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PhD Dissertation Defense

*DEVELOPING A SPACE SCIENCE STEAM ENRICHMENT PROGRAM FOR GRADE 11 GIFTED
STUDENTS IN THE UNITED ARAB EMIRATES*

By

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Time and Date

Thursday, May 4, 2023, at 7:00 PM

Meeting link: <https://bit.ly/3AFoHJR>

Abstract

The main purpose of the study is to develop a space science enrichment program tailored for Grade 11 gifted students in the Advanced Science and Elite Streams in the United Arab Emirates (UAE). The study will investigate the impact of the space enrichment program on the students' unit content knowledge, academic achievement, thinking and problem-solving skills, research skills and creativity skills. Two government schools in Al Ain will be randomly selected (one girls and one boys Emirati Schools). From each school, 30 students from the Advanced Science and Elite streams who are identified as gifted/high achieving students will be selected according to pre-defined criteria (experimental group=30, control group=30). A quasi-experimental design will be employed with two test points at the beginning (pre-test) and at the end of the academic term (post-test). The enrichment program will be based on Baska's Integrated Curriculum Model (ICM), Renzulli's Schoolwide Enrichment Model (SEM), Multidimensional Curriculum Model (MdCM) and Problem-Based Learning (PBL). The proposed instruments are: (1) unit content knowledge tests that will evaluate the students' knowledge of the physics concepts, (2) Classroom Observation Scales Revised (COS-R) questionnaire that will be used to evaluate the students' thinking, research and creativity skills, (3) students' final projects and 3D prototypes evaluation and (4) questionnaires that explore teachers' and students' perspectives on their experience during the space enrichment program. The potential contribution the researcher envisage is developing the physics curriculum in the Emirati Schools and exposing gifted/high achieving students to real-life applications through technical tools such as 3D modelling, 3D printing, programming, and meeting experts in the field.