

HISTORY OF MATHEMATICS IN TEACHERS' EDUCATION

Motivation for and activities of Discussion Group 2

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Discussion Group 2 (DG 2), in a sequence of two one-hour sessions, seeks to revisit the discussion about the role of history of mathematics in teachers' education – both for pre-service teachers and currently practicing teachers. There have been several efforts to address the role of history of mathematics in this way (e.g., Beutelspacher et al., 2011; Clark, 2014; Jankvist, 2009; Siu, 1997), and which have appeared in various forms, including articles, monographs, book chapters, conference presentations, and, during HPM 2012 in Daejeon, South Korea, a panel discussion. The panel “Why Do We Require a ‘History of Mathematics’ Course for Mathematics Teacher Candidates?” obviously focused on a particular use of history (in the form of a history course of some sort) with pre-service teachers. The activities of Discussion Group 2 will build on some of the impressions we gleaned from the small group discussions that occurred during the audience participation of the “Why Do We Require...” panel in 2012.

Participants of the “Why Do We Require...” panel were asked to discuss in small groups one or more of four given prompts, and we provide the prompts and a summary of responses from HPM 2012 for each.

Prompt 1: Identify one or two valuable aspect(s) of a “History of Mathematics” course (from either the perspective of having taken or taught such a course before).

- History of Mathematics (HM) helps students to gain true understanding of how mathematics developed.
- Mathematics is not just the results but also the process of discovery that led to the results. Mathematics was developed by the need of society. If students understand mathematics on a basis of developmental stages, they may think that it is valuable to teach.

Prompt 2: Identify one or two obstacles that may arise in implementing a “History of Mathematics” course. Describe ways in which the obstacles can be addressed.

- From an administrative perspective: We should persuade other faculty members to implement an HM course. That is, there are often too few persons able or willing to teach HM.
- There are few courses for HM and pedagogy; rather, pure mathematics is more likely to occupy the curriculum in teacher education programs.

Prompt 3: Describe the benefits to teacher candidates that requiring a “History of Mathematics” course may provide (again, based on actual experience or what you believe).

- If teacher candidates know HM, they may have access to create lesson plans for helping students with guiding them in a way of gradual mathematizing.

Prompt 4: With regard to the potential content and pedagogy of such a course, what are examples of tasks that we could require?

- If we let students create and perform plays or movies where they consider themselves a mathematician, it will provide them a positive experience in learning mathematics.

The aim of DG 2 is to provide a venue for deeper discussion on prompts 1 through 4, and to do so with respect to teachers’ education more broadly. In particular, we hope for more robust examples of content and pedagogy (prompt 4) for use in mathematics teacher education to emerge from the DG activities. Thus, we plan to structure DG 2’s activities in the following manner. First, we will summarize examples from the literature that propose benefits for teachers and their students when history of mathematics is utilized to teach (and, consequently, learn) mathematics. The remainder of the first hour of the discussion group (DG) will be spent on participants sharing experiences from their own contexts. The DG facilitators will capture the results of the discussion, noting concrete examples from university courses, professional development programs, and projects, and when possible, the observed and/or documented benefits derived from the use of history of mathematics resulting from these examples.

During the second hour of the DG, participants will focus on sharing and discussing specific tasks or activities, which may serve as examples for contexts that do not currently possess a strong history of mathematics dimension within mathematics teacher education programs, or which may provide new examples for those who do. A key product of the DG is to produce a document that contains a description of examples, notation of potential uses, and contact information for persons who either devised or implemented the sample task or activity. The compilation of the DG efforts will be disseminated via the HPM Newsletter or website at the conclusion of the HPM 2016 conference.

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