The Inspark Science Teaching Network
Using Astrobiology to Teach Science as Exploration of the Unknown, Not Just Mastery of the Known
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What is the Inspark Science Teaching Network?
- A teaching network of science educators dedicated to transforming teaching and learning.
- Redefining learning as exploration of the unknown, not just mastery of what is known.
- Dedicated to postsecondary success of disadvantaged students in entry-level science.
- Established by the education technology start-up Smart Sparrow in partnership with the Center for Education Through Exploration (ETX) at Arizona State University, supported by a grant to Smart Sparrow by the Bill & Melinda Gates Foundation.
- Includes more than 25 institutional teaching partners representing over 200,000 first-year science students, of which more than 50% are low-income or disadvantaged.

What is a “Teaching Network”?
A digitally-powered community of educators creating and sharing next-generation courseware and technology.

Inspark Courseware
Design Principles: Derived from ASU’s Successful Habitable Worlds
Habitable Worlds is a fully online science class for non-science majors, satisfying ASU’s “science-quantitative” general studies requirement, created by Prof. Ariel Anbar and Dr. Lev Horodyskyj. Students are challenged to find and characterize a habitable world in a game-like simulation populated by an individualized field of stars. To succeed, they explore the terms of the Drake Equation, via interactive, adaptive simulations that teach how to explore the unknown.

- Explores a big question, at the knowledge frontier.
- Organized around an integrating project.
- Features rich, interactive, adaptive lessons.
- Beautifully designed scientific simulations.
- Conveys the “voice” of the instructors.
- Students are not alone – supported by teaching staff.

Measures of Success: Evidence from Habitable Worlds
Offered since 2011 to >2000 ASU undergraduates, Habitable Worlds is being evaluated with NASA and NSF support.

Inspark Development: Are We Alone?
We are developing Smart Courses modeled after Habitable Worlds.

Smart Course features:
- Centers on major, unanswered question;
- Disaggregates into a suite of narrative “streams” in which students apply knowledge;
- Streams are discipline-specific, each mapping to the content and curriculum of a traditional introductory science course;
- Streams are further subdivided into a series of “missions”, each of which embodies a coherent set of disciplinary learning outcomes;
- Each mission consists of rich, interactive, adaptive, and simulative learning activities, validated by subject-matter experts.

Inspark Technology
A Pedagogical Platform: Rich, Interactive and Adaptive
An adaptive lesson is an online lesson made up of screens that contain information, questions, or simulations. The experience changes based on how a student interacts with it.

An Authoring, Analytics and Sharing Platform: Cycles of Improvement
The Smart Sparrow platform allows teachers to create, deploy, analyze, and share digital learning experiences.

- Through a continuous cycle of analysis and adaptation the courseware gets “smarter”.
- When teachers have the capability to create and share, what emerges are networks of teachers.
- Teachers are happy to share content with colleagues.
- It makes sense to collaborate:
  - reduces costs (e.g., repurpose sims)
  - share best-practices and research findings
  - Raises the bar, across the board, for the discipline.

A Teaching Network: Teaching and Learning at Scale

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