# Designing a teacher guide to support teachers’ planning, teaching and learning

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This presentation reports on an ongoing project aiming to create more knowledge on how findings from research could be transformed into content of a teacher guide. If designed carefully, such a guide could potentially support teachers in “research-basing” their practice of planning and teaching, and also provide opportunities for teachers to learn by using the guide. Using a design research approach, a teacher guide will be tried out by teachers through an intervention in spring 2024. The initial design of the teacher guide will be guided by theoretically based design principles and build on findings from a systematic literature review on the teaching and learning of quadratic equations. How such a teacher guide potentially can support teachers’ planning, teaching and learning is of interest for those designing teacher resources.

## Background

Teacher guides could play a part in supporting teacher practice and at the same time support teacher learning (Ball & Cohen, 1996). However, research from a Swedish upper-secondary school context suggests, that teacher guides as a form of external teacher support is seldom used to guide instructional design (Gustafsson et al., 2023). Moreover, teachers express they neither have the time nor the habit of finding research or using research-based knowledge in their planning (Nordgren et al., 2019). A teacher guide, if designed carefully, could help adding a missing support for teachers.

A teacher guide that includes features aiming to create opportunities for teachers to learn, can be called educative (Davis & Krajcik, 2005). Such features could be, but are not limited to, support in anticipating students’ difficulties and (mis)conceptions in relation to concepts, and supporting instructional strategies with clear rationale on what the intended outcomes should be. In terms of teachers’ learning within mathematics such features could correspond to the domains of Knowledge of Content and Students and Knowledge of Content and Teaching from the Mathematical Knowledge for Teaching framework (Ball et al., 2008).

Teacher guides that include research-based support formulated through such features could therefore be beneficial to teachers in several aspects: in planning, teaching, and possibly in giving opportunities for teachers’ learning. It is the aim of this study to uncover how different features relate to different types of support. Questions of interest are therefore:

1. How do different features of a teacher guide support teachers’ planning and teaching practice?
2. How do the different features of a teacher guide, support teachers’ learning?

## Method

Following design research (Bakker, 2018), a teacher guide for quadratic equations will be designed. As an example, this includes information on common student difficulties found from the review (for example students not being able to separate a quadratic equation from an expression or from other types of equations) with suggestions of instructional activities to handle such difficulties (for example by an activity directed at exploring these differences) in line with ideas from the notion of features being educative.

An intervention will then be conducted consisting of providing teachers with the resource prior to planning for teaching the content of quadratic equations, and evaluating how this resource affected the planning and teaching through post-planning questionnaires and post-teaching teacher interviews.

## Possible results and implications

The results of this study could generate local theories on how different features of such a teacher guide support teachers’ planning, teaching, and learning. The analysis could be guided by using educative curriculum materials (Davis & Krajcik, 2005) and MKT (Ball et al., 2008) as frameworks. This first phase aims to discover empirical suggestions from the participating teachers that can be used to adjust the teacher guide before the second cycle.

These local theories could bear implications for designers of curriculum resources for upper-secondary school teachers.

**References**

Bakker, A. (2018). *Design research in education: A practical guide for early career researchers*. Routledge.

Ball, D. L., & Cohen, D. K. (1996). Reform by the book: What is—or might be—the role of curriculum materials in teacher learning and instructional reform? *Educational researcher*, *25*(9), 6–8, 14.

Ball, D., Thames, M. H., & Phelps, G. (2008). Content knowledge for teaching: what makes it special? *Journal of Teacher Education*, *59*(5), 389–407.

Davis, E. A., & Krajcik, J. S. (2005). Designing educative curriculum materials to promote teacher learning. *Educational researcher*, *34*(3), 3–14.

Gustafsson, M., van Bommel, J., Liljekvist, Y. (2023). Resources for planning and teaching mathematics: A Swedish upper-secondary school case study. *Journal of Curriculum Studies*.

Nordgren, K., Kristiansson, M., Liljekvist, Y., & Bergh, D. (2019). *Lärares planering och efterarbete av lektioner: Infrastrukturer för kollegialt samarbete och forskningssamverkan.* Karlstad University Press.