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**Science spots AR: a platform for science learning games with augmented reality.**

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Summary: Lack of motivation and of real-world relevance have been identified as reasons for low interest in science among children. Game-based learning and storytelling are prominent methods for generating intrinsic motivation in learning. Real-world relevance requires connecting abstract scientific concepts with the real world. This can be done by situating learning processes in real-world contexts, and by bridging the virtual content and the real world with augmented reality (AR). We combined these ideas into a Science Spots AR platform on which context-aware storytelling science learning games can be created. As proof-of-concept we developed and evaluated Leometry game, which contains geometry problems based on the Van Hiele model. This paper's contributions are as follows: (1) concept and architecture of Science Spots AR, (2) design and implementation of the Leometry game prototype, and (3) mixed-method formative evaluation of Leometry with 61 Korean 5th grade elementary school children. Data retrieved by questionnaires and interviews revealed that the students appreciated Leometry despite its minor shortcomings, that the platform's concept is feasible, and that there is potential for building science learning games. These results are useful to educators, computer scientists, and game designers who are interested in combining context-aware learning, AR, and games.

*Classification:* U53 U73 R83 G43

*Keywords:* context awareness; augmented reality; games; science learning; storytelling

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