teaching practice²⁴.

The building block of duration and intensity lies at the crossroads between professional development and facilitation. The continuity of professional development must be facilitated from within the institution to ensure that professional development activities can be long-term and continuous. Below we describe what this building block means in terms of facilitation^{VII}.

Duration and intensity

Duration and intensity

The executive board and senior management should embrace the vision that professional development is part of the professional identity of the lecturers³⁸. This will result in identification of the importance of long-term and continuous professional development. Long-term professional development means that professional development activities span a longer duration and are not limited to a one-off training course every so often². Continuous professional development means that the development of lecturers must be supported on an ongoing basis, for example, by giving professional development a place within the human resources policy².

Finally, there are the building blocks that lie at the crossroads between facilitation and lecturer characteristics: *engagement, responsibility* and *participation* of lecturers. As described earlier, professional development must be tailored to these characteristics, and the development of these characteristics can form the goal of professional development activities. At the same time, the institution could support the development of these characteristics by taking measures to encourage the engagement, the responsibility and the participation of lecturers. This could be achieved, firstly, by involving lecturers in and giving them a voice in their own professional development process, thereby increasing ownership³. Secondly, we know that educational innovation with ICT requires an explicit focus from the powers that be. Institutions can take measures to recognise, value and reward lecturers' engagement, responsibility and participation1. So far, little is known about how exactly institutions might do this^{VIII}.

Conclusion

The Lecturer Professional Development zone has developed a set of building blocks which institutions can use to design and evaluate effective forms of professional development for lecturers in the field of educational innovation with ICT (see appendix). This set of building blocks was created based on this literature review and following discussions with experts. The literature review and discussions examined which building blocks could be identified that helped provide effective professional development for higher education lecturers in relation to educational innovation with ICT. The study identified building blocks in three domains: namely lecturer characteristics, professional development and facilitation. This set of building blocks and their interrelationships (see Figure 2) provide institutions and developers of professional development programmes with the tools to help them with the form, content and organisation of professional development activities for higher education lecturers.

^{VII} The description of these building blocks from the perspective of the content of professional development activities can be found on page 23

^{VIII} The description of these three building blocks from the perspective of lecturer characteristics can be found on page 13 and 14

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Appendix

The set of building blocks







The Acceleration Plan for Educational Innovation with ICT is a four-year programme focused on bringing initiatives, knowledge, and experiences for digitalisation together. The programme is an initiative of SURF, the Netherlands Association of Universities of Applied Sciences, and the Association of Universities, and is organised in eight acceleration zones. In the zone Facilitating professional development for lecturers, 19 institutions are working on improving the professional development of lecturers in Dutch higher education.



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