DST-NRF Centre in Indigenous Knowledge Systems

Indigenous Mathematics in Early Childhood Development

An ECD Practitioners' Workshop on Knowledge for Change

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The workshop was an initiative between CIKS and the South African Knowledge for Change hub of the Durban University of Technology (DUT), /UNESCO Chair in Community Based Participatory Research and Social Responsibility in Higher Education.

Therefore, the workshop was meant to sensitize ECD practitioners on how to build on children's mathematical knowledge and experiences with an enquiry-based approach, developing purposeful and meaningful mathematical experiences in the classroom through storytelling, dance, songs and rhymes. This emphasises the importance of indigenous languages in ECD mathematics education. Language is the most fundamental way that cultural and mathematical knowledge and skills is communicated and preserved. The integration of indigenous communication tools, including language, allow young children to be co-creators of knowledge in mathematics. Therefore, ECD practitioners should see mathematics as a reflection of the learners' life experiences and other subject areas like science and the arts. The workshop involved more than 25 ECD practitioners from different institutions.

The Indigenous Mathematics in Early Childhood Development (ECD) was an initiative of the CIKS hub at the University of KwaZulu-Natal (UKZN). It was in collaboration with South African Knowledge for Change hub of the Durban University of Technology (DUT)/UNESCO Chair in Community Based Participatory Research and Social Responsibility in Higher Education. The full day workshop was held on 28 May 2018, at CIKS hub.

The initiative for this workshop was based on the organisers' realisation that the attainment of numeracy knowledge and skills is widely considered as one of the key prerequisites for active participation in modern society. Consequently, educational systems devote considerable time and resources to the teaching and learning of numeracy. However, research from national and international benchmarking platforms, including South Africa, clearly indicate that not all learners attain satisfactory numeracy outcomes

from their schooling experiences. Learners from marginalized communities, as a group, achieve lower level outcomes than others on these benchmark achievement tests.

The workshop advanced the view that indigenous knowledge (IK) is an important instrument for fostering knowledge for change as it builds on what the learner already knows from their lived experiences. Research across cultures on early childhood development show that young children bring an abundance of mathematical knowledge gathered from their everyday experiences to school than previously believed. This was based on their inquisitiveness, energy, a wide range of social, intellectual and emotional experiences. They are frequently engaged in a range of mathematics, including pattern and shape, magnitude, enumeration, spatial relations, classification and dynamic change.

Indigenous mathematics, including African mathematics is a valuable tool for facilitating knowledge for change because it builds on the community knowledge, skills and cultural practices of the learners. This was based on the recognition that mathematics is embedded in a particular cultural context as it is a socially and culturally constructed way of encoding, interpreting and organising the patterns and relationships emerging from the human experience of physical, spiritual and social phenomena. This implies that learning mathematics is a form of acquiring the characteristics and norms of a culture. Learning mathematics is therefore cultural and place-based. It recognizes the intimate relationship between learners and their cultural heritage. For instance, the existing mainstream school mathematics curriculum in Africa is based on western mathematics cultural paradigm. There are many differences between this paradigm and the framework in which African indigenous mathematics is embedded.

It was also important for ECD practitioners to realize the unique ways in which young children think in mathematical situations. This was based on the realisation that “good teachers interpret what the child is doing and thinking and attempt to see the situation from the child’s point of view”.

Therefore, the workshop was meant to sensitize ECD practitioners on how to build on children's mathematical knowledge and experiences with an inquiry-based approach, developing purposeful and meaningful mathematical experiences in the classroom through storytelling, dance, songs and rhymes. This emphasised the importance of indigenous languages in ECD mathematics education. Language is the most fundamental way that cultural and mathematical knowledge and skills is communicated and preserved. The integration of indigenous communication tools, including language, allow young children to be co-creators of knowledge in mathematics. Therefore, ECD practitioners should see mathematics as a reflection of the learners' life experiences and other subject areas like science and the arts.

The Keynote address was given by Prof GM Nkondo, Member of Freedom Park Council. His paper was entitled Contextualising Childhood Education and Development using Indigenous Knowledge Systems Epistemologies. Presentations and demonstrations were given by Mr Kenyatta Byrd, Founder and Director, AFRICAN MATH(S)™ on Improving Numeracy Knowledge And Skills using African Mathematics and AFRICAN ABACUS™ Games"