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Conceptualizing Teacher Recipience of Analytics Dashboards: A Preliminary Framework

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Abstract: Analytics dashboards offer consolidated views of student progress and performance intended to support pedagogical decision-making. Yet teachers' uptake and productive use of these dashboards vary, reflecting differences not only in technical proficiency but in how teachers engage with, interpret, and act upon dashboard information. Building on work in feedback recipience, sensemaking, and digital assessment literacy, this paper conceptualizes teacher dashboard recipience as a construct that foregrounds teachers' attitudes and behaviours in seeking, interpreting, and using dashboard information. We propose a preliminary framework that links dashboard interactions to metacognition, sensemaking, and pedagogical moves, and delineate its translation into a dashboard recipience instrument. We specify practice-critical understandings that teachers need to work meaningfully with dashboards and conclude with pragmatic future research implementation plans. Collectively, these contributions provide a foundation for realizing greater pedagogical value from dashboards in everyday classrooms by foregrounding how teachers transform dashboard information into evidence-informed instructional action.

Keywords: learning analytics dashboards, teacher recipience, assessment literacy, sensemaking, instrument

1. Introduction

Learning analytics dashboards of student data are now woven into teachers' everyday work. Dashboards aggregate "at-a-glance" indicators of students' progress and performance to inform timely instructional decisions; at the same time, they can complicate teachers' sensemaking as teachers negotiate what is salient, trustworthy, and actionable in local classroom contexts (Molenaar & Knoop-van Campen, 2018; Wise & Jung, 2019).

Empirical studies consistently report marked variation in how teachers use dashboards. Teachers often align responses to their pre-existing pedagogical beliefs and their prior knowledge of students; furthermore, their ability to read visualisations and reason with evidence shapes what they take from the data (Molenaar & Knoop-van Campen, 2018; Wiley, Dimitriadis, & Linn, 2024). By contrast, general demographics such as age or years of experience explain little of this variance, suggesting the need to theorize more proximal, process-oriented constructs (van Leeuwen et al., 2021).

This paper addresses this need by introducing teacher dashboard recipience as a process-oriented construct for explaining variation in how teachers engage with dashboard information through seeking, interpreting, and using evidence for pedagogical purposes. Differences in recipience help account for why teachers use dashboards differently, and we develop this argument by first outlining the construct's conceptual foundations, then presenting a preliminary framework and instrumentation strategy, and finally discussing implications for practice and future research.

2. Conceptual Background

2.1 From feedback recipience to teacher dashboard recipience

Contemporary assessment and feedback scholarship reconceptualises feedback as a process that requires the learner's active engagement rather than passive receipt. Learners must seek, appraise, and use feedback for it to exert educational influence (Carless & Boud, 2018). Extending this perspective to teachers, teacher-facing dashboards can be understood as feedback about students that similarly must be sought out, interpreted, and translated into pedagogical action. Viewing dashboard use through the lens of feedback recipience highlights that it is a feedback-processing event shaped by teachers' evaluative judgement, affect regulation, and strategic decision-making; these go beyond the mechanical use of analytics indicators (Carless & Boud, 2018; Dawson et al., 2023). This framing also explains why teachers in comparable contexts may diverge markedly in their uptake and use of dashboards.

We conceptualise *teacher dashboard recipience as teachers' attitudes and behaviours in proactively seeking dashboard information, interpreting it within their instructional context, and using it to inform pedagogical decisions*. This construct emphasises teacher agency and pedagogical intentionality and further accommodates the attitudinal and epistemic stances, such as trust in data and beliefs about evidence, that shape whether teachers interrogate dashboard patterns or triangulate them with classroom knowledge (Dawson et al., 2023; Zhan, 2022). Empirical research reinforces this emphasis on teacher reasoning, showing that analytics use typically unfolds through cycles of questioning, interpretation, and response driven less by demographic attributes than by beliefs, metacognitive processes, and data or visualisation literacy (Wise & Jung, 2019).

2.2 Sensemaking as the bridge from data to pedagogy

Past research has depicted dashboard use as an iterative sensemaking process in which teachers generate questions, interpret visualisations, reconcile patterns with contextual knowledge, and choose responses such as intervening, waiting, or redesigning tasks (Wise & Jung, 2019). The actions they take tend to align with their pedagogical perspectives and evolving understanding of students (Wiley et al., 2024; Wise & Jung, 2019). Moreover, these processes are further shaped by teachers' visualisation and data literacy. Higher literacy has been found to enable cross-chart comparisons and uncertainty appraisal, whereas lower literacy increases reliance on salient but superficial cues (Molenaar & Knoop-van Campen, 2018; Pozdniakov et al., 2023). Together, the literature underscores that sensemaking serves as the critical bridge between dashboard data and pedagogical decision-making.

2.3 Digital assessment literacy and metacognition

Teacher assessment literacy in digital environments encompasses understanding assessment purposes and processes, technological knowledge, and the beliefs, emotions, and contextual conditions that shape teachers' ability to use digital evidence for formative decision-making (Estaji, Banitalebi, & Brown, 2024). In dashboard contexts, this involves the capacity to interpret indicators appropriately, judge their relevance and validity, and translate them into defensible instructional decisions. Metacognitive regulation underpins these interpretive judgments: as teachers work with dashboards, they monitor their comprehension of visualisations, select and adjust interpretive strategies, and calibrate their confidence in what the data suggests before deciding whether action is warranted (Schraw & Dennison, 1994; Wise & Jung, 2019). Together, these digital assessment literacy and metacognitive processes help explain why teachers vary in their ability and willingness to integrate dashboard feedback into pedagogy.

3. Conceptual Framework and Instrumentation

3.1 General

We conceptualise teacher dashboard recipience as teachers' attitudes and behaviours toward proactively seeking dashboard information, interpreting it in context, and using it to guide pedagogical decisions. Figure 1 presents the preliminary framework. Reading from left to right, a dashboard interaction elicits the process of dashboard recipience. We conceive teacher dashboard recipience as comprising two interrelated groups of factors. The first group, general attitudes, includes confidence in seeking dashboard information, capacity to use feedback productively, management of affect, and assessment confidence. The second group, scenario-specific capacities, concerns how teachers interpret representative dashboard visualisations (e.g., distributions, time-series trends, item-level reports) and reason from patterns to pedagogical implications. Within this process, metacognitive knowledge and regulation support monitoring and strategy selection during interpretation and are closely intertwined with dashboard recipience. As indicated by the two-way arrows, metacognition can both influence and be influenced by dashboard recipience. This process, in turn, shapes subsequent pedagogical moves such as targeted action, wait-and-see, or reflective adjustment (Wise & Jung, 2019).

As the proposed framework foregrounds teacher dashboard recipience as the proximal mechanism through which dashboard information becomes instructional action, this points to an instrumentation strategy with two complementary components. First, a concise attitude scale should include teachers' confidence in seeking and using dashboard information, regulation of affect when signals are ambiguous, and assessment confidence. Second, a set of scenario-based items to elicit the capacities teachers deploy when interpreting representative dashboard visualisations and when translating interpretations to pedagogical moves. The present paper does not detail instrument development or validation procedures; rather, it specifies what should be captured to operationalize the construct.

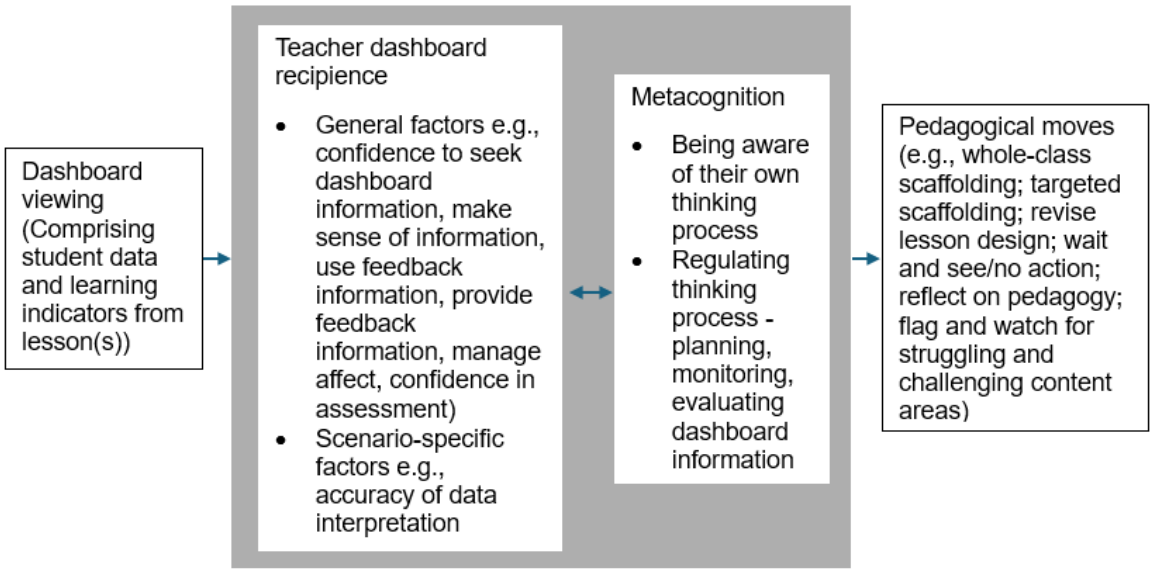

Figure 1. Initial conceptual framework of teacher dashboard recipience.

4. Implications and Conclusion

The framework clarifies what teachers need to know and be able to do to work meaningfully with learning dashboards. We suggest that teachers should be able to read common visualisations fluently and be able to judge data quality, representativeness, and limits so that student data patterns are interpreted proportionately. It is crucial that they can triangulate dashboard patterns with the knowledge of their students and tasks to justify responses aligned to student learning goals, needs, and constraints. Having a sense of monitoring and regulation will also be important so that they can adjust and orchestrate the learning situation.

The proposed instrumentation derived from this framework, which includes general and scenario-specific factors, may, once validated, help identify the strengths and gaps in teacher dashboard recipience. These factors could be captured through a self-report survey, with general attitude items followed by scenario-based items, administered before and after teachers' interaction with student dashboard information. In this way, gaps in teachers' knowledge and skills could be identified and used to inform future professional development.

Still, this framework is preliminary, and the future instrument has yet to be designed and validated. Future implementation plans include the design, testing, and validation of the instrument. The construct might need further finetuning to ensure that it generalizes well across contexts. Also, items and questions that reflect commonly used dashboards in practice are planned too. Further future work includes guides for professional development.

In sum, this paper synthesizes the conceptual foundations of teacher dashboard recipience, advances a preliminary framework, and delineates how that framework will be translated into an instrument for the instrumentation of dashboard recipience. It specifies the practice-critical understandings teachers need to work productively with dashboards and sets out future research and implementation plans. Taken together, these contributions lay the groundwork for realizing greater pedagogical value from analytics dashboards in everyday classrooms by foregrounding how teachers transform dashboard information into evidence-informed instructional action.

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