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Using Design Science Research to Develop a Dynamic Higher Education Learning Experience Feedback System

Abstract

Higher education institutions increasingly rely on systematic knowledge management to enhance teaching, learning, and student well-being. While knowledge management research in higher education remains fragmented, recent digitalization has created new opportunities for data-driven decision-making and pedagogical development. This study aims to assess a multi-level study experience feedback system in a Finnish university of applied sciences, following the Design Science Research Methodology. The system collects and analyzes student experience data and provides feedback on three levels (i.e., student, program, and organization) to foster reflection, dialogue, and evidence-based development. From a knowledge management perspective, the study demonstrates how embedding feedback systems into daily pedagogical practices can reduce fragmentation and may support sustainable knowledge management. The findings highlight the importance of iterative development and diverse stakeholder involvement. The results suggest that effective knowledge management in higher education institutions requires not only technical solutions but also the development of an organizational culture that integrates data into both pedagogical and strategic processes. This research contributes to the limited literature on knowledge management in higher education by providing insights into stakeholders' perspectives on the role of knowledge practices in supporting student learning, well-being, and institutional development.

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1. Introduction

Higher education institutions (HEIs) are knowledge intensive organizations that create and disseminate research knowledge, transfer knowledge with organizations for innovation, and support learning through teaching and training activities (Fullwood et al., 2013). While research in knowledge management (KM) in higher education has been relatively scarce and scattered, more recently, there have been efforts for systematic overview of KM in higher education (Quarchioni et al., 2022). Simultaneously, there is a growing practical need to systematically utilize data and knowledge in higher-education decision making.

HEIs face pressure to prepare graduates ready to enter the labor market on time and with relevant skills. At the same time, they are expected to support students' increasingly precarious well-being and study ability which was further challenged by the recent COVID-19 pandemic. During this highly disruptive event, the HEIs had to undergo a fast digital transformation to provide adequate technological tools and applications for online learning (García-Morales et al., 2021). This rapid digitalization has created new avenues for KM in higher education regarding how knowledge is created, shared, stored, and managed. As HEIs have adopted new information systems due to the COVID-19 pandemic, they now have more interest and opportunities to collect, analyze, and consequently utilize data in their decision making (Komljenovic et al., 2024). Importantly, HEIs have shifted from passively relying on external vendors for user data analytics to actively reclaiming and managing their data, recognizing its strategic value for internal decision-making and innovation. This transition reflects a broader trend in higher education KM, where institutions now demand direct access to raw user data via Application Programming Interfaces (APIs) rather than relying solely on vendor-provided dashboards, aiming to integrate analytics into their own data ecosystems (Komljenovic et al., 2024).

In HEIs, data has been increasingly used for improving teaching and learning in higher education. For instance, at the University of Helsinki, the HowULearn questionnaire (formerly the LEARN questionnaire) has been developed since 2005 to collect, analyze, and utilize student feedback to enhance the quality of teaching and learning (Parpala & Lindblom-Ylänne, 2012). Parpala and Lindblom-Ylänne (2012) describe how the HEI uses the data not only for individual feedback and student counseling but also for institutional development. The aggregated results inform faculty-level quality assurance, curriculum redesign, and pedagogical development. The system supports longitudinal tracking and strategic decision-making, functioning as a dynamic knowledge management tool. At the individual student level, receiving research-based feedback promotes reflection, enhances awareness of learning and study practices, and supports study skills and overall well-being (Haarala-Muhonen et al., 2025).

This paper follows the Design Science Research Methodology (DSRM) by Peffers et al (2007) to assess an online feedback system consisting of study experience questionnaire LearnWell and three feedback reports designed, developed, and evaluated in a university of applied sciences (UAS) in Finland. This paper contributes to research on pedagogical KM by examining organizational stakeholders' perspectives on the design, development, and evaluation of a research-based feedback system addressing students' study ability and study-related well-being in higher education.

2. Design Science Research Methodology

The Design Science Research Methodology is a framework originally developed for conducting design science research in information systems (Peffers et al., 2006). The DSRM process consists of six steps (Peffers et al., 2007) which are outlined for our study in Table 1. Depending on the nature of the research problem, the possible entry point varies. In our study, we adopted the objective-centered entry point as the

aim was to build on the earlier versions of the feedback system to develop a more diverse and sustainable system.

Table 1. DSRM steps

Step in DSRM	Actions taken in the study
1. Problem identification and motivation	- Recognizing the importance of collecting and utilizing data regarding student experiences - First steps to develop a systematic approach to support students' study ability and well-being during the early stages of the studies
2. Objectives of a solution	- Analyzing the steps that were taken before the development of the new solution - Understanding how the newly developed system improves KM in the case organization
3. Design and Development	- Describing the design and development process of the new feedback system
4. Demonstration	- Demonstrating how the feedback system was utilized in the case organization
5. Evaluation	- Evaluating the system by conducting 10 semi-structured interviews with key stakeholders
6. Communication	- Describing how insights have been and will be disseminated within and outside the organization.

The aims of the study

The aim of this study is to examine the design and evaluation of a research-based study experience feedback system developed in the HE context, with particular attention to its role as a KM tool supporting both individual learning and institutional development. Although rapid digitalization has enabled HEIs to develop new information systems and data-driven processes for improving teaching and learning, systematic evaluations of such systems and their development processes remain scarce. Drawing on DSRM (Peffer et al., 2006), this study seeks to assess how a structured, iterative design approach can be used to address a complex pedagogical and organizational problem related to the utilization of student experience data. Furthermore, the study aims to evaluate how different organizational stakeholders utilize the developed system and its data in their work. In doing so, the study contributes to research on data-informed KM in higher education by advancing understanding of how feedback systems can support integrated institutional learning and development. The research questions are the following:

- RQ1: How is the DSRM process implemented in the development of a knowledge management solution for higher education?
- RQ2: How do different organizational stakeholders evaluate the alignment of the multi-level study experience feedback system with the organization's pedagogical and institutional needs?

3. Data and Methodology

Context of the study

The study was conducted at a UAS in Finland. The UAS has approximately 9,000 students across seven campuses. The main fields of education and research are bioeconomy, health, education, business, design, and technology. Over recent years, the UAS has focused on developing a strong culture of knowledge management in decision-making. From 2024, the focus has been on developing second-generation data-driven culture (cf. Berndtsson & Ekman, 2023; Järvinen et al., 2017), extending strategic, tactical, and operational education planning (Kaufman et al., 2002) to a personal level covering various stakeholders, such as students, teachers, heads of degree programmes, and guidance counsellors. One of the focus areas of the institution's KM has been students' progress and well-being during their studies. Since 2021, researchers have been developing a system to systematically collect data on students' study experiences. In 2024, a new digital system consisting of a questionnaire presented to students through Microsoft Forms and three Power BI reports was developed in collaboration with stakeholders. In the following sections, the process will be outlined following the DSRM.

Problem identification and motivation

In collaboration with the organization's lead Business Intelligence (BI) expert, the researchers aimed to develop a feedback system providing detailed insights into students' study experiences and well-being at the UAS. Although data collection and analysis efforts had been initiated since 2021, they remained fragmented and resulted in temporary solutions. In spring 2023, a Microsoft Forms- and Power BI-based system was created to deliver program-level feedback; however, it lacked automation and proved labor-intensive and difficult to sustain. Additionally, the need for a structured pedagogical process to support meaningful reflection on the data with students and staff was recognized.

Objectives of the solution

The objective was to develop an agile system that entails interactive data and provides relevant feedback for different stakeholders. The aim was to build an automated system that requires minimal regular maintenance and is cost-effective to implement and sustain. Designed as a low-cost solution, the system emphasizes flexibility, allowing for easy modification of its structure and content to meet evolving institutional needs. Importantly, the system needed to include functionalities that would enable potential future improvements, support the collection of additional and longitudinal data, and allow scalability beyond the case UAS.

Design and development of the solution

The solution is the system that consists of a study experience questionnaire and three Power BI reports linked to the questionnaire data. The questionnaire was adapted from the HowULearn questionnaire developed at the University of Helsinki (Parpala & Lindblom-Ylänne, 2012) to better suit the context of UAS. It consists of four main areas: learning processes, experiences of the learning environment, general working life competencies, and study-related well-being. The questionnaire has three aims: to foster students' self- and peer-reflection on learning, to systematically generate research-based data for pedagogical development, and to enhance pedagogical well-being by strengthening the community's understanding of learning and well-being in learning environments. It is administered to first- and second-year students.

The three reports are: 1) a real-time student version of individual results for the student answering the questionnaire, 2) a real-time pedagogical staff version of group-level results for study programs, and 3) a staff version of group-level results for the organization (for details, see Figure 1). In addition, researchers developed a pedagogical process whereby the questionnaire is administered, and the results are discussed with the students and staff in a structured manner utilizing the group-level reports.

The Proof of Concept (POC) version of the real-time group-level report was piloted in spring 2023. The data management and the report were built by researchers. This version was successfully piloted with first-

year students from various study programs at the case UAS. The POC was done with lowcode/nocode tools MS Forms and MS Power BI. Data updates were manually done by the researchers.

As one of the aims was to provide individual feedback to students in addition to program level feedback, automation of technical backend processes and creation of individual report for students was taken under development by BI expert of the case institution. The initial reporting prototypes of the individual report concept were designed in the Design Factory Project course by Computer Applications and Business Information Technology students. The pilot version was further developed by the BI expert and the research team.

To automate backend processes and add additional student and programme data from the UAS enterprise data warehouse (EDW), two data integration/automation tools (MS PowerAutomate/Apache HOP) were included in the backend process. To preserve development agility and flexibility, the lowcode/nocode approach were still used. The technical infrastructure of the solution is shown in Figure 1. The developed version of questionnaire and individual report were tested with students, researchers, study counselors, and members of the management team before the data collection.

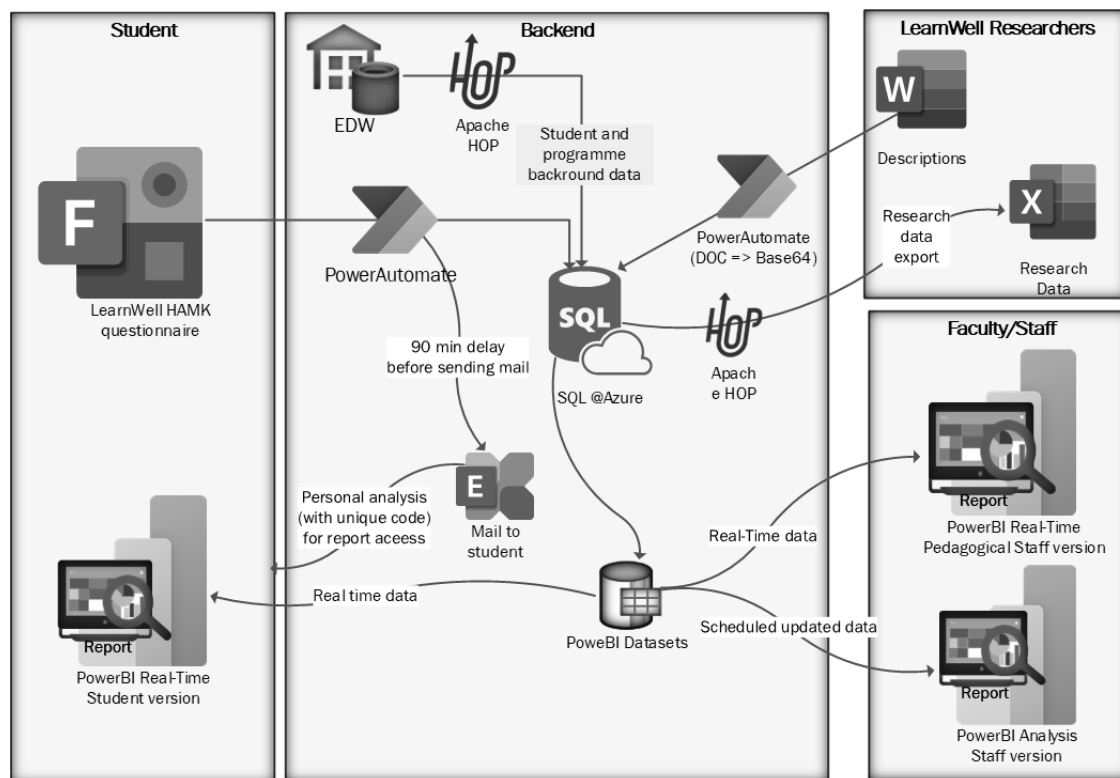


Figure 1: Technical infrastructure of the process

Demonstration of the solution

The system containing the questionnaire and the three feedback reports was piloted in spring 2024 with 1,170 students answering the questionnaire. In most cases, this took place during an on campus or online session with a study counselor or research team member present. The study counselors were actively involved in the development process and testing the system. The Power BI reports show average scores across the questionnaire's 14 study experience dimensions. Each dimension includes a brief description, ideas for development, and reflective questions developed by the research team in collaboration with students at the case UAS.

A Real-Time Student Report

Students completed the study experience questionnaire while logged into their Office 365 student account. Ninety minutes later, they received an email with a link and unique access code to view their individual Power BI feedback report.

A Real-Time Pedagogical Staff Report

The second Power BI report supported the pedagogical process through a real-time, group-level staff report discussed in feedback sessions with students and study programme, typically integrated into teaching sessions. The report automatically updated in real time once at least ten students had responded.

A Permanent Staff Report

As part of the organization's knowledge management and quality strategy, the third report was permanently available to all staff and updated through scheduled data updates. The report included multiple tabs enabling comparisons by study year, study programme, and study mode (full-time vs. part-time). It was intended for use by teaching staff, study counselors, and heads of degree programmes.

Evaluation of the solution

To assess the alignment of the developed feedback system with organizational needs (RQ2), we conducted ten semi-structured interviews with key stakeholders representing diverse roles (e.g., management, educational developers, heads of study programmes, and study counselors). Identified stakeholders were recruited via email. Participation was voluntary, and informed consent was obtained. Ethical guidelines of the Finnish National Board on Research Integrity (TENK, 2019) were followed. Interviewee characteristics are not reported to ensure anonymity due to the small sample size and identifiable context.

The interviews were conducted online via Zoom call in November 2024 by the second and third author. Each interview lasted approximately 20-55 minutes and was conducted in Finnish. The interviews were recorded and transcribed. The interview consisted of five parts. First, participants were asked about their role and general experience with the feedback system. Second, they reflected on the role and impact of the system and the pedagogical process built around it from the general, knowledge management, and organizational strategy perspectives. The third part of the interview focused on the insights and potential challenges related to the feedback system that the interviewees had identified in their role. Fourth, participants were asked to identify any role changes associated with the system. Finally, they were asked about future development needs, expectations, and the system's integration with other organizational feedback systems. The full interview script is available in Appendix A.

The interview data were analyzed using qualitative content analysis with an inductive approach (Bingham, 2023). First, the first and second authors read the interview transcripts several times to gain familiarity with the data. Then, meaningful units in which participants described their experiences related to the alignment of the feedback system with the organization's pedagogical and institutional needs were detected. The meaningful units consisted of a total of 18,381 words in Finnish. In the second phase, the meaningful units detected were grouped into broader categories reflecting participants' experiences. Two categories, emerging inductively from the data from a knowledge management perspective, were detected: (1) successes and (2) challenges and development suggestions. In the third phase of the analysis, within these dimensions detected, the data were further examined and grouped to identify categories describing how the developed feedback system matched (or did not match) organizational needs, resulting into identification of five key themes. Finally, to provide a more nuanced view of the participant experiences, the successes and challenges detected were categorized according to participant roles, divided into a) the management and pedagogical leaders, and b) the study counselors.

The categorization and theme development process was iterative, involving repeated movement between the original data, categories, and emerging interpretations. To enhance the trustworthiness of the analysis, two researchers (the first and second authors) participated in the coding process and regularly compared

coding decisions and interpretations. Coding examples and emerging categories were discussed collaboratively with the co-authors, who critically reviewed the categories and themes, helping to ensure that the interpretations were grounded in the data and consistently applied across the dataset. All analytic decisions were refined through researcher dialogue until a shared understanding was achieved.

Communication

The first insights into designing and implementing the feedback system were shared during conference presentations in Finland, including at the Higher Education Pedagogy Seminar (Pedaforum) in 2024 and 2025.

4. Results

To evaluate the solution, we used an inductive approach that led to the identification of five key themes in the stakeholder interviews: stakeholder involvement, strategic alignment, process development, pedagogical development, and student-centeredness. The full results are presented in Appendix B (Tables B1 and B2). The responses are presented separately for two groups: 1) the management and pedagogical leaders, and 2) the study counselors. The strategic alignment theme emerged only in the first group.

Stakeholder involvement

Management and pedagogical leaders viewed the process as a collaborative effort involving multiple stakeholders. Early challenges included building shared understanding of the process, establishing a common language, and fostering trust, while leadership support was identified as central to the process's success. The process has increased its visibility within the organization, prompted broader discussion among staff and students, and received positive feedback within the organization. Management and pedagogical leaders emphasized the importance of continued communication, sustained involvement of key actors (e.g., the research team and study counselors), stronger engagement of heads of study programs, and closer cooperation to support effective use of the data. One participant described the discussions about the topics as following:

"And then it's a really good starting point for discussion. And of course, it's incredibly valuable for teachers to receive that feedback from the perspective of this survey. — And like I said, it definitely gets discussed. The staff really reflect on it — maybe even too much sometimes." ID 6_2(2)

Study counselors described the process as having become integrated into their work. Although initially challenging, taking ownership of the process helped them better recognize its value. They noted increased organizational awareness of study well-being and study ability and viewed the process as a strong basis for discussion, particularly with teachers. However, they identified increased teacher involvement as an important area for further development, as described by one participant:

"I totally understand that teachers might not be able to engage with the idea and the excitement in the same way, since the information and data have kind of just been handed to them. If they were more involved (in the survey process) and had conversations with the students about it, it might spark something more and lead to greater enthusiasm." ID3_7(2)

Strategic alignment

Regarding strategic alignment, management and pedagogical leaders viewed the process as successful due to its strong fit with the organization's student-centered strategy. The LearnWell process was seen as an important quality management tool that supports identifying the needs of students and teachers while also

highlighting the broader role of HEIs in fostering not only subject-specific expertise but also students' general competencies, as illustrated by one participant:

"And that, in my opinion, is really at the core of our strategy. Now that we're building the design-based education model, I think it truly highlights how we support student agency, teamwork skills, well-being, research and development competence, and so on. In my view, it really encapsulates what we, as a higher education institution, strategically think about learning and student development as part of our work." ID4_10(1)

Process development

Both groups viewed the research-based, more systematic, scalable, and more easily organized process as a success. Study counselors additionally appreciated the equal data availability for all study programs within the HEI. As one participant noted during the interview:

"Through the work of student counsellors, the data has been collected in a consistent manner across all degree programmes. This enables us to access data from all programmes." ID7_4(2)

However, there were also several challenges and improvement points identified. Participants emphasized the need to better demonstrate the process's impact on preventing student dropouts. They also highlighted reducing overlap between student surveys and establishing a clearer organizational survey policy, as multiple overlapping surveys may cause response fatigue and low response rates, particularly among part-time students. Additionally, more advance notice should be given when scheduling sessions. Participants suggested that a clearer and more engaging presentation of participation benefits could improve response rates. Study counselors emphasized the value of human-led sessions and the importance of maintaining them, though one participant suggested exploring immersive technologies or AI to make survey participation more appealing. Several report-related improvements were identified, including easier separation of student groups, access to a demo version of the student report, improved report-saving options, and shorter program-level summaries. Future development ideas included more personalized support service recommendations and additional feedback based on currently unreported survey factors. Study counselors also highlighted the need for ongoing training and a more systematic approach to interpreting results. Finally, participants proposed expanding the target group to include more senior students and adapting the process to the work context.

Pedagogical development

Participants identified several successes in LearnWell-related pedagogical development. The data can be combined with other institutional data to support evidence-based decision making and to highlight strengths and development needs in teaching, student support, and well-being services.

The results were seen as useful for guidance work and curriculum and study module development. Survey themes were noted to feature in teachers' daily discussions and development meetings among staff. Importantly, the process benefits both students and study programs and is viewed as a preventive tool that offers early, holistic insight into students' well-being and study progress. One participant summarized its benefits as follows:

"The LearnWell survey aligns naturally with several key areas of development, including pedagogical advancement, data-informed decision-making, guidance development, and the promotion of student well-being." ID2_11(1)

In addition to these successes, participants identified several areas for further development. They emphasized the need for an organization-wide, systematic approach to using data and results in long-term pedagogical development at all levels. Suggested improvements included clarifying the process for results-based development, integrating it more closely into stakeholders' everyday work, and improving guidance

on when action is needed based on the results. As concrete steps, participants proposed setting shared goals, systematically sharing best practices, and learning from those with more experience using the process. They also noted the need for more time for discussion, individual guidance, and reflection to support the creation of concrete development plans. One participant described it as:

"[...] Ideally, all sections should have been reviewed thoroughly, focusing on how teachers can influence each aspect. Since the survey includes many relevant elements, I believe that from this perspective, it would be highly meaningful to engage more deeply with it." ID8_1(2)

Management and pedagogical leaders noted the need for greater visibility into how study programs have acted on the results and how extensively study counselors are using the process. Finally, participants viewed the process as an opportunity to further develop student services that support students in completing their studies.

Student-centeredness

Participants viewed LearnWell as a student-centered process that emphasizes student well-being and learning. Providing students with a voice was seen as a key success, and the process has received positive student feedback, with higher response rates than in the previous round. It was also valued as an opportunity for in-person meetings where learning processes and well-being can be jointly reflected upon. One participant described it as:

"[...] Many surveys are completed independently by students, and the results are either received much later or disappear into the digital void — students may never see their own results at all, similar to how module feedback is often provided retrospectively. In contrast, this survey is done together in a group setting, and the results can be discussed right away, allowing everyone to see the group-level outcomes immediately." ID7_13(2)

Participants also identified as successes the ability to act on these discussions and to later communicate to students how their feedback has been used. Providing students with instant individual feedback was seen as particularly valuable, as it supports self-development and may function as an early intervention by increasing students' awareness of their well-being and learning and encouraging them to seek support services.

Study counselors additionally offered suggestions for further strengthening the student-centered nature of the process, emphasizing the importance of continuing regular, in-depth discussions with students about the LearnWell themes, as one participant described:

"If there were more time and space, the process would certainly offer much greater value — both for one's own work and more broadly. Taking the time to pause and reflect more deeply would allow for significantly richer insights." ID3_11(2)

They also proposed more systematic efforts to educate students on how to improve their study ability and to encourage them to revisit their results and supporting materials. As a concrete action, participants suggested giving students the opportunity to review their individual feedback together with their study counselor.

5. Discussion

The aim of this study was to examine how the iterative DSRM process facilitates the integration of technical solutions and pedagogical needs in higher education knowledge management. In addition, we examined how stakeholders assessed the developed feedback system's strengths and areas for further development.

From the KM perspective, the study advances conceptual understanding of student experience feedback systems. Rather than treating feedback as a standalone evaluative instrument, the system forms an integrated KM infrastructure that links data and reflection across organizational levels. By demonstrating how HEIs can systematically collect and utilize student experience data to inform both strategic and pedagogical development, we contribute to the limited and fragmented KM research in HEIs (see Quarchioni et al., 2022).

Moreover, this study advances the field by showing *how* such fragmentation can be reduced in practice. Our findings suggest that fragmentation is not merely a structural problem but a relational one: data becomes actionable only when built into shared pedagogical processes. Embedding a multi-level feedback system into daily pedagogical practices may therefore reduce fragmentation in pedagogical development and support more sustainable KM approaches. From the perspective of organizational stakeholders, the multi-level feedback system (student, program, organization) was perceived to support learning and teaching development by providing research-based insights into study processes and well-being and by fostering student–staff reflection and dialogue. We also found that the iterative development process and stakeholder involvement were crucial for building organizational trust and establishing a shared language around the system. Accordingly, KM in HEIs requires not only technical solutions but also attention to cultural aspects (Howell & Annansingh, 2013).

Methodological reflection

The study contributes to design science research in higher education by providing empirical evidence on the value of iterative, stakeholder-driven design. Choosing DSRM (Peppers et al., 2007) over more linear system development approaches allowed us to examine the fragmented use of student experience data from both technical and pedagogical perspectives. By following the six steps of DSRM, we aimed to ensure that the feedback system was not only technically functional but also aligned with pedagogical practices and strategic objectives. Importantly, the iterative cycles of designing, testing, and evaluating made it possible to involve diverse stakeholders throughout the process, which strengthened organizational trust and ownership of the system. At the same time, while stakeholder involvement is central part of the process, it may also slow decision making and require significant facilitation resources. In this sense, DSRM has the potential to support both the system’s technical development and the cultural change needed for its integration into everyday pedagogical work, while also making resource and coordination demands visible.

Stakeholder perspectives and pedagogical implications

The stakeholder interviews revealed some variation in how the different organizational stakeholders had experienced the process. Due to the differences in their roles and responsibilities, the managers and pedagogical leaders focused more on the strategic level and quality assurance perspective, whereas the study counsellors’ viewpoint was more focused on students’ experiences and further developing the student-centeredness. Interviewing stakeholders from various roles and analyzing their responses separately helped to form a more nuanced understanding of the process. This confirms the need for multi-level KM approaches that serve both organizational strategy and student learning and well-being.

Importantly, the study offers empirical insight into how KM practices can be embedded into everyday pedagogical work, rather than remaining a separate administrative process. It illustrates how knowledge management can be perceived as a tool to support student self-reflection, pedagogical development, and strategic decision making in HEIs. This perspective extends design science approaches by showing how product development can be integrated with pedagogical reflection and student-centered processes.

While the COVID-19 pandemic accelerated HEIs’ adoption of digital systems (García-Morales et al., 2021), our findings provides initial evidence of stakeholders’ perceptions of how such infrastructures can be utilized beyond daily teaching with the aim to support student long-term well-being and engagement. By

combining individual and group-level data and providing multi-level feedback to different stakeholders, the system was perceived as having the potential to support student self-reflection and collective pedagogical development, in line with earlier findings on the role of feedback and reflection in student learning (Haarala-Muhonen et al., 2025; Parpala & Lindblom-Ylänne, 2012).

Limitations and future directions

This study has certain limitations. First, it is based on a single case of a Finnish UAS, which limits the generalizability of the results to other HE contexts. Second, the evaluation drew on a small number of stakeholder interviews, which may have led to overrepresentation of highly motivated participants and biased the findings toward specific stakeholder perspectives. Moreover, researchers' involvement in both the development and evaluation of the system may have led to confirmation bias and increased the potential for socially desirable participant responses. Participants may have been reluctant to express more negative experiences during interviews, resulting in socially desirable responses. Furthermore, because the researchers served as both developers and evaluators, confirmation bias may have affected the collection, analysis, and interpretation of the data. Despite efforts to ensure methodological rigor, these potential biases may have influenced the findings and should be acknowledged when interpreting the results. Third, although the feedback system has been piloted with a large number of students, the current evaluation focused on organizational stakeholders' experiences and perceptions of the system and did not examine students' experiences with it or its effects on student outcomes. Future research should evaluate student perceptions of the system and examine student-level outcomes to assess the system's impact on students' study ability and well-being.

The developed system has potential to be scaled and adapted within and beyond the case HEI as a research-based KM mechanism. However, scaling the system is not purely technical; it also requires an organizational culture that supports data-informed reflection and development. Future research should explore whether and how such feedback systems contribute to student retention, student well-being, and curriculum development over time and across diverse HEIs. Moreover, emerging technologies such as artificial intelligence could provide new solutions for enhancing student learning and well-being through the feedback process.

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