

Teachers' Navigation of Assessing Written Work in Times of Generative AI

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ABSTRACT

Teachers' assessment practices are changing as generative artificial intelligence (genAI) becomes embedded in students' schoolwork. While existing research has highlighted teachers' concerns about AI use in written assignments, assessment practices have received limited analytical attention. This exploratory qualitative study investigates how teachers reason about assessment practices in genAI-rich contexts and examines the adequacy of the Technological Pedagogical Content Knowledge (TPACK) framework for understanding these practices. Drawing on survey responses and interviews from licensed Swedish secondary school teachers, the reflexive thematic analysis reveals that assessment emerges as the central practice through which teachers renegotiate what counts as knowledge and how assessment judgements can be legitimised. Teachers describe assessment as epistemically uncertain and reliant on professional judgement, while also raising concerns about equity and legal certainty. The study suggests that assessment constitutes an integrative dimension of teachers' professional knowledge and proposes extending TPACK to include an explicit assessment dimension (TPACK-A).

1. Introduction

Teachers' assessment practices are undergoing profound changes as generative artificial intelligence (genAI) becomes increasingly embedded in young people's everyday lives and schoolwork. In Sweden, almost three-quarters of secondary school students use AI in their daily lives (Internetstiftelsen, 2025). This widespread adoption raises fundamental questions about how teachers can ensure that assessment practices accurately reflect students' own knowledge and skills. Concerns about assessment validity are not entirely new, since home examinations, for instance, have long been debated for their reliability and validity (Cotton et al., 2024; Farazouli et al., 2024). However, the introduction of genAI has intensified these challenges and brought them to the forefront of educational discourse.

In current debates, two broad perspectives dominate discussions of genAI and assessment. One centres on students' use of genAI and its implications for how teachers can evaluate students' work, particularly written assignments (Bower et al., 2024). The other focuses on teachers' use

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of AI as a tool to support assessment-related tasks such as assignment design, grading, or feedback (An & James, 2025; Ciampa et al., 2025; Lo et al., 2025). Across both perspectives, concerns recur regarding the suitability of traditional assessment formats, the risk of over-reliance on AI-generated text, and the need to design tasks that support higher-order thinking and authentic demonstrations of learning.

Despite the growing prominence of these issues, research on teachers' assessment practices in K—12 contexts remains limited (Zhao et al., 2024). Existing studies suggest that teachers are concerned about assessing students' written work in the presence of genAI (An & James, 2025; Ciampa et al., 2025), yet much of this research focuses on attitudes, perceived risks, or task design. Less is known about how teachers reason about assessment in their everyday practice, how they navigate emerging dilemmas related to authenticity and fairness, and how assessment strategies are shaped in contexts where genAI is present. This gap is significant, as assessment is not merely a technical procedure but also a form of professional judgment closely tied to pedagogical values and ethical considerations.

This study addresses this gap by exploring teachers' assessment practices in Swedish secondary education, with particular attention to how teachers reason about and navigate the challenges posed by genAI. By examining teachers' reasoning about these practices, this study aims to provide empirical insight into the dilemmas and strategies that shape assessment in AI-enriched educational environments. To interpret teachers' reasoning, the study draws on the Technological Pedagogical Content Knowledge (TPACK) framework (Mishra & Koehler, 2006; Mishra et al., 2023), which conceptualises teachers' integration of technology, pedagogy, and content knowledge. However, as will be argued, TPACK offers limited guidance for understanding assessment practices, prompting a critical examination of its adequacy in this context.

The purpose of this study is twofold: (1) to investigate how teachers reason about assessment practices in contexts where genAI is present, and (2) to critically examine the adequacy of TPACK for understanding these practices. The study is guided by the following research questions:

- 1) How do teachers perceive and articulate challenges and strategies related to the assessment of written assignments in relation to students' use of genAI?
- 2) How do teachers describe the presence and role of school policies and professional development opportunities in supporting assessment practices in the context of genAI?

2. Previous Research

Research on teachers' engagement with generative artificial intelligence (genAI) in school contexts has expanded rapidly, yet the field remains characterised by exploratory approaches and fragmented analytical foci. Across existing studies, teachers' encounters with genAI are predominantly described as tentative, experimental, and embedded within existing pedagogical practices, rather than as transformative disruptions.

A consistent finding across both survey-based and qualitative studies is that teachers tend to frame genAI as a supplementary resource rather than a replacement for established teaching practices. Teachers report using genAI to support planning, generate teaching materials, and streamline aspects of their work, while simultaneously expressing caution regarding its implications for student learning (Blundell et al., 2025; Moorhouse, 2024; Velander et al., 2024). This early-phase engagement is often characterised by curiosity and pragmatic trial-and-error, suggesting that teachers are still negotiating how genAI fits within their professional repertoire.

Within this emerging body of research, assessment repeatedly appears as a point of concern, particularly in relation to students' use of genAI for written work. Studies focusing on how teachers perceive students' AI use highlight worries about plagiarism, academic misconduct, and the suitability of existing assessment formats (An & James, 2025; Chiu, 2023; Moorhouse, 2024). For example, Bower et al. (2024), in a mixed-methods study across teaching levels and subject areas, show that teachers question whether traditional assessment task types remain appropriate in educational settings where genAI is readily available. Participants discuss paper-and-pen examinations as alternatives to computer-based writing tasks and emphasise the need for assessment designs that foreground authenticity and higher-order thinking. Such findings illustrate how concerns about students' genAI use directly translate into reassessments of what counts as valid and fair assessment.

In response to these concerns, teachers report making practical adjustments, such as restricting home exams or introducing quizzes during lesson time to test students' knowledge (Moorhouse, 2024). While such adjustments have been noted in previous research, they are typically treated as contextual responses rather than analysed as a central organising practice in teachers' work.

At the same time, some research advances more pedagogically optimistic framings of genAI. Studies adopting design-oriented or action research approaches conceptualise genAI as a dialogic or collaborative agent that can support students' critical thinking, creativity, and co-construction of knowledge (Tang et al., 2024). In such work, assessment is occasionally addressed as part of innovative instructional designs, but the analytical focus remains on learning processes rather than on the broader implications for assessment validity, fairness, or professional responsibility (Pastore & Andrade, 2019).

A further strand of research foregrounds challenges related to academic integrity and authorship (e.g., Cotton et al., 2024; Wise et al., 2024). Recent analyses of AI-assisted plagiarism emphasise how genAI complicates traditional notions of originality and detection. The emergence of personalised AI-generated texts – sometimes referred to as “AI-giarism” – renders conventional plagiarism detection tools increasingly ineffective, as AI produces original-seeming text adapted to individual writing styles (Drisko, 2025). These developments intensify long-standing concerns about assessment reliability, particularly in writing-based assignments, yet are rarely connected to teachers' everyday assessment reasoning in empirical studies.

Across these strands, a common pattern emerges: while genAI is widely recognised as relevant to assessment, assessment itself remains analytically under-theorised. Existing studies tend to prioritise teachers' attitudes, technology use, or instructional design, and address assessment-related concerns, such as plagiarism, task validity, and fairness, primarily in isolation. As a result, assessment is often discussed implicitly or instrumentally, rather than examined as a coherent practice shaped by multiple, interrelated considerations. Moreover, research often focuses on individual teachers' practices, leaving the role of school policies, professional norms, and organisational conditions comparatively unexplored.

This points to a significant gap in the literature. There is a need for studies that place assessment at the centre of analysis and examine how teachers reason about assessment practices in genAI-rich contexts. In particular, little is known about how teachers navigate assessment practices as genAI becomes part of everyday educational practice. By foregrounding assessment as a key site of tension and decision-making, the present study contributes to a more integrated understanding of genAI in education.

To address this gap, a theoretical framework is needed that can account for the complex interplay between technology, pedagogy, and subject content in assessment contexts. The Technological Pedagogical Content Knowledge (TPACK) framework offers a well-established lens for understanding teachers' knowledge in relation to technology integration.

3. Theoretical Framework

The theoretical foundation for this study is the Technological Pedagogical Content Knowledge (TPACK) framework (Koehler & Mishra, 2008; Mishra & Koehler, 2006). TPACK conceptualises teachers' professional knowledge as an integrated interplay between technological knowledge (TK), pedagogical knowledge (PK), and content knowledge (CK). More recent developments of the framework have expanded this view by incorporating contextual knowledge (XK), defined as teachers' understanding of institutional, organisational, and technological conditions that shape instructional practice (Mishra, 2019; Petko et al., 2025). TPACK is a framework for capturing specific teachers' knowledge and use of digital technologies to stimulate students' learning of a particular content (Nilsson, 2024).

In parallel with the rapid development of artificial intelligence in education, several TPACK-inspired frameworks have been proposed to capture teachers' competence in AI-rich contexts, including an updated version of TPACK (Mishra et al., 2023), AI-TPACK (Eyal, 2025; Karataş & Ataç, 2025) and Intelligent-TPACK (Celik, 2023). These frameworks have been instrumental in conceptualising how teachers integrate AI technologies into teaching and learning, and in highlighting new forms of technological and pedagogical knowledge required in AI-mediated classrooms.

However, across these frameworks, a critical dimension remains underexplored: *assessment practice*. Assessment is a core component of education that not only shapes learning trajectories but also legitimises knowledge claims and safeguards educational integrity. Within frameworks of PCK (Pedagogical Content Knowledge), assessment has been highlighted as an essential component (e.g., Magnusson et al., 1999; Park & Chen, 2012). Yet within TPACK and its AI-oriented extensions, assessment is typically treated as an implicit aspect of pedagogical knowledge or as an indirect consequence of instructional design. As a result, there is limited conceptual clarity regarding how teachers design, justify, and enact assessment strategies in contexts where genAI challenges established assumptions about authenticity, authorship, and individual performance.

This omission becomes increasingly problematic in relation to written assignments, where genAI fundamentally alters the conditions for evaluating students' work. Teachers are required not only to manage technical and ethical considerations (Celik, 2023), but also to reconfigure assessment practices to ensure validity, fairness, and defensibility. Existing TPACK-based frameworks offer limited analytical tools for examining how such assessment-related decisions are reasoned about and negotiated in practice. This gap points to a need for empirical research that examines assessment as a central practice in teachers' work with genAI, and for a subsequent theoretical development that can account for this dimension.

In this study, TPACK (Mishra, 2019; Mishra et al., 2025; Petko et al., 2025) is used as a theoretical point of departure for interpreting teachers' reasoning about assessment. However, to complement the framework with theories on assessment, the study also leans on the three-dimensional model of teacher assessment literacy (Pastore & Andrade, 2019). In their Delphi study, Pastore and Andrade (2019) conceptualise three important dimensions of assessment. *The conceptual knowledge* dimension concerns questions of what, why, and how to assess, in terms of models and methods. The *praxeological* dimension focuses on assessment in practice and includes teachers' actions, such as collecting and interpreting evidence of student learning.

The socio-emotional dimension explains assessment as a social practice in which teachers need to be conscious of their own role as assessors and of the power of assessment. This dimension also includes how teachers attend to ethical issues such as fairness, equity, and cheating and other malpractices (Pastore & Andrade, 2019).

4. Method

This exploratory study utilises a qualitative research design in which both a small-scale survey and semistructured interviews (Kvale & Brinkmann, 2014) have been used to collect data. Due to the study's exploratory nature, we first administered the survey to teachers who use written examinations in their teaching, using open-ended questions. This survey yielded interesting results we wanted to explore further; hence, we conducted interviews to gain deeper insight into teachers' reasoning for assessing written assignments.

4.1. Data Collection

The survey consisted of six open-ended questions (see below) and four questions about the teachers' background (gender, the school years they taught, whether they taught in public or private schools, and an approximation of the size of their city). The questions were in Swedish but have been translated into English, and the open-ended questions read:

- How has the emergence of generative AI tools (e.g., ChatGPT) influenced your experience with written assignments, assessments, and the fairness of grading?
- Have you made any changes in how you design or assess written assignments to address the possibility that students are using AI tools?
- Do you or your school use locked digital environments (e.g., exam mode or monitored platforms) for written assignments? If so, how do you perceive this affects assessment practices and students' learning?
- Are there any guidelines at your school regarding how teachers and students may use AI tools? If so, how do you perceive these guidelines to affect teaching and assessment?
- How do you think AI and other digital tools will change the work of assessing written assignments in the future?
- Is there anything else you would like to add regarding your experiences or thoughts about AI and assessment tasks?

The survey was distributed in digital form (Microsoft Forms) in the autumn of 2025. Based on the findings in the survey and TPACK, an interview guide was constructed consisting of the following themes:

- Introduction: teacher background, subjects you teach, how you work with written assignments in your classroom?
- Technological knowledge: what is your own experience from using genAI tools?
- Pedagogical knowledge: how do you usually assess students' written assignments? How do you act when you notice signs that a text might be generated?
- Content knowledge: What challenges/risks or opportunities do you see in relation to students' learning process concerning writing?
- Technological pedagogical content knowledge: In what way have you adjusted your teaching based on the presence of genAI? What support, guidelines, or professional development are available for genAI in your school?

- Technological pedagogical knowledge: What is your experience of using locked digital environments for written examinations?
- Closing and reflection: How do you think that assessment of written assignments will change in the future? Is there anything else you would like to add?

Interviews were conducted between October 2025 and January 2026 via Microsoft Teams, a video conferencing program. Interviews were audio-recorded, transcribed with Microsoft Word, and carefully read by the first author for accuracy. The interviews and surveys were conducted in Swedish, and the quotations presented in the article were translated into English using Microsoft 365 Copilot Premium and then carefully reviewed by the authors to ensure accuracy and preserve meaning.

4.2. Participants

The survey participants were selected based on two criteria. First, they should be licensed teachers in the Swedish secondary school (school years 6-9; students aged 11-15). In Sweden, teachers need a license to grade students, and students are graded from school year 6. The issue of a fair and just assessment of students' knowledge is even more critical when students also receive grades. That is the argument for picking this group of teachers. Second, the selected teachers should teach subjects in which written assignments constitute an essential basis for determining the grade. Most of the teachers taught Swedish, and a few taught subjects such as social sciences or English. 15 teachers completed the survey: 7 women and 8 men. The survey was distributed through the authors' professional networks, constituting a purposive convenience sampling. This strategy enabled recruitment of participants who met the inclusion criteria and had relevant professional experience. However, it also implies that the sample could not be considered statistically representative, but rather analytically relevant for exploring the study's research questions. The participating teachers worked in both public and private secondary schools, providing some variation in the school contexts.

When selecting participants for the interviews, the two criteria remained, but to make the interviews more homogeneous, it was also added that the teachers should teach Swedish. This made it easier to compare the different aspects of TPACK and how the teachers framed genAI in relation to a specific subject. In total, seven teachers were interviewed, three men and four women. The teachers worked at three secondary schools from different municipalities in Sweden. All participating schools were public secondary schools, representing Swedish compulsory education, in which students are formally graded and written assignments constitute a central basis for assessment, particularly in subjects such as Swedish. The teachers' experience ranged from 4 to 25 years (mean 15 years; median: 16 years). Participants were recruited through principals known to the authors, who acted as gatekeepers by forwarding the invitation to eligible teachers. This approach can be understood as purposive sampling via professional networks, enabling access to participants who met the study's inclusion criteria.

4.3. Ethical Considerations

This study was conducted in accordance with the ethical guidelines for research issued by the Swedish Research Council (Vetenskapsrådet, 2024). The teachers who participated in the survey received written information about the study and participated anonymously. All names are pseudonyms. Participants in the interview study received both written and oral information about the study and provided oral consent prior to participation. No formal ethical review was required, as the study did not involve the processing of sensitive personal data.

4.4. Reflexive Thematic Analysis

The interview transcripts were analysed using reflexive thematic analysis (Braun & Clarke, 2019; Braun et al., 2022). Analysis began with familiarisation through repeated reading of the transcripts and the writing of brief analytical summaries of each interview. Initial coding was conducted inductively, generating a broad and overlapping set of analytical codes (e.g., *assessment as verification of authorship* and *policy as absent support*). These codes were then clustered into preliminary thematic patterns.

Themes were developed inductively and treated as analytic constructions that capture patterned meanings across the dataset. Once preliminary themes had been identified, they were refined and reviewed in dialogue with theory. At this stage, the TPACK framework and the three-dimensional model of assessment literacy were used as sensitising theoretical lenses to examine how teachers' reasoning about assessment articulated relationships between technology, pedagogy, and subject content.

Throughout the analysis, themes were iteratively reviewed in relation to the full dataset, the research questions, and the emerging theoretical interpretation, and were revised to ensure internal coherence, analytic distinctiveness, and relevance to the study's aim. This iterative process also supported reflexivity and transparency in the development of interpretations.

While the primary analytic work was conducted on the interview material, the survey data provided an additional qualitative dataset that was integrated at a later stage of the analysis. Responses from the open-ended survey questions were analysed separately but in relation to the interview material. The themes identified in the interviews served as an initial analytical framework for organising and interpreting the survey responses, which were used to corroborate and extend these themes. At the same time, the analyses remained open to patterns in the survey data that were not fully reflected in the interview material. Given the relatively small number of interviews, no claims of full thematic saturation are made.

5. Results

The reflexive thematic analysis resulted in four themes that capture recurring patterns in how teachers reason about assessment practices in contexts where genAI is present. These themes are presented below.

5.1. Theme 1: Assessment as the Site where Knowledge is Renegotiated in genAI Contexts

This theme captures how teachers describe assessment as the practice through which questions of knowledge, authorship, and legitimacy become unavoidable in contexts where genAI is present. Across the dataset, assessment emerges as the site where teachers must actively negotiate what counts as knowledge, whose knowledge is being assessed, and how students' contributions can be distinguished from those of technology. Teachers repeatedly return to assessment situations as moments where they must decide what counts as students' own knowledge and how that knowledge can be made visible. Hence, assessment is constructed as an arena in which the meaning of subject knowledge is redefined in response to genAI.

In these accounts, teachers differ in how they respond to this challenge. Some seek to defend established assessment objects, such as individual written products, while others attempt to redesign assessment to foreground reasoning, process, or reflection. What unites these responses is that assessment is where tensions between content, pedagogy, and technology are made explicit and must be resolved in practice.

Several teachers describe how the traditional reliance on written products becomes problematic. One teacher explains that, with the introduction of AI, it is no longer possible to trust that a digital text reflects students' own work:

"But with the introduction of AI, it will no longer be the same way that we can rely on it to be their [the students'] texts." (Anita)

In response, Anita describes a shift towards handwritten work in order to secure the epistemic status of the assessment situation:

"To me... well, I want them [the students] to write on their computers, but it is more and more by hand now, so that they show their knowledge before they write on the computer." (Anita)

Here, assessment serves as a mechanism for distinguishing between students' knowledge and technological output, redefining what constitutes legitimate evidence of learning. Anita has all her students write by hand first, with no computers available. In doing so, she can feel comfortable that students do not have access to any genAI while writing. In a second step, the students are allowed to transcribe their handwritten texts on the computer.

Other teachers similarly emphasise that assessment cannot focus on texts in which AI has played a dominant role. Benny states:

"I don't think we can assess a text that has been written too much by AI. We assess the student's way of writing, not the AI's way. I believe that we as teachers need to find new ways, and not that we stop and sulk and say 'yes, now we have to go back...' But we, as teachers, need to keep up with the development." (Benny)

This insistence on assessing "the student's way of writing" highlights how assessment becomes the site where epistemic boundaries are drawn. When it comes to Swedish, one important criterion is assessing students' writing style, their sense of genre, and their argumentation. At the same time, teachers acknowledge that established assessment practices can no longer be taken for granted. As Benny continues: "We need to find new ways." The renegotiation between traditional ways of measuring students' knowledge and the need to find alternative ways is apparent among the teachers.

In several accounts, this renegotiation involves redesigning assessment tasks to foreground reasoning, process and reflection rather than polished textual products. However, the process is often described as difficult and accompanied by a sense of loss. Benny explains that AI has constrained earlier pedagogical freedoms:

"I think the creative aspect of teaching has disappeared a bit because of AI." (Benny)

Benny describes that the presence of AI forces him to control the students more closely to ensure that he assesses the texts the students have produced themselves. For instance, Benny states that it is not possible to allow students to search the internet for facts and use them in their written assignments. Otherwise, he cannot control which types of sources students use or whether they turn to genAI to find an answer. The epistemic uncertainty introduced by genAI is also articulated as a concern that students may rely on technology at the expense of their own thinking. Doris reflects:

"I guess I'm starting to let [AI] in a little bit more and see how it can work as an aid. But I also feel that my relationship with AI is also a bit of fear, precisely from the point of view that you should stop thinking for yourself." (Doris)

This concern is closely tied to assessment, as teachers worry that learning outcomes become difficult to judge when cognitive work is partially outsourced. The balance between letting students use AI to support their writing and when they use it too much, leading to decreased learning. Doris continues to note:

“The easy way is not always the best way.” (Doris)

Across the interviews, assessment emerges as the practice through which teachers are compelled to confront and renegotiate what knowledge means in the classroom. Assessment extends beyond the evaluation of prior learning and becomes a site where the legitimacy of knowledge claims is actively constructed. Teachers alternate between defending established assessment objects, such as individual written texts, and attempting to redefine assessment in ways that can accommodate genAI without losing sight of students’ own meaning-making.

Survey responses further corroborate this epistemic uncertainty, with several teachers describing difficulties in determining the reliability of written texts and in assessing what can legitimately be attributed to students’ own knowledge.

While this theme foregrounds assessment as a site of ongoing problem-solving shaped by epistemic uncertainty, it also raises the question of how such challenges are handled in everyday classroom practice. The following theme, therefore, shifts focus to the concrete strategies teachers describe for making assessment workable under conditions of genAI.

5.2. Theme 2: Making Assessment Work Under Conditions of Uncertainty

This theme captures how teachers describe pragmatic strategies for making assessment workable in everyday classroom practice when genAI introduces uncertainty about students’ written work. Teachers respond to this uncertainty by adapting assessment practices, combining multiple methods, and drawing on professional judgement as a practical resource in everyday classroom contexts. Assessment is constructed here as a practical activity that must remain functional despite ambiguity.

Across the dataset, this theme highlights assessment as an ongoing problem-solving process in which teachers prioritise feasibility, fairness, “good enough,” and pedagogical continuity. GenAI is treated as one among several complicating factors in a complex assessment ecology, with emphasis on how teachers adapt their practices to sustain assessment under real classroom conditions.

A recurring concern is that AI makes it difficult to determine how much of a written text reflects students’ own thinking. The teacher, Doris, explains:

“Yes, but the risks are, of course, that they [the students] use it [genAI] too much, and that AI simply does the job. That you make it very easy for yourself.” (Doris)

At the same time, this uncertainty is treated as something that must be handled rather than eliminated. Teachers describe how assessment practices are adjusted to compensate for the limited reliability of written texts. Doris continues and notes the difficulty of detecting AI use through technical means:

“I also think it’s tricky that it can be difficult to detect it [students’ AI use], of course. Urkund cannot find it...” (Doris)

The program Urkund, which Doris refers to, is a software for detecting plagiarism and is often used by schools. However, the program cannot detect texts written by genAI. Therefore, instead of relying on detection tools, teachers describe combining different forms

of assessment. Written work is often supplemented with oral elements, follow-up questions, or close observation of students during the writing process. As Claes explains:

“I work quite a lot with the process, towards the final product. So, we have reconciliations during the writing process, and they may have to fill in a template, ideas, make a structure, or a similar [text], and then it is also part of the task to show what you have done in the meantime... You also have a final product to assess, but the assessment has become more spread out throughout the writing process.” (Claes)

In these accounts, assessment is not a single event but an ongoing process in which teachers gather multiple forms of evidence to form a judgement. This approach reflects an acceptance that no individual assessment method can provide full certainty under current conditions. Moreover, the use of locked educational platforms that restrict students’ activities on the computer forces teachers to prepare materials that students need for their writing. Benny describes this:

“Nowadays, I have to give them [the students] text, for example, printed sources, because they cannot leave Dugga [the locked platform] when they write, so they cannot search for information themselves.” (Benny)

Time constraints and classroom realities further shape how assessment is handled. Teachers describe making pragmatic decisions about what is feasible, prioritising practices that are manageable within everyday teaching. One teacher captures this acceptance of imperfection when noting that students may choose the easiest route, even if it undermines learning: “You do not learn so much”, as Doris says. Rather than responding with strict control, teachers often emphasise guidance and dialogue. Knowing students well becomes an important resource in navigating uncertainty. As Doris states:

“The clearest tool is that I know the students and I recognise their way of expressing themselves.” (Doris)

The statement by Felicia underscores that to know the students and their way of writing texts is essential in recognising if they use genAI:

“This is the third year I have had them [the students]. Then you actually learn the student’s personal language, and then you notice quite quickly if there is a text which differs.” (Felicia)

This reliance on professional judgement functions as a practical resource for stabilising assessment practices despite ambiguity about authorship or process. In this sense, uncertainty becomes a normalised condition of classroom assessment rather than an exceptional problem caused solely by genAI.

Across these accounts, making assessment work involves accepting that complete certainty is unattainable, while still taking responsibility for fair and meaningful judgement. Teachers combine assessment forms, remain close to students’ writing processes, and draw on their experience to make informed decisions. GenAI thus reshapes assessment by requiring them to manage uncertainty as an everyday feature of classroom practice.

The survey data reinforce these findings, indicating that many teachers have adopted similar classroom-level strategies, such as restricting assessment to lesson time, using locked digital environments, or returning to handwritten work, in order to make assessment manageable under conditions of uncertainty.

While these strategies enable assessment to remain workable in everyday classroom practice, they also place new demands on teachers’ judgement and responsibility. The following theme,

therefore, shifts focus from how assessment is made to work in practice to what these conditions mean for teachers' professional roles and positioning in assessment situations shaped by genAI.

5.3. Theme 3: Repositioning Teacher Professionalism through Assessment

This theme captures how teachers describe changes in their professional roles and authority as they engage in assessment practices in contexts where genAI is present. Assessment is described as a site where their professional judgement, expertise, and responsibility are actively renegotiated. GenAI challenges traditional assumptions about the teacher as an expert evaluator with privileged access to students' knowledge, prompting shifts toward roles that emphasise transparency, dialogue, design, and ongoing learning.

Across the dataset, assessment emerges as a key arena in which teachers position themselves in relation to students, technology, and institutional expectations. Professionalism is described not as fixed competence, but as something enacted and reworked through assessment practices under conditions of uncertainty. Teachers describe assessment as a practice that places demands on their professional judgement and responsibility, particularly when genAI makes students' written work difficult to interpret. Managing uncertainty thus becomes a central aspect of how teachers understand and enact their professional role in assessment situations.

Several teachers explicitly describe a sense of professional insecurity in relation to genAI. One teacher reflects on their own position as a novice in relation to the technology:

"In fact, I have not used it [AI] so much in my teaching so far." (Felicia)

This sense of uncertainty is not framed solely as a lack of technical knowledge, but as a challenge to the teacher's role in assessment. Doris states:

"I don't really know how to position myself, that is, what I think and feel in relation to AI." (Doris)

In these accounts, assessment becomes a site where the limits of the teacher's authority are exposed. Teachers describe a need to be transparent with students about these uncertainties, rather than maintaining an image of full control. Felicia articulates a concern that AI may undermine students' own thinking, positioning this as a shared problem:

"I hesitate a bit because, on the one hand, there is AI that will be a tool for them to use later. On the other hand, in school, the most important thing for us is not really to get the students to produce, but to learn and develop their thinking." (Felicia)

Here, professional responsibility is reframed as guiding students' thinking processes rather than policing their use of technology to merely produce text. Doris describes an effort to encourage students to engage actively in learning:

"[I] try to get the students to use it [AI] wisely, not to ban it, but to somehow, anyway, make them understand the purpose of also thinking for themselves, working for themselves, producing themselves, imagining themselves and if so, using AI, which I allow them to." (Doris)

Assessment is thus closely tied to professional judgement exercised through presence, dialogue, and process awareness. Claes emphasises the importance of being closely involved during students' work:

"You have to work more actively with the writing process and make both yourself and the students aware of where the boundaries are between your own product and something that... someone else has done, or some tool has done. And then there is a big

grey area in between as well, so you have to constantly discuss... what is allowed and what is not allowed.” (Claes)

In these descriptions, professionalism is enacted through relational and situational judgement rather than through formal control mechanisms. As Claes highlights, the absolute boundaries of permitted or prohibited AI use are under constant negotiation. Both students and teachers need to be reminded to discuss the boundaries. Teachers rely on their familiarity and communication with students as a key resource in assessment. Felicia states:

“I can pretty quickly [see], if I walk by, and see that someone has written three paragraphs of text, I can watch... because I try to be quite present in the process of writing. Yes, but [I] point at certain formulations like this: ‘but what does this mean?’, and they’re pretty honest with me. ‘Have you used AI?’, Yes, but you have to understand what it is you are writing.” (Felicia)

When Felicia passes the students in the classroom, she takes a quick look at their texts and recognises expressions they are unlikely to understand. By asking them, Felicia can explain why the students should not copy texts, rather than just banning their use. Alongside this emphasis on relational judgement and transparency, some teachers also articulate a more active and forward-looking professional stance. Assessment is described as an area where teachers must adapt, redesign, and develop their practices in response to generative AI. One teacher stresses the need to keep pace with change:

“As teachers, we need to keep up with the developments. Find new ways.” (Benny)

This orientation positions the teacher not only as a reflective practitioner, but also as a designer of assessment practices. However, even this more proactive stance is grounded in an acknowledgement that professional competence is not static. Rather, it is something that must be continuously negotiated through assessment work under changing conditions.

Across the dataset, assessment emerges as a key site for reshaping teacher professionalism. Teachers describe moving away from ideals of certainty and expert authority toward forms of professionalism characterised by transparency, relational judgement, and ongoing learning. GenAI does not simply introduce a technical challenge; it exposes and amplifies the need for teachers to articulate what professional responsibility means when assessment can no longer rely on stable assumptions about authorship, knowledge, or control.

The renegotiation of teacher professionalism is also evident in the survey responses, where teachers describe increased uncertainty, heightened suspicion towards written assignments, and the growing reliance on professional judgement in assessment situations involving genAI.

While these findings highlight how assessment practices reshape teachers’ professional roles and responsibilities, they also point beyond the individual teacher. The following theme, therefore, shifts focus to the institutional conditions under which assessment is conducted, examining how concerns about equity, legal certainty, and policy shape assessment practices in contexts where genAI is present.

5.4. Theme 4: Assessment Beyond the Classroom: Policy, Responsibility, and Legitimacy

This theme captures how teachers describe assessment practices as shaped by institutional conditions beyond the classroom, including school policies, leadership, and expectations of fairness and accountability. In contexts where genAI is present, assessment is constructed both as a pedagogical activity and as a matter of legitimacy, responsibility, and organisational alignment. Teachers articulate tensions between professional judgement and external demands for consistency, legal certainty, and shared standards.

Across the dataset, assessment emerges as a site where responsibility is negotiated between individual teachers, collegial communities, and school leadership. Thereby, assessment becomes entangled with concerns about equity, fairness, and legal certainty when genAI is present. GenAI functions as a catalyst, exposing ambiguities in existing policies and highlighting the need for organisational support in assessment-related decision-making. The teachers articulate assessment as a normative responsibility, seeking to ensure that students are assessed under comparable conditions and without arbitrary or unjustified suspicion.

A recurring concern is the absence of shared policies or explicit guidelines for assessment regarding genAI. When asked about common frameworks at the school level, Gustav responds:

“There are no clear laws or rules about how we should use this [AI], but it is kind of an experimental workshop. I feel that everyone gets to try themselves as well, and there will probably be some teachers who find it interesting and will improve their skills, while others will think they won’t deal with it at all.” (Gustav)

In the absence of such guidelines, teachers describe how assessment practices risk becoming uneven across classrooms. Without a shared strategy, teachers are left to explore genAI on their own, leading to varying knowledge of how the tools work. Moreover, different teachers rely on different tools and procedures – such as locked digital platforms, handwritten assignments, or open digital environments – creating potentially unequal conditions for students. As Anita explains, practices vary widely:

“Because we don’t have any guidelines on how to work with AI from the principal, so right now it’s probably very subjective how we use it [AI].” (Anita)

Concerns about equity are particularly pronounced in relation to work completed outside the classroom. Eva explicitly rejects the use of homework as assessed material, arguing that differences in students’ access to support make such assessment unfair:

“I have never given students assignments to do at home that I later collect and assess. Before AI existed, parents helped. And I have explained that to the students, that it doesn’t feel fair.” (Eva)

The same position is reiterated in the survey responses. Here, equity is framed as a practical and ethical boundary for assessment. By excluding certain types of student work from assessment, teachers attempt to prevent unequal access to external support – whether from parents or generative AI – from influencing grades.

Alongside concerns about equity, teachers also express worries about legal certainty and the risk of unjust accusations. Eva continues to reflect on the discomfort associated with suspecting students of inappropriate AI use:

“There can be conflicts if you accuse someone, or kind of suspect rather, so it doesn’t feel good to do so...” (Eva)

In this context, assessment practices such as using locked platforms, requiring handwritten work, or closely monitoring writing processes are described as ways of safeguarding fairness and transparency rather than as tools for surveillance. As Gustav explains, without such measures, it is difficult to ensure that assessment decisions are defensible:

“We cannot guarantee that they [the students] will not cut and paste, and that is a problem.” (Gustav)

Teachers also express a need for clearer organisational guidance to support equitable assessment practices. Gustav imagines future guidelines that could help standardise how AI use is accounted for in grading:

“[In the future] there will be some kind of guidelines on how you are allowed to prompt. You may prompt three times and then you can get this grade, but on five prompts, then it can’t be more than C.” (Gustav)

Although hypothetical, this example illustrates how teachers seek policy solutions that could translate abstract ideals of equity and legal certainty into concrete assessment criteria.

Across these accounts, assessment emerges as a site where concerns about equity and legal certainty are negotiated in the absence of established institutional frameworks. GenAI amplifies existing tensions by making differences in students’ resources, tools, and support more visible. Teachers respond by defining what counts as assessable work, adopting more restrictive assessment conditions, and calling for clearer guidelines. In doing so, they frame assessment not only as a pedagogical judgement, but as a collective and institutional responsibility aimed at protecting fairness and legitimacy in grading practices.

The survey further reinforces this pattern, as many teachers report avoiding the assessment of homework and long-term projects due to concerns about fairness and legal certainty, while also noting the absence of clear school-level guidelines for assessment in relation to genAI.

Taken together, these findings illustrate how assessment in genAI-rich contexts extends beyond individual classroom decisions and becomes a matter of institutional coordination, legitimacy, and shared responsibility.

6. Discussion

The aim of this study was to investigate how teachers reason about assessment practices in contexts where generative AI (genAI) is present. Specifically, the study sought to examine (1) how teachers perceive and articulate challenges and strategies related to the assessment of written assignments in relation to students’ use of genAI, and (2) how teachers describe the presence and role of school policies and professional development opportunities in supporting assessment practices in this context.

Taken together, the findings show that genAI acts as a catalyst, bringing long-standing tensions in assessment practices to the surface. Assessment emerges as the central practice through which teachers renegotiate what counts as knowledge, whose knowledge is assessed, and how that knowledge can be legitimised in educational contexts where genAI is present. In terms of the three-dimensional model of assessment theory, the conceptual dimension (Pastore & Andrade, 2019) is put under pressure. What should be assessed, and with what methods? Across the material, teachers consistently return to assessment situations as moments where questions of authorship and epistemic responsibility become unavoidable. This positioning of assessment aligns with previous research that identifies assessment as a focal point of concern in relation to students’ use of genAI, particularly in writing-based tasks (Bower et al., 2024).

In relation to the first research question, the findings demonstrate that teachers experience assessment in genAI-rich contexts as epistemically uncertain and practically demanding. Both conceptual and praxeological dimensions (Pastore & Andrade, 2019) of teachers’ assessment literacy need to be renegotiated. Across the material, teachers repeatedly describe difficulties in determining what constitutes students’ own knowledge when written texts may be partially or extensively shaped by AI tools (Theme 1). This uncertainty does not remain abstract; instead, it directly shapes how assessment is enacted in classrooms, as ongoing adjustments of

assessment practices. Teachers respond by adapting their assessment practices in pragmatic ways, for example, by restricting assessment to lesson time, using locked digital environments, combining written work with oral follow-ups, or returning to handwritten tasks (Theme 2). These findings extend on earlier research showing how teachers adopt genAI in teaching and learning (Blundell et al., 2025; Ciampa et al., 2025) by adding how teachers adapt their assessment practices to the presence of genAI. These strategies do not eliminate uncertainty, but make assessment workable under altered conditions (see also, Tang et al., 2024).

At the same time, assessment emerges as a key site for renegotiating teachers' professional roles. Teachers describe heightened vulnerability, increased suspicion, and a growing reliance on professional judgement, transparency, and relational knowledge of students in order to sustain assessment practices they perceive as defensible (Theme 3). Hence, they articulate socio-ethical dimensions in which unintended consequences and issues of trust are important aspects of teachers' assessment literacy (Pastore & Andrade, 2019). Professional judgement emerges here as an important resource, enabling assessment to be manageable (cf., Lo et al., 2025). This emphasis on judgment resonates with the research highlighting the limits of technical solutions for detecting AI-generated text and the resulting reliance on teachers' experiential knowledge (Drisko, 2025). Together, these themes show that teachers' strategies are less about controlling AI use per se and more about preserving the legitimacy of assessment amid uncertain authorship and blurred boundaries between human and machine contributions. The socio-ethical dimension of who can trust whom becomes vivid in the teachers' descriptions (Pastore & Andrade, 2019).

The second research question concerns how teachers describe the role of school policies and professional development in supporting assessment practices in genAI contexts. Here, the findings point to a notable gap between individual responsibility and institutional support. Teachers consistently frame concerns about equity and legal certainty as central to assessment decisions, particularly when deciding which tasks can be used for grading and under what conditions (Theme 4). The absence of clear, shared guidelines regarding genAI use in assessment places a disproportionate burden on individual teachers to define what is fair, defensible, and acceptable (Chiu, 2023). While some teachers imagine or call for future policies that could standardise assessment practices, most describe current policy landscapes as fragmented, unclear, or largely absent. A lack of national policy leaves teachers to make decisions in a vacuum (cf., Pastore & Andrade, 2019). Professional development opportunities, where mentioned, tend to focus on the possibilities of AI use rather than on assessment norms, ethical boundaries, or legal considerations. As a result, teachers often rely on collegial negotiation or personal judgement to compensate for the lack of institutional guidance. This finding adds an organisational dimension to previous research that has primarily focused on individual teachers' attitudes or task design (An & James, 2025), by showing how assessment becomes a matter of collective and institutional responsibility in genAI-contexts.

Importantly, the four themes should not be read as isolated findings, but as interrelated dimensions of a broader assessment ecology shaped by generative AI. Epistemic uncertainty (Theme 1) drives pragmatic classroom strategies (Theme 2), which in turn reshape teachers' professional identities and responsibilities (Theme 3). These processes unfold within institutional contexts in which concerns about equity and legal certainty are salient yet insufficiently supported by policy and professional development structures (Theme 4). By foregrounding assessment as a site of negotiation (the socio-emotional dimensions) rather than a technical procedure, the study contributes empirical insight into how teachers sustain meaningful assessment practices under changing technological conditions. In this sense, the study shows that assessment in genAI contexts is a complex practice where knowledge, professionalism, and governance intersect.

6.1. Assessment as an Integrative Practice: Implications for TPACK

Taken together, the findings of this study invite a critical engagement with the Technological Pedagogical Content Knowledge (TPACK) framework. While TPACK has been influential in conceptualising teachers' knowledge for integrating technology into teaching (Koehler et al., 2013; Voogt et al., 2013), the results suggest that assessment constitutes a critical and under-theorised dimension in contexts where genAI is present. Within the TPACK framework, assessment is typically associated with pedagogical knowledge (Mishra & Koehler, 2006). The present study extends this perspective by showing that assessment constitutes a distinct arena for integrative professional reasoning characterised by epistemic and normative demands. In assessment situations, teachers are required to align pedagogical intentions with judgements about students' knowledge under technological conditions that actively shape knowledge production.

Thus, the findings indicate that this integrative work cannot be fully accounted for when assessment is treated as an embedded aspect of pedagogical knowledge. In genAI-rich contexts, assessment emerges as a practice in its own right, in which the relationships between content, pedagogy, and technology are both enacted and explicitly problematised. This suggests a need to conceptualise assessment as a distinct dimension of teachers' professional knowledge within TPACK-based frameworks.

Across the findings, assessment operates as the primary practice through which teachers integrate considerations of subject knowledge, pedagogy, and technology in genAI-rich contexts. When teachers reason about assessment, they simultaneously address what counts as valid subject knowledge, how learning should be supported and evidenced, and how technological conditions shape students' possibilities to demonstrate their knowledge.

While the number of interviews limits claims of full thematic saturation, the analysis yielded consistent, coherent themes across participants. Importantly, these themes were also reflected in the survey data, which did not introduce new patterns but corroborated and extended the interview-based findings. This suggests that the identified themes capture central ways in which teachers who teach Swedish reason about assessment in relation to genAI, while still leaving room for further variation in other contexts.

6.2. Towards an Assessment Dimension in TPACK (TPACK-A)

Based on the findings of this study, we suggest that assessment is conceptualised as a distinct dimension of teachers' professional knowledge within the TPACK framework (Figure 1). An assessment dimension (A) foregrounds how teachers reason about the validity, legitimacy, and defensibility of judgements when technological conditions actively shape what counts as evidence of students' knowledge. This lies in line with the three-dimensional model of assessment literacy (Pastore & Andrade, 2019), which describes a conceptual knowledge, a praxeological, and a socio-emotional dimension of assessment. Rather than being subsumed under pedagogical knowledge, assessment in the present study emerges as a form of integrative professional reasoning in which considerations of subject content, pedagogy, and technology are brought together in situations characterised by epistemic and normative demands.

Conceptualising assessment (A) as a separate dimension makes visible forms of professional knowledge that are central in genAI-rich contexts, including how teachers negotiate authorship, manage uncertainty, and align assessment practices with concerns about fairness and legal certainty. By foregrounding assessment in this way, it becomes clear that teaching in times of genAI needs to consider what students' knowledge should be assessed, how, and which methods and strategies could be used. Teachers need to reflect on what might be lost by

choosing locked digital platforms, even if this restricts students' AI use. The praxeological dimension of how to collect and interpret evidence about students' learning becomes even more complex as teachers need to make increasingly intricate decisions, and they may lack a developed educational policy. Moreover, the trust between students and teachers is challenged, meaning that the socio-emotional dimension of assessment in relation to teaching, content, and pedagogical strategies becomes essential.

By foregrounding assessment, TPACK-A accounts for the empirical reality that genAI challenges not only how teachers teach but also how they can justifiably evaluate learning. This extension refines TPACK by addressing a critical blind spot that becomes increasingly visible in AI-rich educational contexts. Importantly, TPACK-A is not intended as a prescriptive model for assessment design, but as an analytical extension that makes visible a dimension of teacher competence that emerged as central in the empirical material. Moreover, TPACK-A does not replace existing TPACK constructs but extends the framework by analytically capturing assessment as a practice through which integration is enacted and problematised.

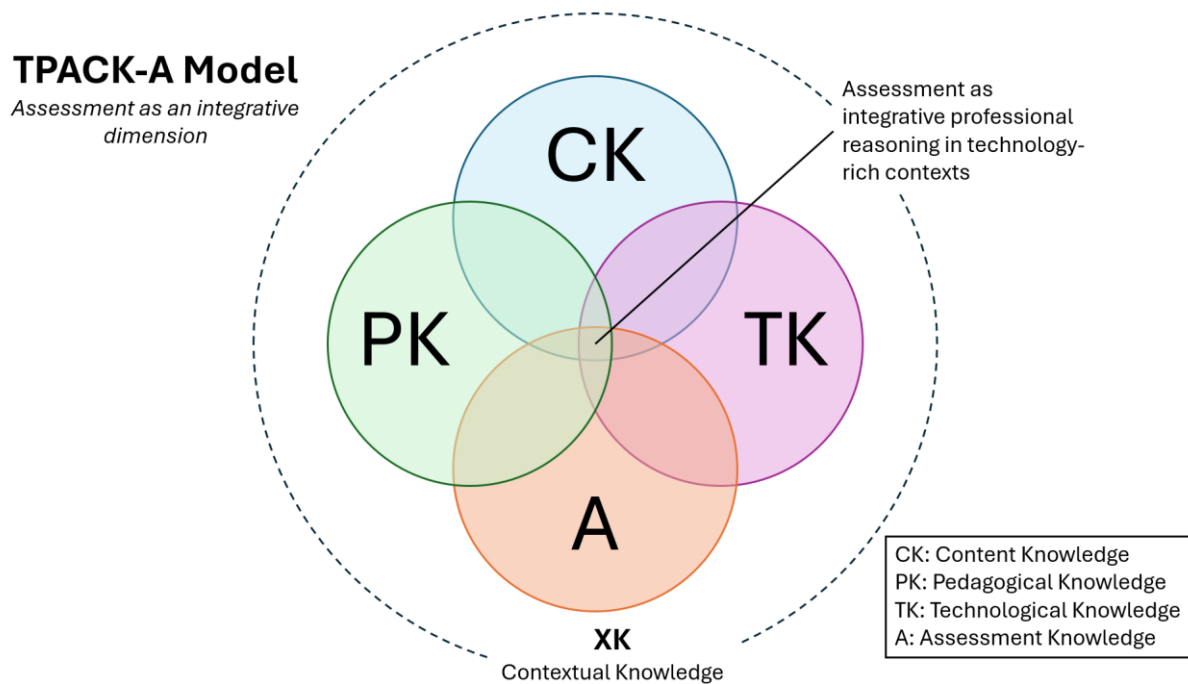


Figure 1. The TPACK-A model conceptualises assessment (A) as a distinct dimension of teachers' professional knowledge that intersects with technological (TK), pedagogical (PK), and content knowledge (CK). In genAI-rich contexts, assessment constitutes a site of integrative professional reasoning where epistemic, pedagogical, and technological considerations converge under contextual (XK) conditions.

At the same time, the proposal is grounded in an exploratory study conducted in Swedish secondary education and primarily in subjects where written assignments play a central role. Further research is therefore needed to examine how an assessment dimension within TPACK might be empirically substantiated, refined, or challenged across other subjects, educational levels, and institutional contexts. Studies that explore assessment practices in different disciplinary traditions and policy environments would be particularly valuable for developing TPACK-A as a robust analytical framework.

6.3. Implications and Concluding Remarks

This study highlights assessment as a central and consequential practice in teachers' work in the presence of genAI, with implications for both research and educational practice. By foregrounding how teachers reason about assessment under conditions of epistemic uncertainty, the study contributes empirical insights into forms of professional knowledge that remain weakly conceptualised in existing frameworks for technology integration. The findings suggest that assessment plays a critical role in aligning subject knowledge, pedagogical intentions, and technological conditions in genAI-rich contexts.

From a theoretical perspective, the study suggests extending the TPACK framework to more explicitly account for assessment as a distinct dimension of teachers' professional knowledge. Conceptualising assessment within TPACK-A offers a way to analytically capture how teachers negotiate validity, legitimacy, and responsibility when technological tools reshape what counts as evidence of learning. This proposal is exploratory and intended as a starting point for further theoretical and empirical work rather than as a definitive model.

For practice and policy, the findings indicate that teachers carry substantial responsibility for sustaining fair and defensible assessment practices in the absence of clear institutional guidance. This underscores the importance of professional development and school-level policies that explicitly address assessment in relation to genAI, rather than focusing solely on instructional use or technological possibilities. Furthermore, more research is needed on how teaching and learning are affected when teachers feel required to use more handwritten exams and locked digital environments.

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