Using Design-Based Research in Educational Technology: when and how
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Introduction
The field of educational technology has enjoyed a great deal of attention over the years, with researchers and practitioners from across the globe investigating ways to apply various research methods, with the aim to offer insights in facilitating and improving the efficiency of language learning and teaching. Nevertheless, there has been much debate and a call for accountability through evidence-based research studies in the field, as authors confirm that there are weaknesses in research designs (Berliner, 2002). A number of research methods have been applied, quantitative, qualitative, mixed methods—nonetheless, the question of whether we are investigating our hypotheses in depth remains. According to Reeves and McKenzie (2013), a simple distinction that has often been made between basic research is to discover new knowledge, and applied research is focused on solving real-world practical problems. Although, this is not enough to define research in educational technology, there is truth to it as we come across projects that focus more on the technology de jour, rather than what we can accomplish when integrating it in the classroom.

In this article, I will discuss the effects of applying a systematic but flexible research methodology known as Design-Based Research (DBR) and when it is recommended. DBR aims to improve educational practices via design, iterative analysis, and implementation based on a collaboration among teachers and researchers in real-world settings, evidently leading to contextually-sensitive design principles (Wang & Hannafin, 2005).

Applying DBR—when and how:
In this section, it needs to be made clear that the intention of the article is not to undervalue other research approaches, neither is DBR meant to replace other methodologies. It often incorporates other approaches for theory generation and/or innovation to resolve educational issues. DBR identifies real-world problems accompanied by subsequent actions, which resembles Action Research (AR). Language practitioners, as in AR are involved in the process. However, DBR differs from AR in the goals and roles of researchers and teachers. DBR generates theory to solve a problem and researchers usually take the initiative in the research process as both researchers and designers (Wang & Hannafin, 2005). In AR, however, it is usually the practitioners who take the initiative to conduct the research after they have identified an issue in the classroom.

According to Kelly (2009), DBR is recommended when the following characteristics apply:

1. When the content knowledge to be learned is new, or gradually being discovered by experts
2. When how to teach the content is not clear or has been proven to be inefficient
3. When Instructional material is not available or poor
4. When the teacher needs to develop their knowledge or skills
5. When the researchers’ knowledge of the content and instructional strategies or material is poor
When addressing such issues in DBR, the main objective is to enable the development of robust intervention research. In order to successfully carry out a DBR study, general considerations for its implementation need to be taken into account:

1. A meaningful issue needs to be tackled in the research: DBR is not a method one could use just for the sake of attempting a new research study. Posing the question “Why are my students not responding to VR?” for example, is not enough. The issue would need to be examined in depth, with emphasis on addressing a meaningful problem faced by teachers and learners. For example, middle school girls show less desire to carry out VR tasks than boys their age; high school girls find it childish and this has lowered their motivation to participate in the language lesson; college students are unengaged and fail to connect it to their advancement of academic skills resulting in poor academic English; the problems could be endless, enduring, and complex. DBR requires longitudinal effort by all those involved, therefore, it should not be used on trivial issues.

2. Collaborate with language teachers: there is no stronger study than when researchers and teachers join forces. Sharing their perspective and know-how in their fields ad to the validity and accuracy of findings. These can later be used for accurate and meaningful change and improvement.

3. Integrating theory: DBR embraces theory, as the researcher does not rely on or base study merely on intuition. Theory is used to design cycles of inquiry and enables theory to be questioned and/or tested. Like in other research methodologies, DBR needs critical literature reviews and needs analysis to identify issues or gaps.

4. Design the intervention and evaluate the impact: According to Joseph (2004), “design: researchers generally target questions central to the design of the intervention itself (p. 236). Via interventions, DBR researchers are able to embody theoretical hypotheses about learning and teaching and then put them to the test. Evaluation the chosen design is formative, where the findings may require that researchers refine the initial design theories (Collins et al., 2004).

5. Disseminating findings: this final stage is of vital importance. When a meaningful and game-changing study holds important information, it must be shared with professionals in the field, policy makers and stakeholders. This is how improvement can occur and this is true of any research study.

Concluding Notes
Educational technology in the field of language learning is evolving in rapid speed. New technologies make an appearance by the minute and teachers are invited to integrate them in their lessons. It is important to evaluate and study their effect before making changes. Therefore, a robust research method, such as the one discussed in this article, can help teachers and researchers innovate and better any educational context, by collaborating and reaching conclusions together.

References:


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