

Instructors' Perceptions and Use of Feedback Dashboard

Feng LIN^{a*} & Rebekah Wei Ying LIM^b

^a*Teaching & Learning Centre, Singapore University of Social Sciences, Singapore*

^b*College of Interdisciplinary & Experiential Learning,
Singapore University of Social Sciences, Singapore*

*linfeng@suss.edu.sg

Abstract: Enhancing teaching quality has always been one of the core objectives of higher education institutions as it has a profound influence on students' learning experiences. Feedback dashboard, utilizing data visualization and analytics, has emerged as a powerful tool to facilitate this process. It could provide instructors with insights into students' learning experiences, empowering them to make data-driven decisions regarding their pedagogical practices. Despite the increasing interests in developing feedback dashboards, little is known about how they can be effectively used by instructors. This paper presents an ongoing research project that aims to understand how instructors perceive and use feedback dashboards.

Keywords: Feedback dashboard, teacher sense-making, teacher learning, analytics

1. Introduction

Enhancing teaching quality has always been one of the core objectives of higher education institutions, as it has a profound influence on students' learning experiences. Feedback dashboards, utilizing data visualization and analytics, have emerged as a powerful tool to facilitate this process. It could provide instructors with insights into students' learning experiences, empowering them to make data-driven decisions regarding their pedagogical practices. Despite the growing interest in feedback dashboard development (e.g., Pyasi et al., 2018; Wook et al., 2019), to our knowledge, little is known about how feedback dashboards can be effectively used by instructors. Existing research indicates that student feedback doesn't always lead to improved teaching quality (Kember et al., 2002), as instructors may use and interpret feedback differently (van Leeuwen et al., 2014), which may influence how they respond to the information and subsequently make changes to their teaching practices. Therefore, the purpose of this research is to examine how instructors perceive and use feedback dashboards and how they may impact their teaching practices and students' learning experiences. Three research questions will be addressed: 1) How are instructors' intentions to use feedback dashboards related to their perceived usefulness, perceived ease of use, attitudes toward feedback dashboards, and attitudes toward student feedback? 2) How are instructors' perceptions of feedback dashboards associated with improvements in students' learning experiences? 3) How do instructors use the feedback dashboard to enhance their teaching practice?

This research will offer insights into the effective strategies associated with instructors' use of feedback dashboards, which can inform the design of professional development training and maximize the value of student feedback for improving teaching quality. It can also offer insights into instructors' data-driven decision-making, a critical skill for engaging in evidence-based teaching practices in higher education.

2. Methods

2.1 Data collection

This research project comprises two phases. In phase one (RQ1&2), a survey will be conducted with approximately 300 instructors who have used the feedback dashboard. Stratified sampling will be employed to recruit participants from various schools and departments, ensuring a diverse sample that represents the university population. Instructors with minimal feedback will be excluded to ensure meaningful analysis (little data to act on). Surveys will be administered after instructors' use of the feedback dashboard (at the end of a semester). The survey consists of Likert Scale (1-5) items adapted from TAM (Davis, 1989; Masrom, 2007; Venkatesh & Davis, 2000) to gauge instructors' *perceived usefulness*, *perceived ease of use*, *attitudes toward feedback dashboards*, and *intention to use*. These constructs have been validated in previous studies which showed good psychometric properties with reliabilities (Cronbach Alpha) exceeding 0.8 (e.g., Venkatesh & Davis, 2000). The survey also consists of items adapted from Flodén's (2016) survey for assessing attitudes toward student feedback. Background data (e.g., age, gender, teaching experience) about the respondents and their perception of the feedback dashboard (i.e., features, usage, and approach) will also be collected. In addition, we will retrieve students' feedback associated with the participating instructors before and after their use of the dashboard to examine the change in students' learning experiences (operationalized using the frequency of positive/negative sentiment and quantitative ratings).

In phase two (RQ3), contrasting case studies (Rummel & Hmelo-Silver, 2008) will be conducted. Four participants will be recruited from the first phase based on their willingness to participate, teaching scores, and survey results. The participants will include two instructors with teaching expertise and positive attitudes and two instructors with less teaching experience and more negative attitudes. Drawing on previous research on teacher sense-making (Wise & Jung, 2019) and teacher noticing (van Leeuwen et al., 2019), we will adopt a three-phase framework to examine how instructors use *feedback* dashboards: 1) awareness and detection, teachers are aware of what data is worth noticing; 2) interpretation and sensemaking, teachers interpret the data and engage in inquiry to make sense of the data; and 3) decisions and actions, teachers make data-informed decisions based on the interpretation and take pedagogical actions to implement the decisions (van Leeuwen et al., 2021). Individual think-aloud interviews will be conducted while the four instructors interact with the feedback dashboard (one interview for one instructor). Interview questions will be adapted from Wise and Jung's (2019) interview protocols. Examples of prompting questions include, 1) *what data are you looking at*, 2) *how do you make sense of the data, what questions are you asking yourself, how do you answer those questions*, 3) *what instructional decisions are you making, and what goals are you trying to achieve*. The interview data will be audio-recorded and transcribed. Additionally, classroom observations will be carried out to understand how the four instructors implement their pedagogical decisions. Three sessions from each instructor will be observed. The classroom sessions will be videotaped and transcribed. Follow-up interviews will be conducted to triangulate with the classroom observations.

2.2 Data analysis

To address the first research question, we will conduct correlation and hierarchical regression analysis to examine the impact of perceived usefulness, perceived ease of use, attitudes towards feedback dashboards, and attitudes toward student feedback on the intention to use feedback dashboards. To address the second research question, we will conduct correlation analyses to examine how instructors' perceptions of dashboards (i.e., features, usage, approach) are related to the improvement in students' learning experiences (change in sentiments and quantitative ratings). To address the third research question, we will use a constant comparative method (Gibson & Brown, 2009) to analyze the interview transcripts. The analysis includes three steps: 1) Identifying relevant ideas and generating labels by reading the transcripts line-by-line; 2) Developing themes by combining all labels and creating

meaningful themes; 3) Consolidating themes by reviewing them against the transcript and progressively revising them until they reach a stable status (Wise & Jung, 2019). Content analysis of classroom observation will also be conducted to understand instructors' pedagogical actions after their use of the feedback dashboard. Through analyzing the surveys, interviews, and classroom observations, we gain a holistic understanding of how instructors perceive and use feedback dashboards, as well as their impact on teaching practices and students' learning experiences.

3. Significance

To sum up, this research aims to understand how instructors perceive and use feedback dashboards and how they impact teaching practices and students' learning experiences. It will advance the research field on instructors' use of learning analytics in higher education. Given that there is increasing work on the use of text-mining techniques for categorizing students' qualitative feedback and developing feedback dashboards (e.g., Pyasi et al., 2018; Wook et al., 2019), the next advancement would be to examine how feedback dashboards can be used to improve instructors' reflection and practice. This study will enrich the theoretical model of teacher sensemaking (Wise & Jung, 2019) and teacher noticing framework (van Leeuwen et al., 2019) in the context of feedback dashboards and contribute to our understanding of the cognitive process involved in the use of feedback dashboards.

Findings from this study will also inform teaching practice in tertiary institutions. It is typical for institutions to collect end-of-course student feedback and some have mined the data to be presented as dashboards. This study will offer insights into effective strategies for utilizing feedback dashboards for reflective practice. These insights not only provide a productive approach to instructional decision-making, but also inform the design of professional development training for using feedback dashboard/analytic tools.

Acknowledgements

This research is supported by MOE Tertiary Education Research Fund (MOE2023-TRF-031).

References

- Davis, F. D. (1989). Perceived Usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly* 13(3), 319-340.
- Flodén, J. (2016). The impact of student feedback on teaching in higher education. *Assessment & Evaluation in Higher Education*, 42(7), 1054-1068.
- Gibson, W., & Brown, A. (2009). Working with qualitative data. Los Angeles, CA: Sage.
- Masrom, M. (2007). Technology Acceptance Model and E-learning. *12th International Conference on Education*, Brunei.
- Pyasi, S., Gottipati, S., & Shankararaman, V. (2018). SUFAT - An Analytics Tool for Gaining Insights from Student Feedback Comments. *2018 IEEE Frontiers in Education Conference (FIE)*, 1-9.
- Rummel, N., & Hmelo-Silver, C. (2008). Using contrasting cases to relate collaborative processes and outcomes in CSCL International conference for the learning sciences, Utrecht, The Netherlands, 346-353.
- van Leeuwen, A., Janssen, J., Erkens, G., & Brekelmans, M. (2014). Supporting teachers in guiding collaborating students: Effects of learning analytics in CSCL. *Computers & Education*, 79, 28-39.
- van Leeuwen, A., Rummel, N., & van Gog, T. (2019). What information should CSCL teacher dashboards provide to help teachers interpret CSCL situations? *International Journal of Computer-Supported Collaborative Learning*, 14(3), 261-289.
- Venkatesh, V., & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, 46(2), 186-204.
- Wise, A. F., & Jung, Y. (2019). Teaching with Analytics: Towards a Situated Model of Instructional Decision-Making. *Journal of Learning Analytics*, 6(2).
- Wook, M., Razali, N. A. M., Ramli, S., Wahab, N. A., Hasbullah, N. A., Zainudin, N. M., & Talib, M. L. (2019). Opinion mining technique for developing student feedback analysis system using lexicon-based approach (OMFeedback). *Education and Information Technologies*, 25(4), 2549-2560.