

## SECONDARY SCHOOL MATHEMATICS TEACHERS' CONCEPTIONS OF PROOF IN TRINIDAD AND TOBAGO

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Keywords: Reasoning and Proof, Teacher Beliefs

Recent reform efforts in Trinidad and Tobago demand that secondary school mathematics teachers provide students with opportunities that reflect the nature and role of proof in mathematics (Republic of Trinidad and Tobago Ministry of Education, 2003). A teacher's propensity to enhance the role of proof in the classroom and to respond to curriculum demands depends on the nature of their own conceptions of proof and their beliefs about its role in mathematics (Knuth, 2002). By "conceptions of proof," I refer to teachers' mathematics content knowledge, beliefs about what constitutes proof, and the role of proof in mathematics (Knuth, 1999).

In this poster, I present findings from interviews with teachers from Trinidad and Tobago. I ask the following questions: (1) *how do teachers in Trinidad and Tobago view the roles that proof plays in mathematics teaching?* (2) *What value do teachers place on proof in mathematics teaching?* I interview 10 in-service secondary school mathematics teachers in Trinidad and Tobago. I apply the five-role theoretical framework in Knuth's 2002 study to guide my analysis of teacher's conceptions about the various roles that proof plays in mathematics teaching.

My analysis of the interviews suggests that teachers identified roles that reflect those in previous studies conducted with in-service teachers (e.g. Dickerson, 2008; Knuth, 2002). These roles included: to *verify* that a statement is true, to *explain* why a statement is true, to *communicate* mathematical knowledge, and to *discover and create* new mathematics. However, my analysis did not find evidence to support the identification of one of the defining roles of proof in the five-role theoretical framework- to *build* an axiomatic system of mathematical results. Teachers also identified additional roles: to *show* that a statement is false and to *provide* intellectual challenge. My findings suggest that the teachers in Trinidad and Tobago understand what constitutes a valid proof and they value its usefulness in mathematics teaching. The teachers see the importance of proof in mathematics; but perceive that their efforts to highlight its value in their classes are limited by curriculum and time constraints. The results of this study can inform future research and professional development efforts in Trinidad and Tobago.

### References

- Dickerson, D. S. (2008). *High school mathematics teachers' understandings of the purposes of mathematical proof*. Syracuse University). *ProQuest Dissertations and Theses*, 240-n/a. Retrieved from <http://search.proquest.com/docview/304371864?accountid=14553>. (304371864).
- Knuth, E. J. (1999). *The nature of secondary school mathematics teachers' conceptions of proof*. University of Colorado at Boulder). *ProQuest Dissertations and Theses*, 241-241 p. Retrieved from <http://search.proquest.com/docview/304521564?accountid=14553>. (304521564).
- Knuth, E. (2002). Secondary school mathematics teachers' conceptions of proof. *Journal for Research in Mathematics Education*, 33, 379-405.
- Republic of Trinidad and Tobago. Ministry of Education. Secondary Education Modernization Programme. (2003). *Secondary school curriculum: Form three mathematics*. Port of Spain: Author.
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- Martinez, M. & Castro Superfine, A (Eds.). (2013). *Proceedings of the 35th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Chicago, IL: University of Illinois at Chicago.