An Ethnomathematics study: Preschool caregivers incorporate multicultural perspectives into the mathematics curriculum with Truku Culture Traditions

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1. Background/ Objectives and Goals

Indigenous cultural has been seen as an important asset in Taiwan recently. In 2004, the tribe of Truku has gained official recognition as an independent indigenous group and it was one of the sixteen indigenous tribes in Taiwan. There were one main preschool and four branches in Truku communal preschool and their children were almost from disadvantaged backgrounds. Since 2012, the communal Truku preschool and the researcher have worked together on transforming local culture curriculum through the mentoring program of Ministry of Education. The program of has already assisted the Truku communal preschool teachers to develop school-based curriculum in a culturally responsive practice setting.

Recent research has showed understanding of mathematics and high quality early mathematical experiences has impacted young children's later mathematical achievement. As a counselor of the Truku communal preschool, the researcher has acknowledged the importance concepts of the ethnomathematics and believed that mathematics has a relationship with culture. The purpose of this study was to explore the perceptions of those of the preschool teachers regarding the concepts of key math content areas which was conceived as a culturally responsive practice.

2. Method

The Truku communal preschool teachers have tried to integrate NCTM's mathematical content and process areas with cultural tradition of Truku. The key math content areas include number and operations, algebra, geometry, measurement, data analysis and probability. Those math content have been engaged indigenous children in a culturally-based mathematics curriculum with setting up daily routine activities and learning areas of art and cognitive in the classroom. The research data were collected by records of classroom observations, focus group interviews, caregivers' reflective journals, and field notes during 2018/08~2019/07 through the principles of ethnography.

3. Conclusion

Base on the literature review and qualitative data, the study has obtained the following conclusions: (1) Truku people's interests, experiences and knowledge were the heart of this mathematical curriculum. (2) By incorporating mathematical activities in daily routine, reading Truku culture picture books, and providing handson activities in art and cognitive areas, children's skills on number and operations, algebra, geometry and measurement of mathematics learning has been enhanced. (3) Meaningful teacher- children interaction and intentional problem-solving process in key math content areas with Truku culture has facilitated young children's critical thinking. (4)In this study, the Truku communal preschool teachers' roles and responsibilities in improving young children's mathematical skills in a culturally responsive practice setting were determined from teacher knowledge of mathematical content and the planners and observers of children's learning.

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Key words: mathematical learning, preschool, Truku