Play in Scientific and Mathematical Non-Formal Education. Bagh Chal, a Tigers-and-Goats Game

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Introduction

• Scientific education must be addressed to contributing to citizenship education.
• This approach influences which sciences and mathematics are to be taught, and how these disciplines are to be taught.
• Playful education fosters important STEM-related skills. Non-formal contexts favour this approach.
Methodology

• We have adapted Ethnomathematical Microprojects to the study of traditional world board games (Considered as artifact, mentifact, socifact) producing what we term Playful Projects.

• Playful Projects, addressed to non-formal educational contexts, are sequences of learning, communication, and reflective action activities, designed to promote STEM learning.

• Playful Projects are conducted in one-hour sessions in which the research team encourages player enquiries, and makes audiovisual recordings.
Results

• World board games, here considered ethnomathematical sociocultural objects, have great interest and potential from a non-formal STEM educational perspective, enabling rich and motivating activities to be designed around them.

• Production of the conceptual elements of the methodology outlined above

• Production of Playful Project “Bagh Chal, a Tigers-and-Goats Game”.
Results

• Participants develop spatial thinking, scientific speech and communication, deductive reasoning, and other STEM aspects, all via playful and dialogic learning.

Implications for policy/Practice

• STEM-related disciplines require playful learning and teaching, because the enquiry and reasoning of scientists and mathematicians resembles children’s way of thinking when playing meaningfully.

• Teachers must know games and be trained in playful approaches to respond to today’s evermore globalized world.
Implications for policy/Practice

• Playful methodologies can promote interdisciplinary, inclusive, intercultural, ethnomathematical education.

• Non-formal (and formal) educational contexts can benefit from playful approaches and promote motivating activities and engagement, leading to long-lasting achievements.
Conclusion

• The Playful Projects methodology is presented as a holistic approach to playful teaching with the aim of contributing to scientific and mathematical education in non-formal contexts.

• We propose this as a pertinent and enriching approach to scientific and mathematical education through world-games-based proposals.
Conclusion

• Play is a teaching resource proven to activate emotional and cognitive factors.
• A specific activity sequence designed around the Nepali traditional game bagh chal is presented, accompanied by STEM-related aspects of interest.
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