

BELIEFS ABOUT SCHOOL MATHEMATICS VS. UNIVERSITY MATHEMATICS AND BELIEFS ABOUT TEACHING AND LEARNING IN DIFFERENT CONTEXTS OF STUDENTS' ACHIEVEMENTS

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This study with 206 pre-service teachers (PSTs) from the Mulawarman University, Indonesia, aims to investigate the relationship of PSTs' beliefs about school mathematics (SM) and university mathematics (UM) with their beliefs about teaching and learning in different contexts of students' achievements. The two contexts in this study are classes dominated by high-achieving (HA class) vs. low-achieving (LA class) students. Further, we use concepts from Ernest (1989) to interpret PSTs' beliefs: the instrumentalist view, the Platonist view, and the problem-solving view. The instrument used is the TBTP (Safrudiannur & Rott, 2020) which, for this study, was modified: (1) differing between SM and UM and (2) adding items related to mathematics teaching and learning. The Cronbach's alpha coefficients of the modified instrument are 0.78 for the instrumentalist, 0.74 for the Platonist, and 0.81 for the problem-solving view.

In line with Geisler and Rolka (2020), the results of our study indicate that PSTs differ their beliefs about SM and UM. However, the results seem to be not in line with the assumption that teachers' beliefs about SM are likely more influential than their beliefs about UM in the classroom contexts (Beswick, 2012). The correlations are shown in Table 1; our data analyses indicate that beliefs about UM are stronger correlated with beliefs about teaching and learning than beliefs about SM—in both contexts, HA and LA classes. The significant correlations imply the necessity to design math lectures for teacher education at universities carefully.

Table 1. The results of the Pearson correlations between beliefs

Associated views	Beliefs about mathematics	Beliefs about mathematics teaching and learning			
		HA class		LA class	
		Teaching	Learning	Teaching	Learning
Instrumentalist view	School Mathematics (SM)	0.194**	0.145*	0.044	0.099
	University Mathematics (UM)	0.199**	0.178*	0.235***	0.164*
Platonist view	School Mathematics (SM)	0.192**	0.311***	0.033	-0.003
	University Mathematics (UM)	0.097	0.213**	0.031	0.021
Problem-solving view	School Mathematics (SM)	0.210**	0.105	0.170*	0.214**
	University Mathematics (UM)	0.329***	0.157*	0.168*	0.298***

* $p < .05$, ** $p < .01$, *** $p < .001$

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