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How do professional learners engage with learning analytics dashboards?

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ABSTRACT: Learning Analytics Dashboards (LAD) research is mainly carried out in schools and higher education, whilst professional learning has often been overlooked. To address this gap, this fine-grained longitudinal study of 12 professionals over a period of five months has taken exploratory steps into the context of professional accountancy learning. It investigates perceptions and use of a static assessment LAD which incorporates data visualization and personalized written feedback, aiming to purposefully affect learning. Overall, findings demonstrate learners took a positive view of and subsequently actively used the LAD, choosing elements directly related to their needs to inform next revision steps. Learning insights which both provide an understanding of past performance and also specifically recommend how the professional learners might improve performance had the highest frequency of use. The implication for the LAD design community is LAD should include context and learner specific elements, providing personalized next step guidance.

Keywords: Learning Analytics Dashboard, professional learning, assessment, feedback, personalization, accountancy.

1   INTRODUCTION

To date, most Learning Analytics Dashboards (LAD) research and implementation studies have been carried out in schools and higher education institutions (Schwendimann et al., 2017; Sclater et al., 2016). Professional learning – ongoing learning in a professional workplace – has been largely overlooked by the Learning Analytics (LA) research community (Buckingham Shum et al., 2022). This research begins to address the gap by investigating learners' perceptions and use of a LAD in a professional accountancy learning environment. This knowledge can inform future LAD design and implementation across professional learning contexts.

2   CONTEXT

The study context was a commercial tuition provider preparing professional accountants for the final admitting exam of the Institute of Chartered Accountants in England and Wales (ICAEW). This longitudinal research followed 12 UK based professional learners from the beginning of the course to the final exam in an authentic learning context, answering calls for practice-based evidence for effects of a LA tool on learning (Wise et al., 2021). Participants had already taken up to 14 high-stakes ICAEW examinations, so were experienced post-graduate level learners. The assessment LAD visualizes

complex competency-based exam marking data to support learners in improving exam performance. LAD elements include standard bar/line charts showing grade by Requirement and by Skill, along with (as per Figure 1) a unique 'map' of the marking key (1) with personalized written feedback (2) and how to improve (3).
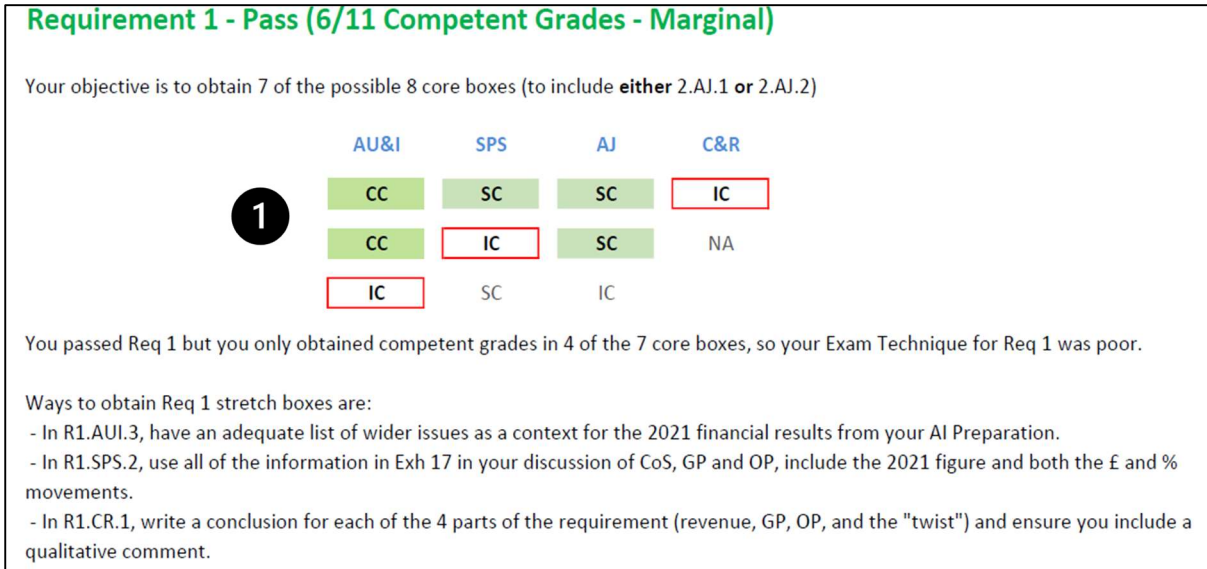

Figure 1: 'map' of the marking key (1), including personalized feedback (2) and how to improve (3)

3   METHODOLOGY

The research took a mixed methods approach, using classroom observations, questionnaires (with 5-point Likert scales and free text options) and post-final exam semi-structured interviews (n=3). Full data was collected for nine learners. Figure 2 shows the data collection timetable. The questionnaires were analyzed and responses checked for normality and skewness. While Factor Analyses were conducted, given the small sample size we opted not to report these. Inductive and deductive processes were used to thematically code each interview transcript (n=3) for references to learning activities as well as context-specific behaviors and pressures.
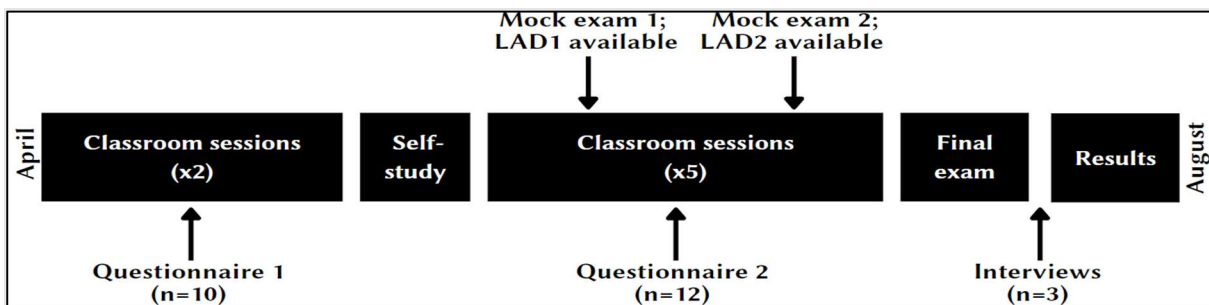

Figure 2: Data collection timetable

4   RESULTS AND DISCUSSION

Participants at the beginning were relatively positive about their intended use of LAD. Using a cut-off at 3.4, 70% of participants indicated to want to use the LAD. At the second measurement, on average, half of the offered LAD elements were used by participants, while five out of 12 respondents used less than a third of the LAD elements. The most used elements were the marking key 'map' and associated

text (n=10, 83%), followed by the personalized feedback / how to improve text (n=9, 75%). This indicates professional learners are looking for both specific insights into and a personalized explanation of the learning data available, supporting previous findings in higher education studies (Rets et al., 2021, Sedrakyan et al., 2020). The post-exam interviewees (n=3) all had an overall positive view of the LAD and took a similar approach in using it to "trigger" (participant 9) their home study revision activities. However, the LAD could not solve the learning challenges of every participant. Participant 13, a low-reported user (only one element, the 'map'), gave insight into their concerns: "I think my motivation and energy levels limit my amount of revision more than the results on the dashboard." The data from this study, therefore, supports previous findings (Rets et al., 2021) that 'good' learners find the LAD useful, but those who are struggling are less likely to use it.

5   CONCLUSION

The LAD studied presented individual exam marking analysis, focused on each learner's performance compared to assessment standards. It does not aim to make predictions of future performance based on the past but offers an automated, personalized explanation of a mock exam result using published standards for accountability. This study has shown the context specific LAD to be an effective tool for professional learning improvement for those learners that engage with it, with learners showing a preference for context specific data visualizations and associated 'what next?' personalized feedback. Although the LAD could not solve all learning difficulties, in this small-scale study it was widely positively received. Further research across multiple classes and cohorts of professional learners is both warranted and planned for 2023.

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