PROJECT TITLE: Spatial Training in Education: Spatial Tasks, Apps, and Assessment

Physical Requirement: Not applicable

Project's Technical Skills Requirement: Experiences in CAD modeling and 3D printing

Project's Available Positions: Undergraduate Research Assistant

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Project Description

Spatial ability has been considered one dimension of multifaceted intelligence and is known as a critical skill for one’s successful performance in science, technology, engineering, mathematics, and Medicine (STEMM) education and at work. Therefore, numerous studies employed spatial training to improve students’ spatial ability, which might improve their STEMM performance. This project aims to (a) systematically review various spatial training in STEMM education, (b) estimate the effects of the training on student performance, and (c) develop an efficient spatial task as a means to accurately assess students’ spatial ability.

This project will start with searching and locating experimental research articles on spatial training. An undergraduate research assistant will systematically document characteristics of spatial training in the identified research articles, such as (a) target population, (b) STEMM content areas, (c) the types of spatial tasks (e.g., gaming, animation in surgical training, augmented reality, virtual reality, apps for engineering design graphics, etc.), (d) types of spatial assessment tools, and (e) changes in student performance due to spatial training. By reviewing spatial training, the student will be able to contribute to the development of a new spatial task or training tool for improving one’s spatial ability. The student will also have an opportunity to collaborate with graduate students who work on different projects in Dr. Yoon’s research group.

A qualified student would be curious, eager to learn, detail-oriented, perseverant, and to think outside the box; has an interest in the engineering education discipline; would like to develop an ability to work/collaborate with others and work independently; might have an interest in applying for the Accelerated Engineering Degree (ACCEND) program for an M.S. or a Ph.D. in Engineering Education; might consider a career in higher education.