Cultivating a mindset and an approach for experimenting with new technologies

TAL Conference 2025

Inger-Marie Falgren Christensen, imc@sdu.dk
Department of Design, Media and Educational Science
Centre for Learning Computational Thinking
University of Southern Denmark (SDU)

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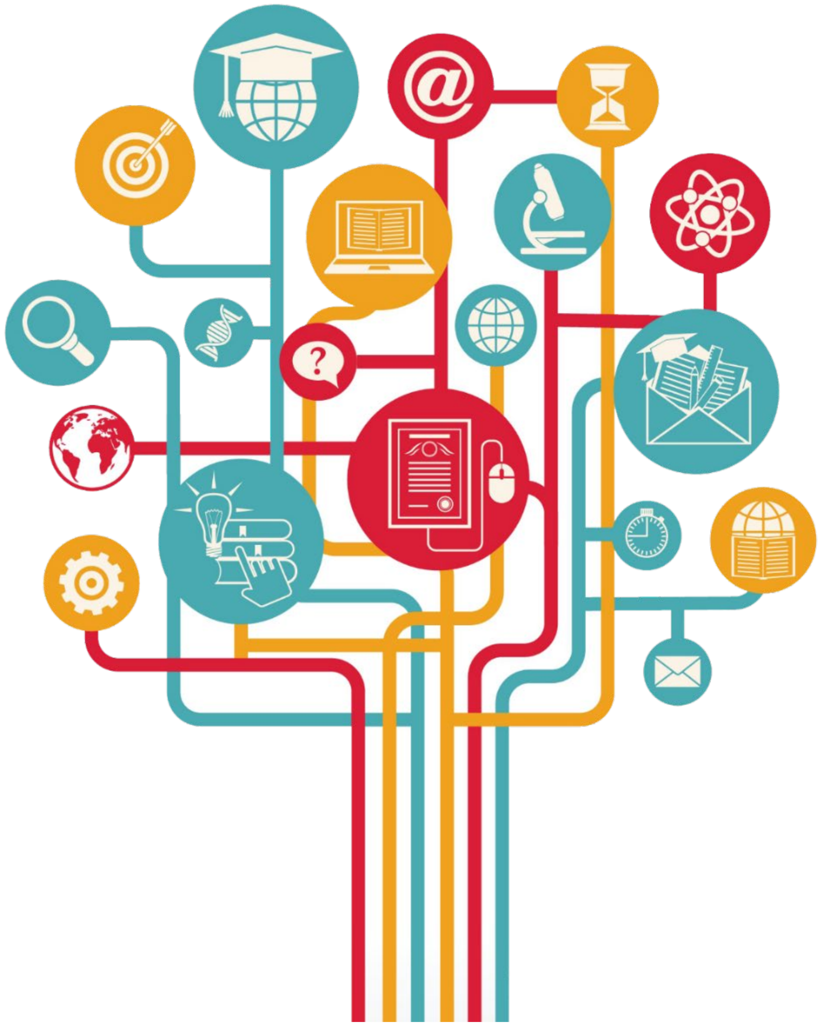
Aim and agenda

Aim

- Support you in developing a vocabulary for understanding and talking about AI in the context of digital competences more broadly

Agenda

- The DigCompUni framework: digital competences for university students
- Group activity: study competence areas – which are most relevant for your context?
- The concepts of *mindset* and *approach*
- Group activity: how can we develop a resilient mindset and approach to emerging technologies?
- Share your insights
- Concluding remarks



SDU

Background: supporting the integration of digital competences in HE is part of my current research project

- Conversations with stakeholders clearly showed that it is not clear what is meant by digital competences
- There is a need for establishing a joint language – a framework – that can help concretise digital competences

The four principles of design-based implementation research (Fishman et al., 2013)

1. Focus on persistent problems of practice from multiple stakeholder perspectives
2. Commit to iterative, collaborative design
3. Develop theory related to both classroom learning and implementation through systematic inquiry
4. Develop organisational capacity for sustaining change in systems

SDU

Design of framework: First phase of the project

- Focus: developing HE students' digital competences
- Connects to SDU's institution-wide strategy
  - Offer flexible education formats for a digitalised society and labour market
  - Updating the contents and formats of study programs
- Work to create framework originally anchored in the ”Strategy for the Faculty of Humanities' study programs 2030”:
  - Give students up to date digital humanistic competences adapted to their discipline
  - Integrate specific skills and broad technology comprehension in (and across) all study programs
  - Support teachers in integrating digital competences in subjects: faculty development and technical support
- The framework is now being disseminated to all faculties at SDU
- Inspiration from the EU *Digital competence framework for citizens* (DigComp 2.2)

Definition of digital competence

The EU framework *Digital competence framework for citizens* (DigComp 2.2) (Vuorikari et al., 2022) defines digital competence as:

- Safe, critical and responsible use of and engagement with digital technologies
- Competence is understood as a combination of knowledge, skills and attitudes
- Attitudes are a disposition and a mindset to act

Vuorikari, R., Kluzer, S., & Punie, Y. (2022). *DigComp 2.2: The Digital Competence Framework for Citizens - With new examples of knowledge, skills and attitudes, EUR 31006 EN*. Publications Office of the European Union, Luxembourg, 2022. https://doi.org/10.2760/490274

Digital Competence Framework for Citizens (DigComp 2.2. translated to a university context)

Crosscutting competences

Five competence areas

Information and data literacy

- To articulate information needs, to locate and retrieve digital data, information and content.
- To judge the relevance of the source and its content.
- To store, manage, and organise digital data, information and content.

Communication and collaboration

- To interact, communicate and collaborate through digital technologies while being aware of cultural and discipline-related diversity and bias.
- To participate in discipline-related discourse though public and private digital services.
- To manage one's professional digital presence, identity and reputation.

Digital content creation

- To create and edit digital content.
- To improve and integrate information and content into an existing body of knowledge while understanding how copyright and licences are to be applied.
- To know how to give understandable instructions to a computer system.

Safety

- To protect devices, content, personal data and privacy in digital environments.
- To protect physical and mental health, and to be aware of digital technologies for social, academic and (inter)disciplinary inclusion.
- To be aware of the environmental impact of digital technologies and their use.

Problem solving

- To identify needs and problems and to resolve conceptual, (inter)disciplinary problems and problem situations in digital environments.
- To use digital tools to innovate (inter)disciplinary processes and products.
- To keep up-to-date with the digital evolution within one's discipline.

Adapted from Vuorikari et al. (2022).

A joint language for talking about digital competences in HE: extended DigCompUni framework

Context of implementation

Generic academic competences and the discipline(s) being studied

Mindset and approach: Open, curious, willing to experiment, critical, reflected, transparent regarding own practice and reflexive

Knowledge, skills and competences in five, specific areas

Information & data literacy	Communication & collaboration	Digital content creation	Safety	Problem solving

(Christensen, 2024, 2025)

Generic academic competences and discipline(s) as context for implementation of digital competences

Digital competences and generic academic competences

- Using digital tools for such activities as
  - Information search
  - Academic writing and dissemination
  - Data collection (qualitative and quantitative)
  - Processing, analysis and presentation of results (methodology)

- Generic competences connected to the traditions of a discipline

Digital competences and the discipline(s) being studied

- How can we work with our discipline and what new types of investigations can we conduct with digital data and tools at our disposal?
- What questions can we now ask that are relevant and of significance to our discipline?

- The coupling of the academic competences and disciplinary expertise is important to ensure that
  - digital tools and methods are used in meaningful exploration of relevant topics
  - the discipline sets the direction and not digital technologies and their capabilities alone

Step 2: Testing DigCompUni against AI

Information & data literacy

- To evaluate data, information and content produced by AI technology and identify correct and misleading content.
- To know the concept of ”deep-fakes” and be aware that it can be difficult to judge the genuineness of digital content.
- Use AI tools for systematic literature searches.

Communication & collaboration

- Identify signs that indicate whether you are communicating with a human or AI-based agent.
- Interact with and give feedback to an AI service to impact future output and recommendations.
- Develop, contextualise, critically evaluate and adapt prompts to get relevant and useful output from an AI service.

Digital content creation

- Create and edit digital content in different formats using GAI services to disseminate disciplinary knowledge.
- Understand how copyright and licenses (e.g. Creative Commons) are respected and used in connection with AI-generated content.
- Develop or adapt a GAI service to solve an academic or disciplinare-related problem.

Safety

- Be able to protect personal data when using AI services.
- Know of and use SDU-approved tools and services, for example, Copilot and scite.ai
- Be aware of the environmental effect of AI technologies.

Problem solving

- Understand how AI technologies work and how to interact with these.
- Identify examples of AI services that can be used in academic and (inter)disciplinary contexts, including future work tasks.
- Use AI technology creatively and critically for knowledge construction in one’s discipline and across disciplines to innovate processes and products.
- Assess ethical questions related to AI use.

(Christensen, 2025)

SDU

Group activity (15 minutes)

In groups of three

- Study the competence areas of DigCompUni
- Identify 1-2 areas that you find most relevant for your contexts
- Discuss what specific competences within each area it would be relevant to integrate in your contexts

- Resources (handouts):
  - Memorandum: *Digital Competences in Higher Education*. See tables on pp. 6 - 10
  - Competence dialogue cards
  - Post-its
  - Digital versions of resources available here:

  https://kortlink.dk/sdu/2tdyw

Mindset and approach – robustness and resilience

- Connects to the concept of technology comprehension
- **Open and curious**: could I use one or more digital tools in connection with my assignment/project?
- **Experimental**: tests specific digital tools – explore their use and usefulness in relation to academic skills and the discipline
- **Critical and reflected**: considers what is possible and what is not possible when using a given technology. What makes sense academically and in relation to the discipline? What are consequences of us?
- **Transparent regarding own practice**: aware of own use of technology, accounts for and documents use, critically assesses results
- **Reflexive**: considers own professional identity, feelings and attitudes, and how these affect one's engagement with technologies

The concept of resilience

- Borrowed from ecology (Hall & Winn, 2011; Weller & Anderson, 2013)
  - The capacity to **absorb disturbance and reorganise** when undergoing change to **preserve function** and **identity**
  - In this context: a common understanding of and a joint language for digital competences and their significance for subjects and study programs in HE
    - broad enough to capture categories of needed competences and **to be applicable to emerging technologies**
- The case of AI
  - "AI competences are intertwined with, and in some cases build on, other aspects of digital competence" (Joint Research Centre, 2025)

Group activity (15 minutes)

In groups of three

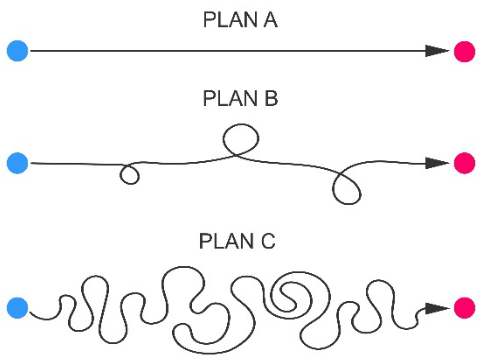
- Discuss how HE stakeholders and institutions can be supported in developing a resilient mindset and approach where digital technologies, including AI, is concerned
  - How can an open, curious, willing to experiment, critical, reflected, transparent and reflexive mindset and approach be cultivated?

- Resources (handouts):
  - Memorandum: *Digital Competences in Higher Education*. See tables on pp. 6 - 10
  - Competence dialogue cards

Share your insights
- Highlights from each group

- Which competence area(s) did you find especially relevant and why?
- Which seemed less relevant and why?
- To what degree did you find the DigCompUni helpful with respects to talking about digital competences in HE?

Concluding remarks



- Challenge
  - Getting from a joint language to actual implementation in practice (next step)

- The concept of resilience
  - Continuous dialogue on digital competences and the role of technologies in HE
  - DigCompUni focuses attention on
    - **the context and what is valued** with respects to the generic academic and the discipline-specific
    - **mindset and approach**: reminder that focus should not only be mastery of specific tools, but an open, curious, experimenting, reflecting, reflexive and transparent approach and mindset

Resilience

The capacity to **absorb disturbance and reorganise** when undergoing change to **preserve function** and **identity**

Next steps:

- How do you put digital competences, including AI, on the agenda in your local contexts?
- Use the DigCompUni framework as a mapping tool
- Use the competence dialogue cards as inspiration
- Engage in a mapping exercise to identify:
  - What digital competences are already integrated
  - Which are need to have
  - Which are nice to have

Thank you for participating

References

Christensen, I.-M. F. (2024). Mapping the current landscape of digital competences. In *Leading the Future of Learning. Proceedings of the Innovating Higher Education Conference 2024* (s. 246-260). European Association of Distance Teaching Universities. https://doi.org/10.5281/zenodo.14220974

Christensen, I.-M. F. (2025). *Competence dialogue cards: How can you put digital competences on the agenda in teaching, subjects and study programs?* University of Southern Denmark. https://portal.findresearcher.sdu.dk/da/publications/competence-dialogue-cards-how-can-you-put-digital-competences-on-

Christensen, I.-M. F. (2025). *Digital competences in higher education*. University of Southern Denmark. https://portal.findresearcher.sdu.dk/da/publications/digital-competences-in-higher-education

Fishman, B. J., Penuel, W. R., Allen, A.-R., Cheng, B. H., & Sabelli, N. (2013). Design-Based Implementation Research: An Emerging Model for Transforming the Relationship of Research and Practice. Teachers College Record, 115(14), 136-156. https://doi.org/10.1177/016146811311501415

Hall, R., & Winn, J. (2011). Questioning Technology in the Development of a Resilient Higher Education. *E-Learning and Digital Media, 8*(4), 343-356. https://doi.org/10.2304/elea.2011.8.4.343

Joint Research Centre (2025). *DigComp 3.0: An overview of major developments*. Directorate-General for Employment, Social Affairs and Inclusion. European Commission.

Ng, D. T. K., Leung, J. K. L., Chu, S. K. W., & Qiao, M. S. (2021). Conceptualizing AI literacy: An exploratory review. *Computers and Education: Artificial Intelligence, 2*, 100041. https://doi.org/10.1016/j.caeai.2021.100041

Vuorikari, R., Kluzer, S. and Punie, Y.. (2022). DigComp 2.2: *The Digital Competence Framework for Citizens - With new examples of knowledge, skills and attitudes*, EUR 31006 EN, Publications Office of the European Union, Luxembourg, 2022. Https://doi.org/10.2760/490274

Weller, M., & Anderson, T. (2013). Digital resilience in higher education. *European Journal of Open, Distance and E-Learning, 16*(1), 53-66.

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