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WHEN WE PARTNER WITH TEACHERS: EDUCATORS AS (CO-)DESIGNERS

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In this special issue, we asked a broad question: what do our designs look like when we partner with teachers? More specifically, we began by acknowledging the fact that our design decisions - the "what has gone into this effort?" - are not always visible in our research publications. The result is a diverse collection of contributing teachers, teacher educators, and educational researchers.

This is the first of two special issues focusing on partnership implementations of instructional designs intended for K-12 classrooms. From an open call for proposals, we invited manuscripts that represented different design approaches, contexts, and products, and gave special attention to those authored or co-authored by teachers. After several rounds of peer review, seven manuscripts were selected for the first issue. In this issue, we have brought together a collection of design cases that reflect a range of science instruction resulting from designing new or re-designing existing curricula to creating web-based virtual rainforest journeys to digital physics games. The authors document details of their design thinking, priorities, and influencers. They discuss implementation considerations and confront tensions that existed between their design ideas and the needs of the learners who would use their instructional products in contexts where resources and constraints cannot always easily be known in advance.

More than half of the original proposal submissions involved examples from the STEM fields. We can't help but wonder if this is attributable in large part to the types of partnerships forged as a result of the investment and priority placed on STEM at local, state, and national levels. This speaks to the kinds of possibilities and impacts we can have when our partnerships are supported over time. Part of us wonders if we are missing a more complete story because other forms of partnership are not treated with as high priority, but that does not diminish the tremendously broad and diverse and valuable examples represented here.

In the first three articles the design teams target groups of learners in a specific context. Friedrichsen, Sadler, Graham, and Brown describe the creation and implementation of a socio-scientific issue (SSI) curriculum unit focusing on antibiotic resistant bacteria for 10th grade honors biology students who were interested in health-care careers. The context for the next case is a non-traditional public charter high school where one researcher (Svihla) and two teachers (Lane and Collins) co-teach a project-based unit on designing temporary houses for people without homes. The authors document how they navigated the design process, allowing students' interests and engagement to guide not only their decisions about timing and sequencing but also the final content of the project. In the third article, Eick and Dias document the intricacies of a professor-turned-classroom-teacher through a naturalistic example of instructional design adjustments in response to sustaining students' interests and drawing on the different talents students bring to the classroom. They discuss the tensions Eick experienced while implementing a prescriptive reform-based science curriculum and the decisions he makes to modify the curriculum to include relevant inquiry activities, opportunities for student choice, and creativity. Shuster and colleagues helped teachers become designers of bioinformatics activities for the K-8 classroom. Their project has been in place for numerous years / design cycles, and they documented a shift that began with faculty designing most of the in-classroom activities to faculty supporting teacher knowledge building and teacher designs of classroom activities. Their teacher-designers confront technical information and bring tremendous amounts of creativity to the process.

The final three cases are examples of curriculum projects designed for a broader student audience rather than those in a specific school or district. Using a "struggle-oriented instruction" approach to increase students' motivation toward learning science, Ahn et al. create stories and activities based on famous scientists' struggles, failures, and eventual discoveries. The authors reflect on the evolution

of their project, the missteps and events that lead them to move from "teacher-led" instruction to "student-initiated" in order to model persistence and better accommodate students' psychological needs. McGees and Zimmerman's *El Yunque* project and Clark et al.'s design case involving *SURGE* games highlight the complexity of designing environments that balance tensions between how science concepts are displayed and introduced with the ways in which students need to interact with the elements in the environment in order to promote student learning.

It is our desire that these special issues bring to our field the standard of precedent-building common in other design disciplines, fostering deeper understandings of designs and implementations within classrooms of all kinds in order to build our collective knowledge of what has gone into and been realized with our designs. And please stay tuned for part two of the collection, to be published in IJDL later this year!