Paper ID: 62923
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IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Hands-on Space Education and Outreach (8)

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ESCAPE ROOMS, AN EFFECTIVE HANDS-ON APPROACH FOR YOUTH SPACE OUTREACH

Abstract

This paper has been resubmitted to the 2021 IAC after acceptance and withdrawal from the 2020 IAC due to COVID-19.

The University of Manitoba Space Applications and Technology Society uses a unique approach in exposing youth to many subfields in space exploration. Commonly known as an 'escape room', UMSATS had strong reception to the activity from youth in outreach events. Through a timed multistage activity, students use friendly competition and their imagination to remain engaged- all while gaining exposure to the field of space exploration.

The link between space exploration is emphasized to students as they are presented with the theme of the escape room: a race to be the first team off of the moon. Each puzzle of the escape room is associated with a different element of space technology. Small teams ranging from 3-5 students solve puzzles, presented to each team in the form of a locked box, and one laptop. First, students must navigate their way through coding interfaces like HTML, to alter text on websites via instructions that have been provided to them. This activity gives exposure of basic coding to students who lack prior experience, and allows students to create a visible product in a time-constrained workshop. Students then gain access to a space-themed computational thinking puzzle, where they apply logic in determining the correct sequence of the puzzle. Solving this activity grants access to a key that unlocks their box, which contains more puzzles that promote skills that STEM disciplines such as space exploration are built upon, such as data sorting. After the data sorting activity, the next challenge focuses on translating code from one coding language to another. The final activity has is 'decoding,' and it is where students use skills from the last four activities to open a lock and 'complete their mission.'

It is challenging to keep students engaged while exposing them to a multitude of elements of space exploration, but the hands-on UMSATS' escape room activity does so and is cost-effective, well-received, and can be conducted in less than thirty minutes. From UMSATS' experience with hands-on outreach, recommendations for other student-clubs looking to encourage STEM fields in youth is to explore workshops and activities akin to escape rooms that have an educational element. Lessons learned include students tend to prefer teamwork-based activities, and that future activities should fully utilize group work.