AGENDA

• About the Webinar Series

• Our Panelists
  ▪ David Morris, Science Division Chair, Eastern Arizona College
  ▪ Professor Ariel Anbar, President’s Professor in the School of Earth & Space Exploration at Arizona State University
  ▪ Dr. Dror Ben-Naim, CEO and Founder of Smart Sparrow

• Presentation: “The Inspark Science Network: Reimagining Science Education”

• Q&A and Discussion
TECHNOLOGY SOLUTIONS WEBINAR SERIES

• ATD Institutions increasingly turn to technology to improve student success outcomes
• Intended to provide information about promising technology solutions
• An opportunity to stay informed in a rapidly changing education technology environment
OUR PANELISTS

Dr. Dror Ben-Naim
CEO & Founder
Smart Sparrow

Professor Ariel Anbar
President’s Professor, School of Earth & Space Exploration
Arizona State University

Professor David Morris
Science Division Chair
Eastern Arizona College
THE INSPARK SCIENCE NETWORK:
REIMAGINING SCIENCE EDUCATION
Teaching Network: A digitally-powered community of educators creating and sharing next-generation courseware and technology dedicated to postsecondary success of disadvantaged students in entry-level science
Started as a research Center at UNSW between 2005-2011 focusing on AI in Education

Mission: Make the World Smarter (because smarter world = better world)
By Empowering Teachers to Teach Better
Which means building technology that:
Promotes learning by doing
Makes the learning experience personalized and adaptive
Empowers – NOT REPLACES – teachers

Platform for Next Generation Courseware: Rich, Interactive and Adaptive

Users from more than 500 institutions
Focus: Science, Medicine, Engineering
Rich, Interactive *and* Adaptive?
So, what is an adaptive lesson?

Adaptive Lesson – an online lesson that changes based on how a student interacts with it.

An Adaptive Lesson is made up of Screens that contain information or questions.

Screen can include Information, such as text, images or video.

... and “Input widgets” that students interact with, e.g. a slider or a Multiple Choice Block.

Screens can also include rich simulations.
But what makes it adaptive?

The learning is adaptive in two ways. Students receive both adaptive feedback and an adapted learning pathway.
Examples

✓ Rich, Interactive, Adaptive
✓ Learning By Doing
✓ Adaptive Feedback
✓ Adaptive Lesson Pathway
Examples

- Rich, Interactive, Adaptive
- Learning By Doing
- Adaptive Feedback
- Adaptive Lesson Pathway

*Please see narrative in the notes of this slide.*
Are We Alone?

*HabWorlds Beyond* explores the formation of stars, planets, Earth, life, intelligence, technological civilizations and, ultimately, is a quest of exploration as we attempt to answer one of the most profound questions: are we alone in the universe?

Produced by Prof. Ariel Anbar and Dr. Lev Horodyskyj from Arizona State University, *HabWorlds Beyond* is now available for faculty to teach at your university.
Platform for Next Generation Courseware: Rich, Interactive *and* Adaptive
A platform to...

Create
Deploy
Analyze
Share
Instructors make continuously improve the courseware to better suit their students’ needs through an iterative process of deployment, analysis and adaptation.
Analyzing the rate of star formation.

All life on Earth depends on the sun for energy. So, we assume that other alien life will similarly depend on the energy of a host star.

In order to figure out if there is any alien life out there, we need to know how often stars are born, and which stars are best for life.
Turns out:

- When you give the capability to create and share to instructors – what emerges are *networks* of teachers
- Teachers are happy to share content with their colleagues
- It makes sense to collaborate:
  - reduce costs (e.g. repurpose sims)
  - share best-practices and research findings
- Raise the bar, across the board
Empowering Teaching Networks

Adaptive Mechanics
7 Eng Schools
12 RIA Lessons
Failure Rate: 31%-5%

BEST Network

Smart Science Initiative
4 Sci Schools
30 High Schools
Empowering Teaching Networks

BEST Network
Biomedical Education Skills and Training Network
Aug 2012, $4.5M grant, 10 Med Schools, 1 Tech partner

Concept
A network of biomedical schools sharing next generation courseware and technology

Rationale
Collaborate across geography to improve the discipline
Not only about courseware or technology
it's about supporting teachers to use it!!!

Now
Viral: 1100 instructors from 200 Schools, creating and sharing 100 RIA lessons
Set up as Non-Profit, directed by discipline leaders
Recently entered the US

www.best.edu.au
Summary

Make the World Smarter

Rich Interactive and Adaptive Courseware

Create, Deploy, Analyse & Share

Teaching Process

Ability to share results

Teaching Networks
Teaching Network: A digitally-powered community of educators creating and sharing next-generation courseware and technology dedicated to postsecondary success of disadvantaged students in entry-level science
The prototype for next generation courseware...
Habitable Worlds
A Transdisciplinary Science Course for Non-science Majors

Explores a big question, at the frontier of knowledge

Organized around an integrating project

Features rich, interactive, adaptive lessons

Beautifully designed scientific simulations

Students and staff supported by networks

= A better way to teach science, because it addresses some big problems...
The Lecture Model

- Passive rather than active
- Teaches science as accepting what is known; but science is *exploration of the unknown*
- Potential STEM majors are *turned off*; non-STEM majors are *never pulled in*
- Especially *bad for under-prepared students*
The questions we care about don’t fit in silos
After nearly 2000 students over 6 semesters...

“I was able to open up my mind to topics that have always scared me (science and math) and I learned that I could enjoy it and that I was capable of doing it.”

Objective evaluation in progress via NSF support
Smart Courses
Next-Generation Science Courseware

BIG QUESTION

ARE WE ALONE?
Smart Courses
Next-Generation Science Courseware

BIG QUESTION

STREAMS

GENERAL-ED
IS ANYBODY OUT THERE?

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PHYSICS
WHERE ARE THE WORLDS?

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WHICH WORLDS ARE HABITABLE?

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BIODIVERSITY
CAN WE FIND LIFE?
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BIG QUESTION

STREAMS

MISSIONS

ADAPTIVE LESSONS

PROJECT

ARE WE ALONE?

GENERAL-ED
IS ANYBODY OUT THERE?

PHYSICS
WHERE ARE THE WORLDS?

CHEMISTRY
WHICH WORLDS ARE HABITABLE?

BIOLOGY
CAN WE FIND LIFE?
If we want students to learn at scale then teachers need to work at scale, too.
The Inspark Science Network

A Teaching Network: educators, scientists, evaluators, and partner institutions…

powered by a Digital Platform
to create, share, modify, deploy, and assess cutting edge courseware
decentralized and collaborative, leveraging the internet for course creation and support
25 Teaching Partners

25 Teaching Partners

25 Teaching Partners

~197,000 first year science students

~113,000 low-income & disadvantaged science students
“.. progress comes when you find a solution by seeing the problem in a new way. That’s innovation. When you **re-invent the way you educate**, the old assumptions about time and cost and method vanish – and you break through.”

- Bill Gates
Teaching Network: A digitally-powered community of educators creating and sharing next-generation courseware and technology dedicated to postsecondary success of disadvantaged students in entry-level science
Why Would the Science Division of a Rural Community College be Interested in Inspark and the Habitable Worlds Curriculum?

- Reaching disadvantaged and underserved communities
- Offering access to college level science to a broader community
- Reaching an underprepared community of High School students
- Delivering science education that connects and inspires
- Distance education that fails to go the distance: A track record that falls short of the mark
Failure rates (D,F,W) in online science classes

Student feedback indicates a failure to connect

An unchanging demographic landscape; over 40,000 potential students that are not being reached
Seeing the Problem in a New Way; Innovating Success

- Using technology to open doors and cross cultural divides
- Science as exploration of the unknown; not excavating knowledge of the past
- Connecting with existing experience: college level science as engaging as Portal?
The Process thus Far…

- Exploring the software
- Gauging student reactions and receptivity
- Gauging institutional reactions; leaving the LMS box
- Starting à la carte, finishing table d'hôte; the experience thus far
Q&A AND DISCUSSION

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http://inspark.education

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NEXT WEBINAR

• Wednesday, March 18, 2015 at 12:30 PM ET

• Gaining Actionable Insights on Student Readiness at Houston Community College featuring Houston Community College and Pearson