

Abstract: We examine the use of artifacts of children's mathematical thinking to develop preservice elementary teachers' (PSTs') subject matter knowledge. Using three design principles: (a) connecting to previous knowledge, (b) experiencing sense making, and (c) connecting various types of knowledge; artifacts are chosen to specifically address PSTs' conceptions and allow them to experience sense making and move beyond their reliance on meaningless algorithms. Results show that tasks including such artifacts can be used (a) to assist teachers in developing subject matter knowledge, (b) allow PSTs to move beyond their reliance on the algorithms, and (c) serve as a gateway to allow PSTs to open up to listening to other students' thinking. However, these changes are not easy. Conceptual difficulties are discussed.