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Exploring concepts from abstract algebra using variations of generalized woven figure eights.

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Summary: Students often struggle with concepts from abstract algebra. Typical classes incorporate few ways to make the concepts concrete. Using a set of woven paper artifacts, this paper proposes a way to visualize and explore concepts (symmetries, groups, permutations, subgroups, etc.). The set of artifacts used to illustrate these concepts is derived from our investigation of open-work woven mats produced in several cultures in the South Pacific. The exemplars that will be shown present variations of the figure eight, and can be created using readily available materials and straightforward instructions.

Classification: M85 H45
Keywords: weaving; symmetries; group theory; permutations
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