Teacher professional development interventions to promote data use in education

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Impact Statement

Although proficiency in English as a second/foreign language can bring personal, institutional, national or regional advantages, the proficiency level is still low in many countries, including Indonesia. This calls for improving the quality of ELT in these countries. For continuous improvement, 'data use' is often suggested in the literature as an evidence-based strategy. Using different types of data to make instructional decisions can help address students' needs in an evidence-based way so that the quality of instruction and student learning can be improved. Given the lack of teacher knowledge and skills in data use and the potential of professional development to equip teachers to use data effectively, this dissertation contributes to the understanding of the role of professional development interventions and teacher characteristics in promoting data use. The motivation behind this dissertation is to provide evidence on the effectiveness of PDIs in promoting data use, on the characteristics of online teacher professional development (OTPD) for data use that promote or hinder teachers' participation, and on the influence of teachers' characteristics on the level of data use practises in the classroom. To this end, findings from the international literature and the perspectives of university English teachers in Indonesia are analysed to provide more comprehensive and nuanced insights. The implications of this dissertation are described below.

Contribution to the research community

Using multiple methods (two systematic reviews, a meta-analysis, a discrete choice experiment, and a decision tree analysis) for more robust and nuanced evidence, this dissertation demonstrates the important role of PDIs for data use in increasing student learning. It also provides evidence on which intervention characteristics influence teachers' participation in OTPD and teachers' data use practises. In particular, the dissertation contributes to the research community by presenting evidence on the positive impact of data use PDIs and on the implementation of such PDIs based on various findings from the international literature. In doing so, it aims to address some concerns about the effectiveness of data use PDIs in improving teachers' skills, classroom conditions and thus student learning outcomes. In addition, this dissertation provides evidence on the characteristics of OTPDs that encourage/discourage them to participate in data use OTPDs and the determinants of teachers' individual characteristics that promote frequent data use practises. These findings are from a developing country–Indonesia–in the context of English language teaching (ELT), where there is no research on data use in the current literature. Thus, the findings can address the current gaps in research on data use, as much of the research has been conducted in Europe, the United States and New Zealand (Mandinach & Schildkamp, 2021), while also highlighting areas where further research is needed to enrich the current literature.

To increase the impact of our studies and make them available to the scientific community, three of the four studies–Chapters 2, 3 and 4–have recently been published in reputable peer-reviewed journals, while the remaining study is still under review. Two of the three studies (Chapters 2 and 4) have been published as open access articles, allowing for wider exposure and dissemination of the studies. In addition to publication in journals, our studies have been presented to the academic community through conference presentations such as the Learning and Innovation Conference (Maastricht, The Netherlands) and the Monthly Hybrid Conference Series (Pekanbaru, Indonesia). Finally, at the suggestion of a reviewer of our study (Chapter 3), the article was also requested to share with the American Educational Research Association (AERA) Data-Driven Decision Making SIG (Special Interest Group).

Contribution to policymakers

In general, the findings of this dissertation also contribute to policy making for data use PDIs either in face-to-face or online contexts. Chapters 2 and 3 show the effectiveness of data use PDIs in improving teacher qualities, instructional conditions and student learning outcomes, and the necessary components that influence their (in)effectiveness. Based on these findings, we further argue that the evidence can be used to guide the planning, development, implementation and evaluation of data use PDIs to increase programme effectiveness. Policymakers are thus encouraged to develop evidence-based interventions that focus primarily on effective data use through teacher professional development to ultimately improve student learning. In particular, the findings will help policymakers or data use PDI providers to formulate and implement interventions to promote data use through PDIs that are specifically targeted at efforts to improve classroom conditions and promote student learning outcomes. Similarly, policymakers should keep in mind that the ultimate goal of any data use PDI is to improve student learning. To achieve this, the principles of PDIs should be clearly articulated in a policy guideline that includes information about a systematic process of data use and the essential features of PDIs (e.g., collaborative learning through data teams or professional learning communities/PLCs, skilled facilitators both in terms of pedagogical skills and data use, normative and procedural guidelines, etc.).

The findings presented in Chapters 4 and 5 may also be particularly useful for decision-makers in the language centres at state/public Islamic higher education institutions in Indonesia. Since data use is new to university English teachers, their preferences should be taken into account when providing PDIs for data use so that teachers are willing to participate in OTPD. Chapter 4 shows the characteristics of the intervention. Teachers prefer synchronous interaction but are unlikely to participate in an OTPD programme that is costly, does not offer certificates of participation or completion, is conducted

over a long period of time, and uses digital reading materials. Chapter 5 presents the determinants of teacher individual characteristics, of which pedagogical ability plays the most important factor in data use practises. The findings from these two studies make it clear that both intervention and teacher characteristics should be considered when implementing PDIs for data use. Therefore, policymakers at the language centres need to develop interventions that match teachers' preferences (e.g. free, synchronous interaction, short duration, availability of certificates, etc.). They should also tailor the interventions to teachers' individual characteristics so that teachers can use data more frequently to improve their instruction and thus enhance student learning. Thus, the inclusion of both intervention and teacher characteristics is crucial for contextually relevant PDIs for data use.