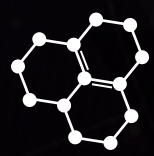




NARST 2017

GLOCALization and Sustainability of Science Education Research and Practice

NARST 90th Annual International Conference — Grand Hyatt San Antonio — San Antonio, TX, USA — April 22-25, 2017



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implications for how educators and administrators could provide supports (e.g., resources, materials and opportunities) to improve Chinese teachers' instructional practices of integrating technology. Keywords: PhET simulation, science instruction, contextual factors

Using Expert Perspectives to Inform the Design of Instruction about Ecosystem Science Practices

Amy M. Kamarainen, Harvard

Tina Grotzer, Harvard University

Shari Jackson Metcalf, Harvard University

Chris Dede, Harvard University

ABSTRACT:

Reform efforts advocate for integrating knowledge and practices in science instruction. Application of this idea is particularly challenging in the context of ecosystem science due to logistical and conceptual challenges that teachers and students encounter when thinking about and implementing investigation and associated practices in ecosystems science contexts. To inform the design of instructional materials that would better support teachers and students in integrating scientific practices in ecosystem science learning experiences, we used semi-structured interviews to gather perspectives on practices (including experimentation) from ten ecosystem science professionals. We offer descriptive accounts of the themes that arose in these interviews, and in the final paper we will consider how insights from this work may be applied to the design of ecosystem science instructional materials to better support teachers and students in developing accurate perspectives on practices within ecological and ecosystems science.

Making Science Practice Visible in the Classroom: Characterizing Teachers' Classroom Practice Related to the NGSS

Allyson M. Rogan-Klyve, Central Washington University

ABSTRACT:

This study documents and characterizes teachers' classroom practice in light of the adoption and implementation of the NGSS in a K-12 school district. Classroom observations were conducted over a two-year period guided by the Practices of Science Observation Protocol (P-SOP) (Forbes, Biggers, & Zangori, 2013) to characterize the ways in which teachers provided students opportunities to engage in scientific practices. Findings discussed in this study include patterns of teachers' classroom practice as it relates to the inclusion of scientific practices, and the activity structures teachers used to facilitate student participation in scientific practices.

Notable patterns include the prevalence of some dimensions of scientific practice, and the limited occurrence of other dimensions of practice. Additionally, some classroom activity structures were found more likely to be used by teachers to engage students in scientific practices than others. Implications of these findings regarding opportunities for teacher learning related to the NGSS are also discussed.

An Instructional Material for Teaching 'Life Cycle of Frog' to Visually Impaired Students

Seyda Gul, Ataturk University

Fatih Yazici, Ataturk University

Mustafa Sozbilir, Ataturk University

ABSTRACT:

The aim of this study is to design an instructional material for visually impaired students. Material was designed in accordance with visually impaired students' needs. Observation and interview were utilized as data collection tools to determine students' needs and effectiveness of instructional material. The sample studied in the needs analysis consists of six 6th grade students from Visually Impaired Middle School in the city center of Erzurum/Turkey. In the light of students' needs towards physical environment, instructional, learning and assessment and evaluation, 3D printer was used to design some parts of instructional material about 'life cycle of a frog'. Additionally, color and tactile contrasts and embossed parts were designed through need analysis data. As a result, it is considered this material help teachers in order to support education and also to contribute a better understanding of students due to the fact that it was designed in accordance with the curriculum, learning outcomes, students' individual needs and their cognitive level. Additionally, it is suggested this material should be developed and disseminated more accordingly to the visually impaired students' needs.

Strand 5: College Science Teaching and Learning (Grades 13-20)

Chemistry Learning

8:30am-10:00am, HBG Convention Center 007C

Presenter: Stephen L. Thompson, University of South Carolina

Analyzing Predictors of Freshmen Content Knowledge Acquisition and Study Success in Chemistry

Daniel Averbeck, University of Duisburg, Essen

Elke Sumfleth, University of Duisburg, Essen

Eckart Hasselbrink, University of Duisburg, Essen

ABSTRACT: