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Show Us Space: Demonstration of Hands On Education and Outreach (8)

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AN EFFECTIVE TOOL FOR SPACE AWARENESS:HANDS-ON ACTIVITY WITH TARDIGRADES

Abstract

Tardigrades are among the most resilient microorganisms and occupy a unique position among extremophiles. Their increasing recognition, both in scientific research and popular science, provides an opportunity to use them as an effective educational tool. In this context, their connection to space exploration could serve as a bridge to stimulate scientific curiosity and raise awareness of space studies in science centers and educational institutions.

To evaluate the educational potential of tardigrades, a hands-on activity is being conducted at the Gökmen Space Aviation Training Center (GUHEM). This study examines how live tardigrade displays under a microscope influence participants' curiosity about space and explores the effective use of this approach. A platform in the exhibition space enables live observation of tardigrades, their 3D model and habitats, while a science communicator provides information about their resistance mechanisms.

To measure the impact of the activity, participants will be surveyed before and after the activity, and a further survey shared online will be used to comparatively analyze the potential impact of the Hands On activity and digital materials on space awareness and curiosity. The questionnaire consists of questions about participants' level of knowledge about tardigrades, how often they make associations between tardigrades and space, the impact of this association process on their level of curiosity about space, and how they use the information they have learned about tardigrades. The study tests three hypotheses:

Hands On activties increase interest in space more than online materials.

New knowledge about tardigrades increases curiosity about space.

Tardigrade-based citizen science projects strengthen participants' perception of "active contribution to space studies".

The validity of these hypotheses will be tested within the scope of the research conducted and the findings obtained will form the basis of a tardigrade and space awareness themed citizen science project that can be implemented in the future. Data collection started in January 2025 and will end in May 2025, and analysis will be done using t-test and chi-square methods.

In conclusion, this study highlights the role of hands-on activities in scientific engagement, encourages interdisciplinary approaches in citizen science and aims to make space exploration more accessible through the democratization of knowledge.