

On the bumpy road to decisions: Reconciling different agendas and perspectives in cross-community collaborative task design

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Rationale

The importance of collaboration in task design is widely recognized in the mathematics education committee (Margolinas, 2013). In comparison to a single designer, design teams have the advantage of a multi-faceted expertise in issues of mathematics education, providing valuable resources to draw on, and increasing the likelihood that the tasks will be better suited for a diverse cohort of students. It has been suggested (Pinto & Cooper, 2019) that the resources at the disposal of design teams can be further expanded and diversified by including representatives from different stakeholders in mathematics education (e.g., teachers, teacher-educators, mathematics education researchers).

However, cross-community collaborative task design can also bring about challenges, such as conflicting perspectives and professional obligations (Herbst & Chazan, 2020), which may lead to tension among team members and hinder collaboration (Pinto & Cooper, 2017, 2019). There is limited research on the processes that underly cross-community collaborative task design that can explain how diverse design teams can function as more than their “sum of parts”.

Research aims and methods

This study is part of a larger investigation of the processes of cross-community collaborative task design within a diverse design team that included four mathematics teachers, three mathematics teacher educators, and two mathematics education researchers. The team met every three weeks, for four academic hours, throughout one year. All team meetings were videorecorded, and key episodes were transcribed. Our investigation highlights two intertwining collaborative task design processes: *expansion* and *convergence*. The expansion process, which we discuss in Eraky et al. (submitted), is characterized by emergence of multiple options and considerations in relation to a design decision, and with them tensions, which may be seen as reflecting different professional obligations of different stakeholders (Herbst & Chazan, 2020). We found that expansion processes in cross-community collaborative task design may be highly nuanced and complex and provide valuable insights but may also hinder formulation of joint decisions. This poster focuses on the second process we identified – convergence – where tensions are made explicit and addressed as a crucial step towards reaching an agreement on a design. Our investigation is guided by the question: What characterizes convergence processes in cross-community collaborative task design?

We investigate this question in the context of a particularly ‘bumpy’ road in the work of the design team, which concerned a critical design decision. This decision-making process was selected because it was particularly rich in conflicting mathematical and pedagogical considerations that were not easily resolved. The task in question was a geometry task for upper elementary students, which guided students in an inquiry into how quadrilaterals can be classified based on the properties of their

diagonals. Data for this study comprised of three discussions that took place in three different design meetings, which were fully transcribed. To investigate the how discussions converged to concrete design decisions, we conducted a content analysis and coded the transcripts using three codes: dilemmas, suggestions, and decisions., and created visual representations using utterances maps.

Results

The poster will display three utterance maps that visually depict how the task design team gradually converged to decisions. The maps, marked as (I), (II) and (III), pertain to the first, second and third meetings of the design team, respectively. Map (I) shows that many dilemmas were raised (for example, whether or not the task should be limited to same-length diagonals; whether or not it should include concave quadrilaterals). These dilemmas were discussed in depth, yet very few actual design suggestions were made, and the discussion did not yield any decisions. Map (II) shows that while more dilemmas were raised, a considerable number of suggestions was brought up by various participants (for example, that students should note the names of quadrilaterals they identify (e.g., rectangle, trapezoid), and leave blank those that they do not identify, thus legitimizing getting also “nameless” quadrilaterals). In addition, two decisions were reached. Map (III) shows that the discussion branched out into several directions that included more dilemmas and a higher number of suggestions relatively to the previous meetings, also resulting in two decisions, for example, The group decided that the introduction would include examples and non-examples of diagonals. Another decision was to simplify the task and adapt a version of the research task for struggling students. The maps highlight that all the participating stakeholders contributed to the accumulation of both dilemmas and suggestions. We note that these three meetings, although displaying a gradual process of convergence, did not conclude with a final design for the task as hand. This complex process is still ongoing, demonstrating the complexity of reaching decisions in a cross-community task design group. We are currently following the continuation of the design process, in hope that further analysis will shed more light on whether and how the final product reflects the ‘bumpy road’ that preceded it.

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