

The Relevance of Versatile Learning Online Assessment Feedback for University Student

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ABSTRACT

In the process of learning, assessment is relevant from multiple perspectives. Learning assessment guides student learning and teaching either knowingly or unconsciously. This study takes a closer look at the meanings given to online assessment by academic adult students and how they experience different assessment feedback. The study was a qualitative online survey for adult students (N=35). Adult students valued assessment feedback, and their perceptions about assessment were mainly traditional. They considered assessment feedback truthful and used self-assessment as a natural part of their learning process. They did not experience the peer-assessment of their own learning as central or reliable. Written teacher assessment feedback on whether the content to learn was understood correctly was significant from students' point of view. New forms of assessment and assessment, such as group-peer feedback or teacher asynchronous voice feedback, were perceived as interesting novelties. According to the results of this study, the objectives of learning assessment should be clear and shared with the students. The continuous nature of the sustainable learning process emphasizes the versatility of assessment as a natural part of e-learning. Versatile online assessment practices will strengthen student agency and ownership of their learning in the future of digitally-enhanced higher education.

Keywords: Assessment feedback, University student, Learning process

Universities are undergoing major transformations internationally (OECD, 2019). In addition to traditional academic activities, universities have become a platform for new activities and expectations such as working life connections (OECD, 2020), neoliberal profit goals (Davies & Bansel, 2007; Laiho et al., 2020) and continuous learning (OECD, 2020). Education produces the skills and competitiveness needed for developing welfare states while expanding the opportunities for individuals to grow and succeed in life. The Finnish higher education system is considered one of the most competitive in the world (Isopahkala-Bouret,

2019.) Further, a key national objective of the country is to educate its citizens to an even higher level while creating more flexible learning pathways (Moitus et al., 2020). The open university concept supports this Finnish education policy goal. The aim for 2030 is that at least half of 25–34-year-old citizens will have completed a higher education degree (Ministry of Education and Culture, 2017). Therefore, open universities in Finland offer almost free university education available to all without admission requirements (Ministry of Education and Culture, 2017). Students are diverse in background and aspirations (Haltia et al., 2021). In Finland, the number of open university students has been increasing. In 2010, there were 72 000 students studying in Finland's 13 open universities, and in 2021, 153 361 students (Vipunen, 2021).

Finnish universities have autonomy in designing their curricula, and open university teaching aligns with these curricula. Teaching is research-based, focusing on both content and learning processes (Tynjälä, 2014; Tynjälä et al., 2020). While pedagogical competence is vital for teachers, its level varies. Previous studies have emphasized the significance of assessment in the learning process (e.g., Biggs & Tang, 2007; Ramsden, 2003), highlighting the importance of lifelong and sustainable evaluation that enhances students' self-assessment skills and agency (e.g., Boud & Falchikov, 2006; Boud & Soler, 2016). Assessment is considered integral to learning and closely linked to the learning process (Yan & Yang, 2022).

In the university context, learning, expertise, and self-assessment are interconnected with pedagogical and curricular solutions (Boud & Molloy, 2013; Molloy et al., 2020). Integrative pedagogy (Tynjälä et al., 2014) supports the integration of learning and assessment, fostering sustainable agency in learning (Boud & Molloy, 2013; Tynjälä et al., 2020). Compared to solitary work, collaborative and varied interaction better facilitates the acquisition of general skills like decision-making, creativity, and problem-solving (Virtanen & Tynjälä, 2019). Expertise relies on deep, holistic knowledge, encouraging integrative thinking, creative solutions (Tynjälä et al., 2020), and intuitive application (Gube & Lajoie, 2020). The modern concept of expertise emphasizes ongoing self-assessment of one's competence (Charless & Boud, 2018), making it crucial to practice this skill in higher education.

In all this, assessment culture becomes crucial, and it encompasses the beliefs and values underlying assessment practices, guiding the entire assessment process (Fuller & Skidmore, 2014; Watling et al., 2020). Finnish higher education's assessment culture differs from other countries, such as England, as it emphasizes low-threshold assessment without national exams or rigid practices (Ursin et al., 2021). However, assessment for learning is rarely described in official university documents, and student activities are often framed as performance rather than learning (Nieminen, 2022). Different assessment cultures have been identified, including fear-based, accommodation-based, learning-developing, and emergent learning cultures (Skidmore et al., 2018). A culture of assessment that supports student learning focuses on integrative learning, shared responsibilities between students and tutors, diverse assessment methods, authentic contexts, and the development of learning-to-learn skills and meta-skills.

This study examines the topic of online assessment and the associated feedback practices. The participants in this research are students studying educational sciences at the Open University of the University of Jyväskylä in Finland. Due to the pandemic, these students have completed their open university studies entirely online, without in-person interactions with their teachers or fellow students. The main focus of this study is to understand the significance that students attribute to diverse forms of online assessment feedback. Specifically, the aim is to explore assessment feedback from the students' perspective and gain deeper insights into the design, implementation, and improvement of assessment feedback for learning purposes. The research question guiding this study is: "What meanings do students give to the online assessment feedback?" To address this question, an electronic Webropol survey was developed for Finnish open university students, and a total of 35 students responded to the questionnaire. The textual data collected was then analyzed using content analysis techniques. In the next section, we will describe the literature that is functioning as the framework for this study.

Literature review

Learning and Assessment in higher education

Assessment and feedback in learning are informed by various understandings of how learning occurs (Nicol & Macfarlane-Dick, 2007; Tynjälä et al., 2020). The importance of assessment within the learning process has been emphasized in research (Charless & Boud, 2018). Despite extensive study and conceptualization of learning processes, a comprehensive understanding is still lacking (Leadbeatter, 2021). In higher education, there has been a shift towards considering students as active constructors of their own knowledge and skills, leading to decreased teacher-centred communication (Henderson et al., 2019; Winstone et al., 2022). From a cognitive and constructivist perspective, individuals are viewed as active builders of knowledge who continuously assess their learning (Tynjälä et al., 2020). The learning process is social and requires guidance from teachers, including different assessment practices (Charless & Boud, 2018). Recognizing the connection between learning and context (Knowles, 1980) and the importance of critical reflection (Mezirow, 1991) are essential foundations for an academic learning culture. Self-assessment of learning necessitates support and a shift towards students taking a proactive role in evaluating their learning process (Nicol & Macfarlane-Dick, 2007). The reflective and cyclical nature of personal experience (Kolb, 1984), the socio-cultural aspect of learning, and the significance of communities of practice (Lave & Wenger, 1991), provide theoretical frameworks for structuring learning and assessment. New constructs such as the OECD's Lifelong Learning and Active Learner as Responsible Citizen are also emerging, reflecting the need for continuous learning in response to rapid changes in the workforce, society, and economic demands (e.g., OECD, 2020). Learning has also taken on entrepreneurial and transactional aspects, with an increased presence in digital environments (Laalo et al., 2019; Bunce et al., 2017; Rossade et al., 2022).

The perceptions and practices surrounding learning and assessment are evident in the growing trend of online education in higher education. Online teaching and learning are becoming increasingly prevalent worldwide. However, the shift to online learning poses opportunities and challenges for adult students, necessitating careful consideration in pedagogical planning, including assessment practices (Ibarra-Sáiz et al., 2020; Rossade et al., 2022). The transition to online learning in higher education has opened up new possibilities for assessment feedback (e.g., Min, 2006; Nicol et al., 2014). On the other hand, there are pedagogical constraints associated with online learning (e.g., Charless & Boud, 2018), such as student disengagement (Miller, 2013; Bedenlier et al., 2020) and the risk of fragmented understanding and reduced depth of learning (Swiecki et al., 2022). Additionally, students need to properly understand why educational technology is used and how to utilize it effectively (Bedenlier et al., 2020). Providing adult students with comprehensive mentoring in academic learning and practices, including clear assessment objectives (Charless & Boud, 2018), contributes to student retention and progression (Thurmond, 2007; Rhine et al., 2000).

Feedback practices and its meanings to students

Feedback in education has evolved over time and encompasses various meanings. It refers to the practice of teachers communicating and justifying the assessment of students' work. Feedback is crucial in bridging the gap between actual and desired performance, helping students improve (Nicol & Macfarlane-Dick, 2006; Hattie & Timperley, 2007). In a socio-constructive framework, feedback goes beyond one-way communication and fosters interaction and shared understanding (Boud et al., 2013; Winstone et al., 2022).

Hattie and Timperley (2007) categorize feedback based on its focus: performance, learning process, self-regulation, or student personality. Performance feedback, which corrects errors, has effectively enhanced learning (Boud et al., 2015). Additionally, feedback should address the student's learning process and strategies, facilitating self-regulation and strengthening their self-concept. The feedback that looks

forward (feedforward) has proven more effective than feedback focused on past performance (Henderson et al., 2019). Students' perceptions of feedback quality and effectiveness have also been studied (Charless & Boud, 2018).

Feedback holds individual significance for students, associated with usefulness, detail, impact, and personalization (Dawson et al., 2018). Consistency and flexibility of the feedback process also contribute to student engagement (Haughney et al., 2020). In this study, feedback refers to written, asynchronous audio, and synchronous audio feedback teachers provide to students. Summative assessment feedback assesses students' achievement of objectives (Boud, 2000; Crisp, 2012). In written feedback, students value comments on their understanding of the topic (Winstone et al., 2016). The digitalization of education has led to the use of multimodal feedback methods (Charless & Boud, 2018).

Asynchronous audio feedback, recorded by teachers, has been perceived as effective and used more than verbal feedback (Ice et al., 2007). It promotes feelings of inclusion, personalization, and comprehensibility (Middleton, 2009; Parkes & Fletcher, 2014; Woodcock, 2016). Self-assessment and peer assessment encourage student responsibility in the learning process (Seifert & Feliks, 2019). Peer feedback has shown effectiveness but poses challenges due to students' inexperience (Huisman et al., 2019; Stancic, 2021). Students associate quality peer feedback with its quantity and length (Zong, 2021). Self-assessment involves students evaluating their own achievements and learning outcomes, facilitating learning and self-awareness (Boud et al., 2015; Seifert & Felks, 2019). It is a cyclical process involving criteria definition, seeking feedback, reflection, and continuous calibration for accurate self-assessment (Yan & Brown, 2017).

Methodology

Data collection and participants

In spring 2021, data for this study were collected from 35 students studying educational sciences (educational science and adult education) at the Open University. The data was obtained through a survey using an electronic Webropol questionnaire. The survey link and information about the study's purpose and objectives were shared with the target group on the Open University's e-learning platform. Before answering the questionnaire, students were informed that their responses would be used as research data and asked for their consent. They were also assured that their personal information would be anonymized and stored securely with password protection.

The Webropol questionnaire consisted of four background questions (age, gender, education, number of credits completed) and two open-ended background questions regarding the students' learning goals and life situations. Additionally, the questionnaire included 13 open-ended questions related to assessment and feedback. The selected sections of the questionnaire focused on exploring the students' perspectives on the importance of different types of assessment feedback for their learning. Students were asked about their positive and negative experiences with written feedback, asynchronous auditory feedback, peer feedback, and self-assessment. They were also asked to identify which types of feedback they considered most important for their learning.

The survey remained open online for a period of two weeks, and a reminder was sent out after the first week to encourage participation. A total of 35 students responded to the survey, with 97% of them being female. The gender distribution of the respondents closely mirrored that of the Open University, where approximately one-third of students in 2021 were female (Vipunen, 2021). The participants had diverse educational backgrounds, with 46% coming from a vocational background, 34% from a polytechnic background, 17% from a university background, and 3% holding a previous university degree. On average, they had completed 48 credits at the Open University.

Thematic data analysis

The data analysis for this study involved several steps that will be described in more detail in the next. Firstly, relevant sections on assessment feedback were extracted from the larger dataset and compiled into separate files for each student, with pseudonyms assigned to ensure anonymity. The initial analysis focused on examining the data to identify general meanings and themes related to feedback. The next step involved identifying key and recurring themes aligned with the research question. This process entailed classifying the implications of feedback based on the students' responses, resulting in preliminary thematic clusters. As the analysis progressed, these themes were further refined into main themes and sub-themes, with their relationships becoming clearer. The main themes that emerged during the analysis were "The meaning of assessment feedback" and "Versatile assessment feedback online." The latter central theme was explored in more depth through the identification of sub-themes such as "Practices of A/synchronous Audio Feedback," "Peer Feedback," and "Self-Assessment." The questionnaire used in the study guided the students to respond to the presented themes, contributing to the preliminary data structure along these themes. The qualitative and substantive diversity of the data allowed for the identification of both anticipated and new themes. Feedback-related statements were extracted from the data and categorized based on similarities and differences.

The analysis process involved refining the main themes and sub-themes by examining their substantive meanings concerning the research question. Ultimately, structuring the data into themes enabled a precise interpretation of the meanings and a comprehensive answer to the research question. The analysis process culminated in the construction of the themes and the results of the study, shaping the structure of the presentation of the findings. The results section directly addresses the research question through the organization of these themes. It is worth noting that the research material was originally in Finnish, and the quotations included in the results were translated into English.

Limitations of this study

The small sample size (N=35) and the use of a questionnaire can both be considered as limitations of this study. While qualitative research aims to provide an in-depth understanding and description of issues (Patton, 2002), a more comprehensive and extensive data collection method could have yielded deeper insights into the participants' responses. These could have, for instance, been in-depth interviews or focus group interviews. The meanings conveyed by the students' assessments also indicate the multi-dimensional nature of their feedback. For example, initial emotional reactions to feedback may be intense, but as they are processed, the input may acquire new meaning for the students (Parander et al., 2021). In order to enhance the trustworthiness of the study, detailed methodological steps have been described, and authentic quotes from the data have been included. Researcher triangulation (Korstjens & Moser, 2018) has also been employed to enhance trustworthiness.

Results

The meaning of assessment feedback

According to university students, all the feedback they received from teachers on the assessment of their learning was meaningful to them. They considered the most critical feedback they received was the final assessment by the teacher of the written assignments they had completed during their studies. Students felt it was essential to obtain qualitative feedback on their learning and grades.

According to the students, feedback that was relevant to their learning was both positive and constructively critical.

"Feedback that supports learning is positive, encouraging and constructive. It's nice to get feedback on what has worked. I also like to get feedback on how I could do things even better." Respondent 13

Students emphasized the importance of feedback for the continuity of learning in terms of content. Feedback helped to crystallize the scope of what had been discovered and to reinforce the essential points. At the same time, the feedback focused on learning broader perspectives and contexts, which the students considered necessary. From a learning perspective, quality assessment feedback provided students with new perspectives to broaden their own thinking.

Students perceived feedback as relevant to their learning when it was sufficiently explicit and justified. Well-targeted and concrete feedback was understandable and useful for future studies and learning.

"One that has highlighted a few important details of the task and provided feedback on them - either good feedback or suggestions for improvement or other observations that have helped them to improve their own performance." Respondent 22

Although the assessment feedback was mainly understood as a written summative assessment after completing the task, formative and guiding feedback during the process was also relevant. Small messages of encouragement from the teacher and quick answers to students' questions were meaningful and supported active progression. Formative and guiding feedback endorsed the student's sense of self and academic progress. Varied and timely feedback from the teacher was relevant to the continuity of the learning process. Students also stressed the importance of feedback from an academic skills perspective. Students mentioned that they had received guiding feedback on academic writing skills and concrete tips to strengthen them.

"Encouraging. Especially feedback that builds confidence in your own skills. Small private messages, responses and guidance have also been very important. Messages have been answered quickly and felt important." Respondent 4

The assessment feedback was a vital mirror of the student's own learning. The appreciative style and tone of feedback were key, according to students. Feedback was expected to be supportive and constructive, sufficiently explicit, and appreciative, thus contributing to the student's experience of feedback as a learning support element.

Students used feedback in a variety of ways in their studies, such as developing study skills and strengthening their study ability. Responses highlighted the process-oriented approach to learning and the continuously developing academic skills that feedback supported.

Perceptions of the importance of feedback highlighted its multifaceted relevance. However, students' perceptions also highlighted the partly instrumental significance of feedback. Students wanted feedback to help them perform better in future assignments, and the learning aspect was not specifically mentioned. However, the many meanings of learning and feedback were clear to university students. However, there are many different forms of feedback and their different purposes, which will be explained below.

Versatile assessment feedback online and its' meaning to adult students

University students were provided a wide range of online feedback on their learning. Next, we look at the forms of feedback relevant to students: teacher-directed written feedback, asynchronous and synchronous audio feedback, student peer feedback and student self-assessment.

The most relevant and common form of feedback was individual summative written feedback from the teacher after the course. Students were used to this form of feedback during their previous studies. According to the students, the advantage of written feedback was that it was personalized and focused on their individual learning. The written feedback can be stored and used for future learning and learning processes. Positive and constructive learning feedback also had an emotional effect on the learning experience

"Super encouraging and appreciative of my study skills, the written feedback I went to see several times and read aloud to my husband.... Gave me so much belief in myself. I also returned constructive feedback to make corrections to my bachelor's thesis." Respondent 30

"I was very pleased with the written feedback, it was detailed and told me how I could further improve my writing. The written feedback has also informed me about the strengths and successes of the answers. The benefits are excellent, I can always go back to see what kind of feedback I have received. The written feedback has been personal, just for me. I like them." Respondent 17

The relevance of summative feedback after the completion of the course was questioned. Some of the written feedback provided by teachers was perceived to be limited in content. According to students, feedback was of the same type regardless of the teacher, which led to a loss of relevance of the feedback. Other areas for improvement of written summative feedback included a lack of guidance to study further and learning and a lack of opportunity for interaction.

"I consider the lack of support and guidance for learning to be a weakness. For example, there was a lack of guidance for additional courses. There was also a lack of interaction."

Respondent 6

"I have received constructive feedback that has supported my studies. After receiving feedback, I would sometimes like to justify what I had done and ask questions to the feedback provider regarding the feedback." Respondent 28

Practices of A/synchronous Audio Feedback

Asynchronous individual audio feedback from the teacher was given to half of the students surveyed during their studies. According to them, it was a meaningful and positive new form of feedback for learning. Audio feedback enriched traditional written summative feedback and was reported by students to be rich in content and honest. Students reported listening to the recorded feedback several times and tried to internalize the content as fully as possible regarding the factors that contributed to their own learning. According to students, the most significant benefit of audio feedback was the experience of personalization. The different teacher personalities became more familiar to students through the audio feedback, which students found particularly enriching for the online and remote campus learning experience.

"Audio feedback is personal because in distance online you may never have met or spoken to the teacher when you receive your first voice feedback. A good addition to written feedback."

Respondent 15

The most perceived weakness of audio feedback was related to technical limitations. It could not be recorded by the system itself, which was the main weakness compared to the recording and use of textual feedback. The students had transcribed the feedback to be able to use it in the same way as the written feedback. Sometimes there were technical problems, such as finding the feedback recording in the system and having it stutter. For audio feedback, some students expressed a need to respond but did not have the technical capacity to do so. The content of the feedback was perceived to be rich and rewarding in some respects and limited and general in others, as was the case with the written feedback.

"The challenge I find with audio feedback is that it's harder to record than written feedback, and it took me a while to find it." Respondent 9

Some of the students had received audio feedback on their learning from the teacher in face-to-face online meetings or online seminars. The feedback was perceived as meaningful and even surprisingly positive in content. In face-to-face meetings, the encouraging feedback and encounter with the teacher inspired students to continue their studies. According to the students, the online mediation did not narrow

the encounter at all, but they experienced the situation as a live situation. The relevance of direct interaction was highlighted, and common understanding could be built and completed naturally. In particular, the feedback received in the one-to-one live situation allowed students to receive accurate feedback on their learning, which was significant as a learning experience.

"In live situations, the challenge is that something gets missed, but otherwise the feedback from the live situation has been positive, encouraging and critical in a good way. And you can ask questions straight away if something is still bothering you." Respondent 21

In seminar situations, the teacher's audio feedback was usually group-oriented, summarizing, and guiding feedback. In seminar meetings, the teacher's feedback and guidance was not directed at the individual student, which was understood from a time management perspective. In live situations, a few students discussed the tension, making some of the content of the assessment feedback challenging to assimilate. For the most part, however, students reported that the live situations were relaxed and immediate and that interaction with the teacher and other students was natural. However, some students reported that they only chose to study independently and without direct interaction with other students or the teacher. Students also emphasized the importance of this possibility.

Peer Feedback

Students also had experience of giving and receiving peer feedback on learning, both synchronously and asynchronously. It was perceived as meaningful and allowed for new perspectives on the content and social interaction. Students perceived meaningful feedback as constructive, developmental, and encouraging. Giving feedback was perceived as a problematic but valuable skill. Gaining a deeper understanding and fresh perspectives on the learning process was made possible by becoming familiar with what is being assessed, how it is assessed, and the underlying criteria. Giving feedback was a labor-intensive activity that took time and conscious study. According to the students, only a few peers were able to provide quality feedback within the time available. The relevance of peer assessment was crystallized in learning and assessment's cyclical and continuous nature.

"Peer feedback gives you new perspectives on things and also teaches you how to give and receive feedback." Respondent 11

Peer feedback in the form of written summative feedback was reported by students as very important when studying online courses. According to students, several online courses were structured in an asynchronous but scheduled pedagogical structure. The small groups in the online course proceeded in a dialogical way, reflecting together on the content being studied. In these situations, the skills of giving and receiving feedback were emphasized and the importance of the feedback instructions given in the online course, as highlighted by the students.

"In online courses, I have experienced both benefits and challenges of feedback from other students. I think that the guidelines for giving feedback should be improved. I have noticed that some peer feedback is superficial and assesses the look of the assignment rather than the content. Other feedback focuses on criticism and leaves out important positive feedback altogether." Respondent 17

Peer feedback situations were meaningful experiences for students, both positive and negative. Feedback and the teacher's lack of response to the situation were humiliating and traumatizing. On the other hand, successful teacher-facilitated feedback moments and processes were memorable and encouraging situations. For feedback to be meaningful, students felt that the teacher needed to instruct feedback and justify its relevance clearly. At its best, feedback was a significant part of the learning process for all

involved; at its worst a pejorative or oversimplified additional task. According to the students, the conscious practice of giving and receiving critical and constructive feedback was an essential skill for the future.

Self-Assessment

During their studies, students had come to understand the importance of varied assessment feedback, including self-assessment, as an essential part of the learning process. Students were used to self-assessment of their own learning, which was meaningful and regular. It was perceived as a meaningful reflection on one's own strengths and weaknesses, which helped to structure the learning process. Self-assessment reinforced students' agency in the learning process, where goal setting and assessment were integral to the learning process. The stage of learning was reflected in the ability to self-assess their own learning process. At the beginning of their studies, self-assessment skills required conscious research and the development of critical thinking. As investigations progressed and in other contexts, the skills practiced automated self-assessment of learning and made it more meaningful.

"It's instructive and challenging if you haven't done it much. It's easy to fool yourself, you have to be mature enough to critically and reasonably self-assess." Respondent 10

"Self-assessment should be done continuously to promote your own learning. This has been a new and really instructive experience. I have always used self-assessment quietly in my mind, but never in writing." Respondent 29

University students considered the self-assessment successful if it aligned with the teacher's feedback. The teacher's assessment feedback was considered more valuable than the "truth" and was not questioned by students. Students in the early stages of their studies felt written and summative assessment feedback from the teacher to be the most valuable and other forms of assessment to be subordinate to it. As the studies progressed, students highlighted the importance of self-assessment in reflecting on the learning process. They found it difficult to assess their own learning process at first, but clear self-assessment questions facilitated the process. Some students automatically associated self-assessment with their learning outcomes. Some wondered if they would only carry out a self-assessment of learning if it were compulsory. Students reflected on the interconnectedness of different assessment feedback forms and on learning from different perspectives.

Discussion

This study aimed to explore the significance of various types of learning assessment feedback for open university students. The findings indicated that online pedagogical approaches were meaningful to students, aligning with the insights Sharma and Hannafin provided (2007). It was partly explained to students why different learning assessment and feedback practices were employed, emphasizing the importance highlighted by Bedenlier et al. (2020). According to the results of this study, in academic contexts, there should be greater emphasis on justifying pedagogical decisions and placing them within a broader framework, thereby empowering students and fostering their active role, as Henderson et al. (2019) emphasized. Further, according to this study, the assessment of learning with this studied cohort had evolved from a traditional one-way summative feedback approach from the teacher (as discussed by Winstone et al., 2022) to a more student-centered approach (also highlighted by Boud & Molloy, 2013; Rossade et al., 2022). Also, the development of integrative pedagogy (cf. Tynjälä, 2014) was observed, allowing students to utilize the feedback received in their learning process (also discussed by Winstone & Carless, 2020).

This study found that students were accustomed to receiving written summative feedback from the teacher after submitting their assignments (as noted by Charless & Boud, 2018; Dawson et al., 2018). Additionally, some students had experienced receiving both formative and summative audio feedback from the teacher at different stages of their studies, offering flexibility (also mentioned by Haughney et al., 2020).

These new feedback practices were perceived as enhancing written summative feedback and grade information, as also identified by Ice et al. (2007). Peer review was generally viewed positively, mainly when clear guidance was provided (as discussed by Li et al., 2020; Sivenbring, 2017), and when its relevance was evident. However, there were instances where peer review was weak or even offensive, indicating the need for further research, as noted by Huisman et al. (2019). Students recognized the importance of self-assessment as an integral part of their own learning process. From a self-directed learning perspective, self-assessment was regarded as a fundamental element of agency: students contextualized their own learning, set goals, established a personal relationship with the subject matter, and ultimately assessed their achievement of self-imposed objectives (see also Yan & Brown, 2017).

To ensure sustainable and self-regulated expertise and learning processes within an academic context, comprehensive and deliberate monitoring of learning is necessary throughout the study phase (as highlighted by Boud & Molloy, 2013; Tynjälä et al., 2020; Ishihara et al., 2022). Learning objectives, contextualization, and continuous assessment of the learning process should be consciously practiced dimensions of academic learning. The significance of multifaceted learning assessment feedback is evident, as work environments for academic professionals demand continuous learning and creative problem-solving, where comprehensive assessment of diverse situations is an essential skill. Future research on the sustainability of academic learning and teaching should further investigate the additional abilities, beyond assessment skills, that contribute to the development of expertise. In conclusion, the findings suggest the importance of creating in higher education a supportive and dynamic learning environment that values different forms of assessment feedback, promotes student engagement and facilitates self-directed learning.

As education becomes digital, it is essential to consider the diversity of evaluation and feedback. The use of AI in learning can be seen as an opportunity if it is integrated into the learning process in pedagogical ways that support deep learning, for example, through authentic tasks and personal reflection or collaborative learning. In this case, AI is seen as an actor in the learning process and knowledge construction, not just as a mechanical answer machine. Bearman et al. (2022) have argued that, so far, digital technology has yet to be used in assessment and, even then, mainly as a tool for achieving efficiency. In addition to AI, another educational policy product of the digitalization of education is the European megatrend of micro-credentials, i.e., small units of competencies. The European Union has set a target that by 2030 every European adult should have completed at least one micro-credential (EU). Micro-credentials are an effective response to the challenges of continuous learning and to fill the competence gap. However, the aim of effectiveness should maintain the depth of learning, to which assessment is directly linked. AI can enhance and automate assessment, but to promote deep learning, its use requires pedagogically trained teachers. Research suggests that providing quality feedback to students is challenging in the current context, where universities increasingly rely on casualized and temporary academic staff to assess undergraduate work (Richards et al., 2017; Nica, 2018). Finally, we conclude that assessment has a significant power on student learning and therefore it is important to strengthen the role of pedagogically trained teachers in future digital learning environments.

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