



Multi-sensory interface to facilitate learning of basic concepts of trigonometry

Tangible User Interface (TUI's) used as a pedagogical tool for the teaching-learning process of basic trigonometric concepts in a meaningful, inclusive and fun way.

In the last three decades, the application of TUI's (tangible user interfaces) in education have demonstrated that incorporating digital technologies to enhance learning positively influences performance and learning of students. In mathematics education, studies evidence difficulties and challenges in the teaching-learning of trigonometry in secondary and higher education.

THE TECHNOLOGY

The interface considers a multimodal approach (vision, hearing and touch in tandem), thus supporting diverse learning styles and providing different ways to access the information. All this with the goal of activating previous knowledge and/or correct misconceptions and integrate them to the new concepts. The artefact provides a graphical and sonic representation of trigonometric concepts, which are explored manipulating physical controllers using different gestures (sliding, pressing, rotating) that modify parameters and define a drawing on a screen.

LEVEL OF DEVELOPMENT

TRL: 5. The device has been validated in a partially relevant environment with positive results

MAIN RESEARCHER

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INTELLECTUAL PROPERTY

Patent pending

MAIN ADVANTAGES OR BENEFITS

Multiple controls facilitate intuitive interactions. Sequential constructivist scenes allow for guided/directed exploration. New knowledge built on firm grasp of intermediate/prior knowledge. The TUI facilitates multisensory learning, enables collaboration between learners and permits reversible actions which encourage exploration.

USES/APPLICATIONS

High school students.

Universities (mathematical levelling courses).

BUSSINES OPPORTUNITIY

- Technology available for licensing.

CONTRACT

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