

Impact Sheet

Ahl, L. M., Helenius, O. & Koljonen, T. (2022). Gauging fidelity to an implemented teaching model through the lens of the documental approach to didactics. *Implementation and Replication Studies in Mathematics Education*, 2(1), 45–75.
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1 Problem Addressed

In a context of implementing a strict six-phase Swedish teaching model, the so-called TRR (Thinking, Reasoning, and Reckoning), the authors set out to find a theory base for researching teachers' adaptation of teaching resources. Their choice falls on the Documentational Approach to Didactics (DAD) (Trouche et al., 2020). The more specific question asked by the authors is how DAD can help gauge the fidelity and adaptation of the determinants of a highly prescriptive curricular resource such as TRR, where “determinants” refer to core components of the TRR. This said, the authors do acknowledge that “fidelity is an elusive concept to capture in analysis”.

2 What is Implemented and Achieved?

The TRR model has been implemented with more than 1,000 primary school mathematics teachers in 14 Swedish municipalities. The study of the present paper is, however, an in-depth analysis of two teachers' implementation of the TRR model in their respective classrooms. In the analysis of the two teachers making up the case of the study, a distinction is made between “classroom organization determinants” and “content organization determinants”. As an embedded component of DAD, the authors utilize Vergnaud's (1998) notion of scheme in terms of teachers' “schemes of utilization”. It is found that both teachers made adaptations in their utilization schemes, and created new “documents” in relation to working with the new resource of TRR. Yet, while these documents seemed aligned — processing high fidelity — with the content organization determinants of TRR, the same was not the case for the classroom organization determinants. Hence, the use of DAD appears to offer a

promising theoretical basis for researching teachers' implementation and adaptation of curricular resources, while the construct of teachers' utilization schemes provide insight into aspects of fidelity as well as teachers' "change". In this respect, the study also contributes to the discussion of the need for a "theory of change" — or more comprehensively, a so-called program-theory — in implementation research.

3 Implications and Significance

An interesting implication of the study, with reference to Vergnaud (1998), is related to the fact that "if one accepts that schemes organize behavior, one can create hypotheses about the teachers' actual schemes by analyzing their observable behaviors." Teachers' actions may thus "be explained in terms of adaptations of their utilization schemes applicable in the situation in which they operate." The authors argue the embedded concept of scheme, and in particular utilization schemes, in DAD may offer an explanation for teachers' behaviors as an analytical tool which may possess a higher analytical precision than e.g., the constructs of teachers' beliefs, views, or cultural norms (or values). Arguing "research has shown that these [beliefs, views, etc.] are all elusive concepts that are difficult to change with professional development" the authors suggest considering schemes instead when it comes to fidelity.

References

- Trouche, L., Gueudet, G. & Pepin, B. (2020). *The documental approach to didactics*. ArXiv. <https://arxiv.org/pdf/2003.01392.pdf>.
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