

Negotiating Usability and Security in Digital Transformation: A Qualitative Study of Everyday Work in Finnish Vocational Education

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Jyväskylä, in the Middle of Finland

Distances

Helsinki

3 hrs.



1 hr.



Stockholm

2 hrs.



Paris

4 hrs



London

4 hrs



Digital transformation changes everyday work, also at schools

- ❖ Employees work across multiple digital systems
- ❖ Data on students, staff and work are in digital systems
- ❖ Security requirements are continuously increasing
- ❖ Everyday work depends on both usability and security

USABILITY ↔ SECURITY

Limited research on how this balance is negotiated in everyday work in schools, incl. vocational education



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Research questions:

1. What kinds of digital systems and service environments shape everyday work in vocational education institutions?
2. How do employees negotiate tensions between usability and digital security in digitally transformed everyday work?



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Theoretical background

Combination on **digital employee experience, usability and security, and informal digital practices** such as shadow IT and workarounds.

Kainda et al. (2010): Usability and security are closely intertwined; security mechanisms that protect systems and information may also reduce efficiency, learnability, and ease of use.

Digital employee experience: Gheidar & ShamiZanjani, 2020; Moganadas & Goh, 2022

Kainda, R., Flechais, I. & Roscoe, A. W. (2010) Security and usability: Analysis and evaluation. Proceedings of the 2010 International Conference on Availability, Reliability and Security, 275–282.



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Why vocational education is interesting?

A particularly complex digital environment

In most educational institutions, work and data have become increasingly digital, creating growing amounts of digital assets that must be protected.

- **Vocational education introduces additional complexity:**
 - Authentic learning environments such as restaurants, hair salons, and car repair shops
 - Students and staff work also with real customers, customer data, and business systems
 - Digital systems extend beyond the institution itself
- Work crosses organisational boundaries also in terms of digital systems

A larger digital ecosystem means a larger attack surface and more complex usability–security challenges.



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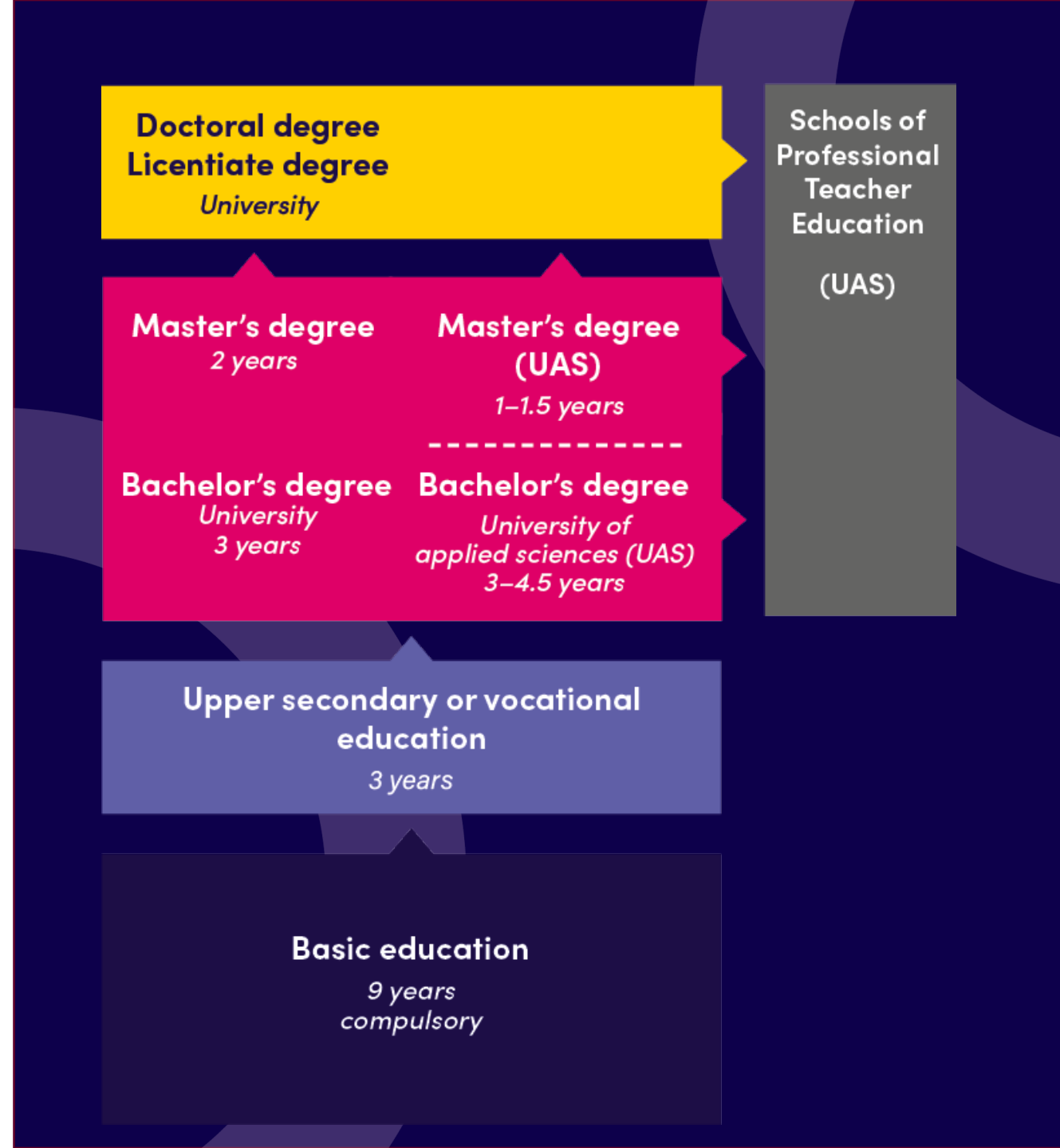
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The Finnish Education System

Vocational education provides practical, career-oriented training that prepares students directly for a profession and in Finland also gives eligibility for further studies in higher education.

In Finland, vocational education can be part of compulsory education for many young people aged 16–18.

Also available to and popular among adults who want to gain new qualifications or update their skills.



Research design

Data collection

- 25 semi-structured interviews with altogether 27 informants (≈ 22 hours of interview data Spring 2024)
- 3 Finnish vocational education institutions (7 municipalities around Finland; one special needs education VETI)
- Teaching, administration, IT, student services, and management staff
- Complementary observations in learning environments

Data analysis

- Qualitative thematic analysis
- Focus on: Digital work environments, usability, security, workarounds and shadow IT



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Findings

Main finding:

Vocational education employees continuously negotiate between usability and security in their increasingly fragmented digital work environments



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Finding 1

The digital work environment is increasingly fragmented

- There is no single digital work environment.
- Everyday work is distributed across multiple systems.
- Systems are often poorly integrated.
- The same information may need to be entered into multiple systems, and you don't get any extra time nor compensation for doing that
- Employees must continuously navigate between platforms, interfaces, and requirements.



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Finding 2: Security is essential, but it may get in the way of work

Security is embedded in everyday work...

- Access controls regulate how you can access information, so...
- Authentication mechanisms protect systems and data, but...
- Security requirements support compliance and privacy, but...
- Approved software portfolios define which tools can be used, so...

...but security can constrain your work by:

- Multiple logins and credentials
- Multi-factor authentication which interrupts workflow
- Access rights that do not always align with practical work needs
- Technical failures that may prevent task completion and teaching processes altogether
- Industry-standard tools may be unavailable if they are not approved by the institution

Work is no longer
dictated
primarily through
professional
experience and local
relationships, but
through the
workflows
embedded in digital
systems.

Finding 3

When official systems do not fit the work, employees create alternatives

Employees use third-party applications for communication, teaching, and coordination even when those tools are outside institutional control.

“We are not allowed to use WhatsApp... however, teachers still use it via their personal phones to communicate with students, as it remains the most effective communication channel”

→ Shadow IT is both rule-breaking but also a response to misalignment between formal systems and everyday work

Finding 4

Complexity brings usability and security challenges

Work crosses organisational boundaries and digital systems

Employees collaborate e.g. with:

- Workplaces providing on-the-job learning
- Student welfare and healthcare services
- Guardians and external partners
- Public sector organisations

E.g. teachers, student counsellors, and welfare professionals may work in different organisations.



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...Additional complexity



- Systems and interfaces change continuously
- Employees must constantly adapt to new digital practices
- Generation gap?
- What if the vendor's platform (e.g. Canvas) is compromised or unavailable? -> outsourced responsibility and trust



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If the usability–security relationship is not a fixed trade-off but an ongoing process of negotiation in everyday work, how to support the personnel?

- By reducing system fragmentation
- By aligning access rights and responsibilities with real work needs
- By supporting secure use of third-party tools instead of only banning them
- By ensuring business continuity (backups, trainings, plan Bs especially with the essential systems & data) when third-party platforms are unavailable



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