Bridging the gap between theory and practice

Mario Schmiedebach

Claas Wegner

The aim of educational research is to systematically investigate and study various aspects of education to enhance understanding, inform decision-making, and improve educational practices. Educational research is conducted to address a wide range of questions and issues related to teaching, learning, curriculum development, educational policies, and institutional effectiveness. The specific goals of educational research include questions like "What motivates students to study a specific subject?" or "What methods foster learning?". All of this is also stated as the focus and scope of *Global Education Review*; the journal wants to report "approaches to and implications of educational practice" and welcomes "theoretical, empirical, and policy related articles [...] that address critical issues in education throughout the world". Obviously, *Global Education Review* is not the only journal that presents educational research, and mostly all journals and researchers want to link research to educational practise; however, various research has shown that there is a transfer problem of educational research in educational practice (Gräsel, 2010; Kuhn, 2014; Steffens, Heinrich & Dobbelstein, 2019). This transfer problem clearly shows that (often) educational research does not affect educational practice as much as it should. But why is that and how can we bridge the gap between theory,

derived from educational research, and practice? The special issue shows how different researchers from different disciplines build small bridges to influence both theory and practice at the same time. One of the underlying research principles for such a goal is *Design-Based Research (DBR)*.

What is Design-Based Research (DBR)?

Design-Based Research (DBR) is a robust and innovative approach to educational research that aims to bridge the gap between theory and practice. It offers a systematic framework for collaboratively designing, implementing, and refining educational interventions in real-world settings. The essence of DBR lies in its commitment to solving practical problems while simultaneously contributing to the development of educational theory (Schmiedebach & Wegner, 2021). This methodology is particularly relevant in the ever-evolving landscape of education, where the need for evidence-based practices is paramount. To obtain this interplay between theory and practice, DBR emphasizes the importance of collaboration between researchers and practitioners. DBR is fundamentally a collaborative enterprise that seeks to integrate

the efforts of researchers and practitioners in joint activities aimed at developing practice and contributing to the knowledge base of a discipline (Design-Based Research Collective, 2003). This collaborative effort ensures that the research is not detached from the reality of educational settings but is deeply embedded in the practical experiences of educators and learners. Therefore, educational research should be conducted in "real" educational settings and developed by both researchers and practitioners to ensure suitability for the actual practical field.

Since research and practice are highly linked in DBR, the method is inherently context-sensitive. This means that the researchers acknowledge the unique characteristics of each learning environment and its specific limitations, restrictions, necessities, etc. On the other hand, practitioners acknowledge the need to investigate educational settings in order to develop theories and conduct research. This dual focus on both theory and practice of DBR creates a unique method to foster relevance and sustainability of innovations in specific educational contexts (Barab & Squire, 2004).

Central to DBR is the iterative design process, which involves cycles of design, implementation, and evaluation. Each cycle affects the subsequent one, allowing for continuous improvement of educational interventions. This allows researchers to refine their theories and practitioners to modify their practices in response to the evolving findings from each iteration (Anderson & Shattuck, 2012), making DBR a flexible method with continuous improvements for both theory and practice.

What are the goals of Design-Based Research (DBR)?

At its core, DBR is problem-oriented. It begins with the identification of a specific educational problem or challenge (Schmiedebach & Wegner, 2021). Researchers and practitioners work together to design interventions aimed at addressing these problems. Hence, the goal of a DBR project is to create solutions to complex, practical problems in the field of education. This problem-solving approach ensures that the research directly contributes to the improvement of educational practices. At the same time, DBR focuses on the development of educational theory. While solving practical problems, DBR research develops or refines educational theories about teaching and learning. By testing and evaluating different interventions in iterative cycles, the researchers see what theories about learning and teaching "work" in practice (Cobb et al., 2003). While this might sound like a "trial and error" mindset, DBR research puts a strong emphasis on evidence-based practice. By testing and evaluating different prototypes, researchers collect data to support their theories and, hence, create evidence-based and practice-proved recommendations for learning and teaching (Design-Based Research Collective, 2003). Therefore, DBR contributes both to the growth of theoretical understanding in the field of education and to the improvement of education itself.

DBR promotes collaborative learning not only among researchers and practitioners but also among educators themselves. DBR offers a structure for professional development that engages practitioners in collaborative processes of inquiry about teaching and learning (Design-Based Research Collective, 2003). This collaborative learning aspect is crucial for fostering a culture of continuous improvement

and knowledge sharing within educational communities. Furthermore, scepticism regarding educational research can be reduced if practitioners take part in DBR research and notice benefits from such research for their teaching. Because DBR uses an iterative approach to develop, test, and evaluate educational interventions, it might take some time to see the positive effects of DBR. However, at the same time, DBR focuses on the long-term impact of its projects since both researchers and practitioners are committed to the project's success (Anderson & Shattuck, 2012).

What are the challenges and critiques regarding Design-Based Research (DBR)?

While DBR has gained prominence in educational research, it is not without its critiques and challenges. Some scholars argue that the iterative nature of DBR can be time-consuming, and the generalizability of findings may be limited to specific contexts. Others emphasize the need for clearer guidelines on how to balance the dual goals of theory development and practical problem-solving within DBR projects (Easterday, Lewis & Gerber, 2014). Even though the challenges and critiques regarding DBR might be valid, we argue that the positive aspects of DBR research outweigh possible challenges or critical aspects. This special issue will show different ways of conducting DBR research in different fields of educational context, with different theoretical approaches regarding both the design of interventions and the evaluation, and how DBR helps to improve the practical field.

Description of the special issue

With the help of a special thematic issue, "Bridging the gap between theory and practice", the current objective is to obtain a global perspective of research projects that connect both theory and practice to show how those two inseparable fields of education can be linked to improving both research and practice.

In the study "Quality of Research Based on Design-Based Research Approach - Using an Example from Early Childhood Talent Research", Schäfers and Wegner focus on early childhood education in the context of detecting giftedness by developing and investigating a test instrument in various DBR cycles. The authors use their experience to develop quality criteria for both qualitative and quantitative research in DBR. This is especially interesting since some opponents of DBR research criticize that such research mainly focuses on the practical field and not on research quality.

In their study "Preliminary concept description, based on system thinking, of semantic gaps in the theory and the practice of physical and sports education in the Italian context", Invernizzi et al. use the DBR approach to draw attention to physical education's semantics with the aim of highlighting possible language gaps in practice and research applied to physical and sports education. The authors use systematic thinking as a research method to verify the coherence of terminology used by Italian academics and practical communities in motor and sports science to understand potential differences between theory and practice.

In their study "Enhancing subject-specific interests through interdisciplinary teaching units", Kramer and Wegner investigate an interdisciplinary approach to teaching

biology and PE to increase student interest in those subjects. For this, they developed a prototype for a one-day intervention combining biology and physical education, evaluated the intervention, and used the results to improve and redesign their intervention. The first cycle of the DBR project was published in a previous GER issue and the authors show how research results are used to improve interventions according to DBR. Furthermore, they present results regarding interdisciplinary teaching.

All articles in the special issue tackle the aforementioned questions about DBR and show how different research methods can be used within the scope of DBR to investigate relevant questions for both theory and practice. The overlapping use of DBR as a core element in different fields of educational research – ranging from early childhood education to higher education; focusing on physical education, the combination of two subjects and gifted education – reflects on how DBR can be used as a key method to unify different fields of research. Such a vast thematic range in one special issue could only be realized with a focus on the one thing that should be equally important for all educational researchers, no matter the specific area or subject of interest: what are the actual problems in the educational field, how can we develop solutions for those problems, and how can we expand our theory by doing research on and with our solutions for the relevant problems?

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