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Behavioural Indicators for Teaching and Learning with Technology in Higher Education

Complementary to the Framework for Digital Competences of Lecturers (Acceleration Plan)

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Version 1.1

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Introduction

The Framework for Digital Competences of Lecturers was developed in 2021, commissioned by the zone Professional Development of the Acceleration Plan Education with ICT (Uerz et al., 2021; Tondeur et al[1]). This framework describes the competences that are essential to the design of education which enables personalization and flexibilization through the use of technology and keeps up with an ever-changing society. It was developed for higher education, but it is also suitable for vocational education. Some higher and vocational education institutions in the Netherlands have already adopted this framework. The framework distinguishes four main dimensions (see figure 1):

1. Designing, implementing and evaluating education;
2. Empowering students for a digital society;
3. Professional conduct as a lecturer[2];
4. Digital literacy for lecturers.

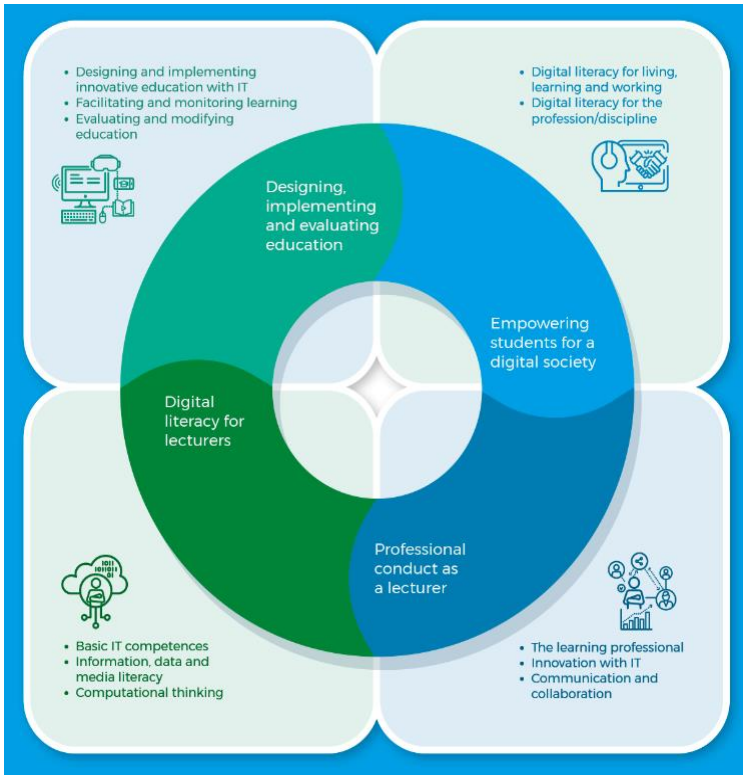

Figure 1. Framework for Digital Competences of Lecturers in Higher (and Vocational) Education

The framework subdivides these dimensions into subdimensions and underlying competences. The dimensions are not separate entities; they are inter-connected. The link between 'Empowering students for a digital society' and 'Digital literacy for lecturers' may act as an example: for teachers to be able to educate students in digital literacy for living, learning and working, they must first be competent in this area themselves. In conjunction, all competences influence the actual use of technology in education and the extent to which teachers foster students' digital literacy (Kooi, de Korte, Kurver, Kral, Bakker & van Rens, 2021).

HAN University of Applied Sciences aims for all HAN teachers to be demonstrably competent in technology enhanced education and fostering digital literacy within the next few years. The educational programme HAN Open Digital Horizons was set up to achieve this. The iXperium Centre of Expertise Teaching and Learning with ICT drives this programme and ensures an evidence-informed approach. The programme uses this framework as a scaffold. Both research and everyday practice show that teachers need practical examples and further clarification of the competences addressed in the framework to properly assess their own actions and development needs. Moreover, support staff and HR staff recognize the same need.

[1] This document is based on two related publications: 'A framework for digital competences of lecturers' (Uerz et al., 2022) and 'The HeDiCom framework: Higher Education teachers' digital competencies for the future' (Tondeur et al., 2023).
[2] In this document, we will use the term 'teachers' synonymously with the 'lecturers' mentioned in the Framework.

To cater to these needs, the iXperium has formulated behavioural indicators to complement the competences in the framework. These behavioural indicators describe examples of demonstrable and actionable behaviour which competent teachers might display. The behavioural indicators, therefore, answer the following question: what can you observe when someone is competent? By complementing each competence with clear, objectively observable behavioural indicators, this document facilitates a discussion of the teacher's real-life behaviour. This allows teachers and assessors a more granular insight into the degree of competence achieved.

The behavioural indicators were partly adapted from pre-existing behavioural indicators of teaching and learning with ICT which are already in use within HAN University in e.g. teaching degrees and the Master's programme Design for Contemporary Learning (Coetsier et al., 2016; Coetsier et al., 2019; Gorissen et al, 2019). The behavioural indicators as formulated in this publication were presented for feedback to all authors of the framework and experts within HAN University. Subsequently, they will be shared for validation within the HAN Open Digital Horizons programme, in discussions about professionalisation needs as well as (self-)assessment procedures.

Later in 2023, an extended set of behavioural indicators will follow, including the current behavioural indicators on the basic level, added by behavioural indicators on a senior level, which are currently being developed. The extended set will replace the current set with only basic behavioural indicators.

In the following chapters, we address the competences and behavioural indicators for each dimension.

1. Designing, implementing and evaluating education

The first dimension of the framework addresses the competences teachers need to design, implement and evaluate education to facilitate and monitor students' learning processes. During this process, it is key that teachers purposefully apply the potential of technology to improve or facilitate learning.

1.1. Designing, implementing and evaluating (innovative) education with IT

Competences

Teachers…

1. are able to design innovative education that is consistent with their own concept of teaching and learning using technology and with the institution's educational vision;
2. are able to design and implement innovative education that makes use of technology to improve students' ownership of their learning process and respond to the individual needs of students;
3. know how to support, combine and coordinate the learning process in a variety of learning environments (e.g. face-to-face, online and in the workplace);
4. are able to take the well-being of students and inclusion into account in digital learning processes;
5. are able to select, modify, organise and create digital resources and learning materials.

Behavioural indicators

Teachers...

- use their personal practice-informed and theory-informed concepts of learning to shape their technology enhanced education;
- know how to apply educational design principles within the context of technology enhanced learning arrangements;
- work together with colleagues and/or students to create innovative technology enhanced learning packages within the context of their institution, using technology to add value;
- justify design choices using their vision for teaching and learning, the learning goals, the students, the broader context and how the design fits into the curriculum;
- explain design choices and the corresponding selection of digital tools;
- select digital tools and use them to cater to different students' needs;
- take the student's needs into account in their design (including cognitive load, basic IT competences, age);
- ensure that the educational design and selected (digital) tools comply with accessibility regulations;
- take the consistency between the learning process and learning environments into account within the design;
- measure their design against usability requirements (logical, consistent, compliant with standards, no redundant user behaviour and easy to understand) when designing education;
- select digital tools and apply them to align with learning goals, learning process/pedagogy, content and assessment (in accordance with TPACK);
- regularly create and combine digital content, including open educational resources.

1.2. Facilitating and monitoring learning

Competences

Teachers…

1. are able to monitor and support the students' learning process using formative and summative assessment, making effective use of technology;
2. are able to use technology to collect, analyse and report on student data, to understand and improve the students' learning process;
3. are able to use technology to provide timely and personalised supervision and support.

Behavioural indicators

Teachers...

- select digital tools and use them to facilitate collaborative learning, including peer feedback;
- select digital tools and use them to facilitate students to learn independently with and through technology;
- use data from several sources as well as data they collect themselves to enhance their students' opportunities for self-regulated learning;
- select digital tools and use data from several sources as well as self-collected data to:
    - establish the starting points and developmental needs of students;
    - monitor and evaluate learning processes;
    - provide students with feedback;
    - determine next steps.

1.3. Evaluating and modifying education

Competences

Teachers…

1. are able to evaluate and optimise their design for innovative education, making effective use of IT;
2. are able to reflect on the benefits of implementing IT in educational processes and modify its use accordingly;
3. are able to consider their own digital pedagogical-didactic conduct and adapt this to individual, institutional and societal needs.

Behavioural indicators

Teachers...

- decide how to organize their education on the basis of data on students' learning and development processes;
- evaluate how technology has contributed towards achieving the goals of the learning activity and deliberately select different (digital) tools if needed;
- are aware of (peer coaching) methods that allow teachers to collectively reflect on their own technology-supported pedagogical practice;
- reflect on their technology-supported pedagogical practice and identify follow-up steps to improve this practice;
- are aware of current developments in their own institution, in society, and the profession/discipline for which students are educated, specifically regarding digitization, and apply this to their own pedagogical practice.

2. Empowering students for a digital society

The rapid changes taking place in society and the job market, and the accompanying technological developments, require students to acquire new digital competences, both as citizens and as future employees. Teachers play a role in the development of students' digital literacy for living, learning and working. Moreover, teachers can be expected to pay attention to digital competences specific to the profession or discipline at hand.

2.1. Digital literacy for living, learning and working

Competences

Teachers…

1. are able to develop and implement learning activities to empower students' digital literacy;
2. are able to guide students in making rational use of the internet and social media;
3. are able to empower students to effectively manage and protect personal data and learning analytics;
4. are able to guide students in the regulation and monitoring of their own learning process using IT.

Behavioural indicators

Teachers...

- are aware of (the differences in) students' digital literacy;
- design and carry out learning activities that allow students to create with technology and use technology to solve problems;
- pay attention to the possibilities and difficulties that students might encounter when interacting with technology;
- act as role models when it comes to digital literacy for living, learning and working;
- design and carry out learning activities to:
    - teach students to familiarize themselves with new digital tools which facilitate living, learning and working;
    - teach students to purposefully and systemically search and process information, as well as assessing the reliability of both the information and its source;
    - enable students to develop the required media skills;
    - teach students to discuss the added value and risks of internet and social media;
    - foster students' data literacy;
    - familiarize students with privacy laws and regulations pertaining to data and online information (GDPR);
    - foster students' computational thinking skills.
- help students to:
    - safely, legally and ethically responsibly use technology;
    - protect intellectual property rights;
    - manage and protect their personal and learner data while being able to express why this is important.
- support students to monitor and regulate their own learning processes through the use of technology.

2.2. Digital literacy for the profession/discipline

Competences

Teachers…

1. are able to ensure that students are familiar with new technological developments in the profession/discipline;
2. are able to encourage students to actively contribute to technological innovations within the profession/discipline;
3. are able to help develop the digital communication skills of students to ensure continued employability.

Behavioural indicators

Teachers...

- acquaint students with existing technologies within their future profession/discipline;
- join students in experimenting with new technologies within their future profession/discipline;
- encourage students to keep up to date with (technological) developments within the profession/discipline;
- encourage students to share (technological) developments within the profession/discipline with each other and their teacher;
- encourage students to experiment with technologies that are new to them;
- foster students' problem solving skills regarding the use of technology within the profession/discipline and familiarize them with applicable design models;
- guide students in managing their online profile*;*
- support students to develop their digital communication skills required for instance for online meetings and other digital means of communication.

3. Professional conduct as a lecturer

Teachers, being learning professionals, must continue to develop their skills and knowledge within the context of their profession and their own professional identity. Within the context of their education, they must be competent in educational innovation with technology. Moreover, it is important that they are able to communicate and collaborate with other professionals in this area.

3.1. The learning professional

Competences

Teachers…

1. are able to identify areas for personal professional development with regard to teaching and learning with technology and to actively work on development in these areas;
2. are able to work with colleagues to develop a vision for innovative digital education and empowering students for a digital society that aligns with the vision of the university;
3. are able to evaluate their own vision for innovative digital education and modify this based on research results, developments in society and educational practice.

Behavioural indicators

Teachers...

- have a clear perspective on their own professionalisation needs regarding educational innovation with technology;
- seek out and regularly participate in professional development activities which address these needs;
- use technology to facilitate their professional development regarding teaching and learning with technology;
- share their professional learning process regarding teaching and learning with technology with others within the organization;
- create an environment that allows them to learn about technology and digital literacy from and with students;
- regularly interacts with colleagues about recent developments, recent research findings and experiences in the classroom regarding the educational use of technology and their relevance for the individual and collective vision for teaching and learning with education and digital literacy.

3.2. Innovation with IT

Competences

Teachers…

1. are able to analyse and critically evaluate innovative digital education practice and implement it in their own teaching practice;
2. actively follow innovative digital education practice in their profession/discipline and is able to critically reflect on the benefits of this for their own teaching practice;
3. are able to actively follow and experiment with developments in teaching and learning with technology and digital literacy and discuss these with colleagues.

Behavioural indicators

Teachers...

- actively seek out innovative digital tools;
- use innovative digital tools to create contemporary education and address students' needs;
- inspire others or act as role models for leveraging the potential of technology;
- critically assess (innovative) technology enhanced educational practices on their merits for students, teachers and for their own educational practice;
- critically assess innovative technology enhanced practices within the students' future profession/discipline on their merits for students and their own educational practice;
- keep track of recent developments and research findings regarding (innovative) technology enhanced education;
- use good practices of technology enhanced educational innovation from home and abroad as inspiration;
- experiment with various current and innovative digital tools fitting their own educational practice;
- innovatively apply technology within the context of the organization through well-considered and evidence-informed experimentation with colleagues and/or students;
- select new pedagogical and/or educational technological tools and experiment with them in their own education;
- translate everyday use of technology to their educational practice;
- contribute to educational development within the University through the evidence-informed design of teaching and learning while using technology.

3.3. Communication and collaboration

Competences

Teachers…

1. are able to collaborate in the design and evaluation of innovative digital education;
2. are able to participate in professional online networks or communities to strengthen professional ties relating to educational innovation with technology;
3. are able to use technology for communication with students, the university and others.

Behavioural indicators

Teachers...

- collaborate with colleagues and/or students to innovatively design technology enhanced learning arrangements within the context of the institution;
- collaborate on innovative technology enhanced education in multi-disciplinary teams;
- actively share online learning materials and content with colleagues and re-use open educational resources;
- (co)create innovative technology enhanced education with students and others;
- share their acquired insights on teaching and learning with technology with others within and outside of the school;
- actively participate in discussions about education on various social media;
- have a social media profile and use this for personal branding.

4. Digital literacy for lecturers

In order to facilitate students' development in digital literacy and to be able to design and implement future-proof education with technology, teachers themselves must also be digitally literate. Within the framework, these competences are subdivided into basic IT competences, information, media and data literacy and computational thinking.

4.1. Basic IT competences

Competences

Teachers…

1. are able to effectively implement technology in educational processes;
2. know which digital tools are available or should be available in a certain context, and how they impact the use of technology in an educational setting;
3. are able to select and quickly familiarise themselves with new digital tools, actively keep up with technological developments and experiment with new tools.

Behavioural indicators

Teachers...

- explore multiple online environments focused on (facilitating) education like learning management systems and student tracking systems;
- keep up to date with recent, relevant technological developments;
- are curious about new digital tools;
- demonstrate having quickly familiarized themselves with various new digital tools;
- articulate pros and cons of existing digital facilities for teaching and learning;
- use the available online environments focused on education and understand how systems within them are connected;
- add new (pedagogical) digital tools to the existing digital infrastructure of the University;
- apply digital tools to different groups of students or courses than they were originally intended for.

4.2. Information, data and media literacy

Competences

Teachers…

1. are able to find, analyse and interpret digital information and resources and evaluate their reliability;
2. take a critical approach to the use of internet and social media;
3. understand the rules regarding copyright and plagiarism, the different types of licences and can properly cite digital resources;
4. are able to actively, creatively and critically use and understand data, and manage and protect the personal data of students.

Behavioural indicators

Teachers...

- assess the reliability and authenticity of websites and information;
- organise sources of information efficiently;
- use various sources and channels of digital (learning) materials;
- assess the quality of information from students and colleagues;
- adequately use search engines, social media, and databases;
- compare information from different sources and synthesizes the retrieved information;
- know what media strategies are used to reach and influence youth;
- know what media skills are needed in a mediatised society;
- realize that society requires new media skills;
- regularly mention the effects of increasing media use on society;
- actively use social media for their own professional development;
- use social media strategically and purposefully;
- are able to consider and manage their use of media and differentiate between media use for work and in private;
- assess their use of technology against ethical principles, institution-wide guidelines, laws and regulations;
- are aware of copyright regulations and have personal strategies to optimize the flow of information from various digital media and know how to systemically manage relevant information;
- responsibly deal with others' materials and are aware of associated regulations (references, copyright, privacy regulations);
- keep up to date with institutional guidelines and laws and regulations pertaining to data collection, data storage and data use (GDPR);
- use suitable tools for data collection, data storage and data use.

4.3. Computational thinking

Competences

Teachers…

1. are able to formulate a problem in their profession or discipline in such a way that it can be solved using technology;
2. are able to develop a solution to a problem using technology;
3. are able to apply the solution in their profession or discipline.

Behavioural indicators

Teachers…

- can (re)formulate problems in such a way that a computer can effectively carry out the solution;
- can collect, analyse and visualize data to solve problems and issues and use digital tools to achieve this;
- can break a problem down into smaller parts (decomposition);
- can make problems less complex by omitting specific details and focusing on core aspects (abstraction);
- can describe the solution to problems and issues in separate steps (algorithms) and procedures;
- can use technology to run the solutions (algorithms and procedures) to problems (automation);
- can display the solution in the form of an existing model or process, or conduct an experiment based on an existing model or process;
- can systemically detect errors in algorithms and procedures (debugging).

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