

Uncovering Geometrical Ideas in Weaving: An Ethnomathematical Approaches to School Pedagogy

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Abstract : Weaving mat is one of the common activities performed in different community generally in the rural part of Nepal. Mat weavers' practice mathematical ideas and concepts implicitly in order to perform their job. This study is intended to uncover the mathematical ideas embedded in mat weaving that can help teachers and students for the teaching and learning of school geometry. The ethnographic methodology was used to uncover and describe the beliefs, values, understanding, perceptions, and attitudes of the mat weavers towards mathematical ideas and concepts in the process of mat weaving. A total of 4 mat weavers, two mathematics teachers and 12 students from grade level 6-8, who are used to participate in weaving, were selected for the study. The whole process of the mat weaving was observed in a natural setting. The classroom observation and in-depth interview were taken with the participants with the help of interview guidelines and observation checklist. The data obtained from the field were categorized according to the themes regarding mathematical ideas embedded in the weaving activities, and its possibilities in teaching learning of school geometry. In this study, the mathematical activities in different sectors of their lives, their ways of understanding the natural phenomena, and their ethnomathematical knowledge were analyzed with the notions of pluralism. From the field data, it was found that the mat weaver exhibited sophisticated geometrical ideas in the process of construction of frame of mat. They used x-test method for confirming if the mat is rectangular. Mat also provides a good opportunity to understand the space geometry. A rectangular form of mat may be rolled up when it is not in use and can be converted to a cylindrical form, which usually can be used as larder so as to reserve food grains. From the observation of the situations, this cultural experience enables students to calculate volume, curved surface area and total surface area of the cylinder. The possibilities of incorporation of these cultural activities and its pedagogical use were observed in mathematics classroom. It is argued that it is possible to use mat weaving activities in the teaching and learning of school geometry.

Keywords : ethnography, ethnomathematics, geometry, mat weaving, school pedagogy

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