Proof in Math for Elementary School Teachers Courses

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Proof for Understanding

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- One question: What advice would you give to other students learning mathematical proofs?
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Key takeaway: understanding!!
Important for teachers to understand ”why” - and the idea of the field of mathematics

Many researchers and curricula recommend proof as an integral part of the student experience at all grade levels (e.g. Ball and Bass 2003; Stylianides 2007)

Teachers struggle with the notion of justification outside of empirical evidence/examples (Hauk et al, 2008)

If teachers don’t study proof in these courses, there is a good chance they may never have an opportunity to
Covers all topics in the MB K-8 curriculum at a deeper level

Include proofs of three types:
- Elementary divisibility results (students must do these themselves)
- "Important" proofs (students must memorize these)
- Geometric/two-line proofs (students must do these themselves)

Spend 4ish weeks covering logic/proof/sets
Students find proofs the hardest part of the Math 2903/2904 curriculum

Evidence that students that can master simple divisibility proofs have more success in the course compared to those that haven’t

Anecdotal evidence that proofs help with understanding in any other mathematics courses taken by Math 2903/2904 students.
Questions

- How much proof should we introduce to pre-service teachers?
- Should we introduce proof to other non-major courses as a way to increase understanding?
- When/how much proof should be introduced in the school curriculum?