

# Request for Proposal

## Scaling Adoption of Inspark Courseware

*Inspark Teaching Network*

Issue Date: 30th November 2016

Due Date: 30th January 2017

### Summary

After the recent success of the previous request for proposals, in which 8 institutions were awarded a grant, the Inspark Teaching Network is offering another opportunity to be supported as an institution in an effort to reach a scaled adoption. The program is designed to measurably improve student outcomes, with a focus on engagement, learner success, and completion, by accelerating and scaling adoption of next-generation science courses and technology. The target demographic is low-income, first-generation, minority students (too many are failing high enrollment general education courses, particularly in STEM), with a focus on providing accessible and affordable courseware (\$25 per student, no cost to the institution). In this round, up to 2 institutions will be granted between \$15,000 to \$30,000 and up to 10 institutions a no-cost piloting period. The grants include in-kind support for instructors and students. Courses available include: gen-ed science, non-majors biology, chemistry, physics, and astronomy. Institutions currently participating in the Inspark Teaching Network as well as those new to the project are encouraged to apply.

Grant:

1. Up to 2 grants between \$15,000 to \$30,000, including Spring & Summer 2017 pilot at no cost (instead of \$25 per student)
2. Up to 10 grants offering Spring & Summer 2017 pilots of Inspark courses at no cost (instead of \$25 per student)

Eligibility criteria:

- Courseware adoption in science courses such as introductory non-majors biology & chemistry
- Accredited two-year or four-year postsecondary institution, including state systems
- 15,000 or more undergraduate headcount preferred

Who should apply: Administrators, Provosts, Deans, Department Chairs

### Background

Inspark has developed a series of Smart Courses for introductory science. The next-generation courseware is a personalized learning journey, customizable for the instructor, and uses curriculum centered on compelling scientific questions, such as, *Are alone in the universe?*, in order to engage and motivate students. Learning objectives are threaded through real-world science problems in an effort to teach science as exploration of the unknown, not just mastery of what is known.

The Inspark Teaching Network is a community of educators, creating and sharing personalized learning experiences and supporting Smart Course development. The project is dedicated to postsecondary success of low-income, first-generation, minority students in entry-level science. It is a collaboration between the newly

formed [Center for Education Through eXploration](#) (ETX) at Arizona State University, [Smart Sparrow](#) (a recent Bill & Melinda Gates Foundation grantee for the project), and Achieving the Dream, empowering instructors with the latest digital learning technologies. The network is moving towards becoming its own not-for-profit entity in line with other Teaching Networks such as the [BEST Network](#).

## Grant Program Overview

### Purpose

The purpose of the grant is to support institutions already piloting or interested in adopting Inspark courseware towards achieving scale and effective use of high-quality learning experiences. The Inspark Teaching Network is leading the effort to transform and measurably improve learner success and STEM completion. The curriculum innovation proposed by Inspark, with its unique personalized learning journey, along with adaptive courseware, has the potential, particularly in a blended setting, to achieve greater learner success in these critical low-success courses. This program aims to ensure access and affordability to students in two-year and four-year institutions. Faculty are provided with support and tools to customize the courseware in order to fit their curriculum and teaching.

### Design

Inspark will choose up to 12 institutions to receive a Scaling Adoption of Inspark Courseware grant. Selected institutions will commit to an accelerated adoption of Inspark curriculum and courseware to achieve enrollment milestones (as detailed below in the Selection Criteria) within the program term extending to the end of calendar year 2017. At the conclusion of the program, additional grant funding may be provided. The standard pricing of \$25 per student will not change beyond the program timeframe, and there will never be a cost to the institution to enable the use of the courseware.

Inspark will manage the proposal submission and review process, institution selection, award notification, and all program administration required by the grant. Participating instructors can choose to pilot a portion of the courseware (one lesson or module) during the evaluation, before moving to adopt the majority of the course material in either a blended or fully-online setting.

### Grant Spending

Two institutions will be awarded grant funding between \$15,000 and \$30,000 (10 institutions will be awarded a no-cost pilot for their students). Whilst not prescriptive, grant funding may be used to support:

- a campus-based program manager,
- faculty development to promote program participation, engagement, and instructional skill enhancement,
- faculty release time, or
- stipend for data collection.

In-kind support will be provided by the Inspark Teaching Network as:

- instructor training and workshops, and
- first semester pilot at no cost to the students.

### Impact

The Inspark Teaching Network has the ambitious goal of 150,000 student enrollments by the end of 2017. The courseware is currently being piloted in over 55 institutions across the country, mostly by non-majors students. Whilst the courses can be adapted for majors, the focus on courses for non-majors has high impact because:

- A larger proportion of students take these courses<sup>1</sup>.
- STEM qualifications improve social mobility and future earnings<sup>2</sup>.
- Traditional science and math courses have high failure rates for these students, overloading them with facts and formulas they may never use<sup>3</sup>.
- These courses provide 21st century skills such as critical thinking and scientific reasoning, in what might be the only science course they take.
- These are the students that will become the decision-makers of the future<sup>4</sup>.

This program builds on the recent Inspark Evaluation Cohort to which our Inspark Research & Evaluation team from Arizona State University, University of California, Berkeley, Carnegie Mellon University, and University of Texas at Arlington, has been providing ongoing evaluations. Evaluations of impact, in terms of learner success, extend beyond course grade and completion rates by measuring improvements in scientific reasoning, critical thinking, and persistence (see the [Inspark Learner Success Model in the Data Use Agreement](#)).

## Grant Offering

All selected institutions will receive the following during the grant period, unless stated otherwise:

### For the institution:

- Grant funding to support the launch, implementation, and scaled adoption of personalized courseware (only 2 institutions)
- No cost to students for the first two semester pilots and evaluation (Spring & Summer 2017), with the option for the institution to exit the program (funding will be contingent on continued scaling beyond the evaluation)
- No cost to the institution, ever
- Learner Success Evaluations, conducted by independent evaluator SRI Education and Inspark Research & Evaluation team, measuring outcomes such as scientific reasoning and critical thinking in addition to course grade and completion rates
- Access to the Smart Sparrow Adaptive eLearning Platform to enable the use and customization of the courseware

### For faculty:

- Half-day webinar/workshop, for technology training and curriculum exploration, as part of the Inspark Professional Development Program
- Portion of grant funds eligible to compensate faculty for release time
- Instructional design support for courseware customization
- Dedicated faculty support (setting up courseware and during teaching)
- Dedicated IT (LMS integration) and technical support
- Learning community for faculty implementing the courseware

### For students:

- Subsidized cost of \$25 per student for the courseware (following the first semester pilot) with the option for instructors to replace a more expensive textbook with the courseware

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<sup>1</sup> Based on our research, the *Intro to Biology* course materials market is comprised of ~60% non-majors.

<sup>2</sup> See [recent Chronicle of Higher Ed article](#).

<sup>3</sup> See [article on LaGuardia Community College in NYTimes](#), and [Nature article discussing how few STEM majors in lecture-based model go on to complete their degree](#)

<sup>4</sup> See [recent Slate article on HabWorlds](#)

- Dedicated student mentoring and support by experienced teaching assistants, answering student questions via online discussion boards

## Important Dates and Timeline

Selection Process	
November 30	RFP release
December 7 at 2 PM ET/11 AM PT	RFP Information Webinar ( <a href="#">register</a> )
January 16, 2017	Questions due
January 30	Proposal narrative due
February 3	Institutions notified of selection

Program Timeline	
Spring 2017	Training & workshops provided by Inspark
Late Spring 2017	First partial deployment
Summer 2017	First full deployment
Fall 2017	Enrollment milestone achieved

## Eligibility and Selection Criteria

To choose the institutions, an evaluation committee that includes Inspark, Achieving the Dream, the lead academic partner Arizona State University, and several industry experts, will review proposals based on the following:

### Eligibility Criteria

- Accredited two-year or four-year postsecondary institution, including state systems.
- Unduplicated undergraduate headcount greater than 15,000 preferred.
  - Institutions with unduplicated enrollment less than 15,000 still eligible to apply.
- Percentage of Pell-eligible students greater than or equal to 30% is preferable.

### Selection Criteria

- Adoption of Inspark courseware in one or more of the following disciplines:
  - Biology
  - Anatomy & Physiology
  - Chemistry
  - Physics
  - Environmental Science
  - Geology

- Astronomy
- Inspark courseware to be at least 30% of course content.
- At least 50% of student enrollments using Inspark courseware for chosen courses by Fall 2017.
- Capacity and willingness to evaluate Learner Success (see [Inspark Data Use Agreement](#)).
- Demonstrate commitment to and capacity for successful implementation of Inspark courseware.

## Expectations for Selected Institutions

Selected institutions agree to:

- Report on number of faculty piloting and number of student enrollments in each course
- Provide course completion data for classes where Inspark courseware is being evaluated – data must be disaggregated by race/ethnicity, gender, and Pell eligibility (see [Inspark Data Use Agreement](#))
- Participate in faculty training and workshops to become familiar with content and technology
- Participate in periodic faculty surveys assessing adoption, usability, learner success, etc.

## Contact

Questions regarding this program should be directed to:

David Schönstein  
Director of Network Development  
Inspark Teaching Network  
(415) 490-8054  
[david.schonstein@inspark.education](mailto:david.schonstein@inspark.education)

# About Inspark Courseware

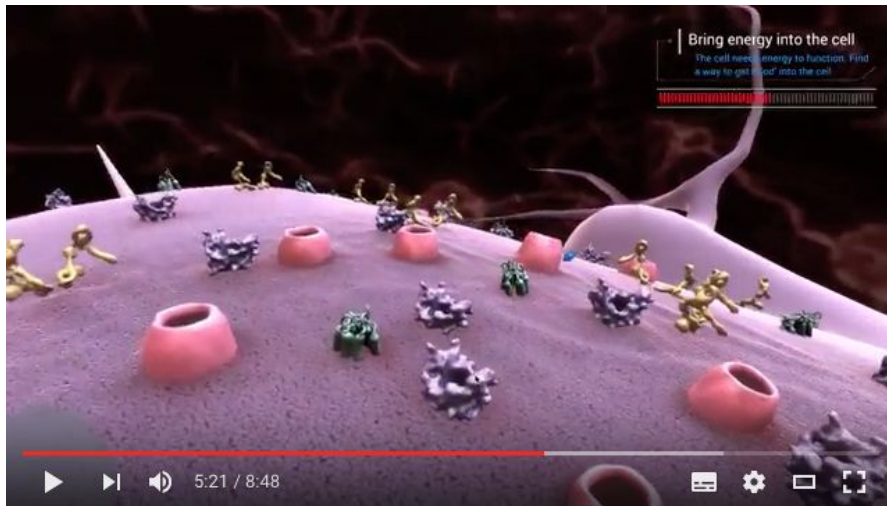
The Inspark courseware are full courses with over 100 hours of learning. They are turn-key and customizable, often used to replace more expensive textbooks. There are currently two courses on offer with more being released early 2017:

## BioBeyond

*BioBeyond* is a 4-credit non-majors 100-level introductory biology course that maps closely to traditional disciplinary learning objectives while motivating students with the *Are We Alone?* narrative. The course can be adapted to a majors course and used in other courses such as anatomy & physiology or environmental science.

See also:

- [Introduction video](#)



- [Courseware demo video](#)
- [Sample lesson on Genetics using DNA Builder Simulation](#)

Inspark Genetic Blueprints

Lucien Kahn

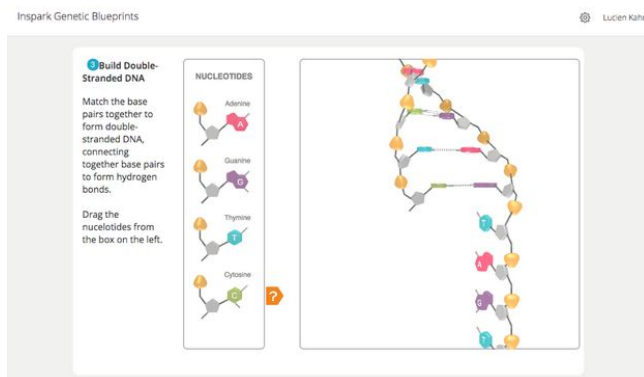
### Build Double-Stranded DNA

Match the base pairs together to form double-stranded DNA, connecting together base pairs to form hydrogen bonds.

Drag the nucleotides from the box on the left.

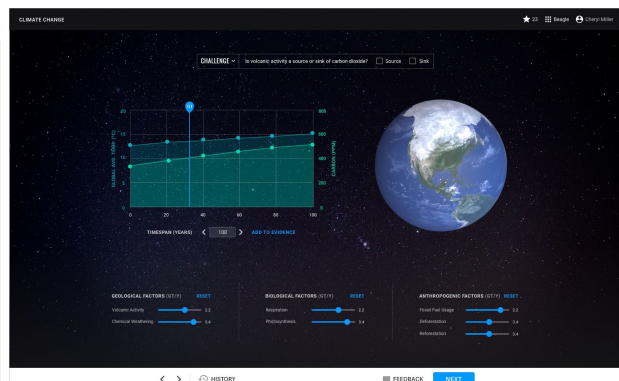
**NUCLEOTIDES**

- Adenine (A)
- Guanine (G)
- Thymine (T)
- Cytosine (C)

A screenshot of the "Inspark Genetic Blueprints" interface. It features a task titled "Build Double-Stranded DNA" with instructions to match base pairs and drag nucleotides. A list of nucleotides (Adenine, Guanine, Thymine, Cytosine) is shown on the left, and a 3D model of a DNA double helix is on the right.

CLIMATE CHANGE

CHALLENGE: Is climate warming a natural or man-made phenomenon?  Natural  Man-made

A screenshot of the "CLIMATE CHANGE" simulation interface. It features a graph showing CO2 levels (ppm) over time (years) from 1800 to 2000. A globe is shown on the right. Below the graph are three sections: "GEOLOGICAL FACTORS", "BIOLOGICAL FACTORS", and "ANTHROPOGENIC FACTORS", each with a "RESET" button and a slider for "Volcano Activity", "Photosynthesis", "Forest Land Change", "Deforestation", and "Urbanization".

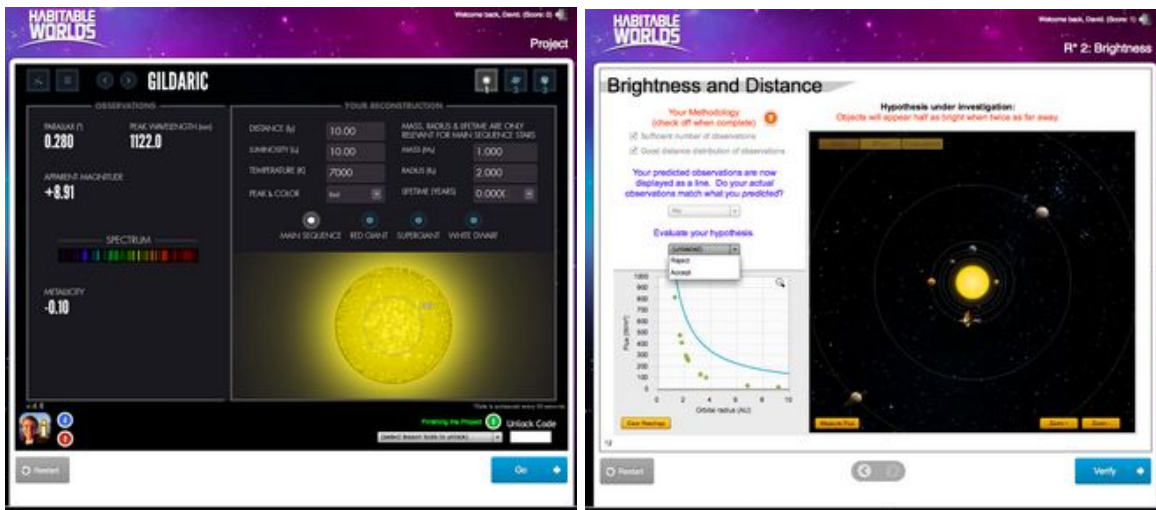


## HabWorlds

*HabWorlds* is a 4-credit general education science course with an Astrobiology (Are We Alone?) theme that can be used as a full course in astronomy or Life In The Universe courses, or partially in physics, environmental science, chemistry, biology, and geology courses.

See also:

- [HabWorlds.org](http://HabWorlds.org)
- [Introduction video](#)
- [Courseware demo video](#)
- [Sample lesson teaching the relationship between brightness and distance \(and the scientific method\)](#)



## Forthcoming Courses

- Chemistry (two semester general chemistry with lab): early 2017
  - A course teaching chemistry principles through the interplay of matter and energy. Through challenges and problems concerning nuclear fusion to nuclear power, students connect abstract principles to concrete applications.
- Physics: mid 2017

## Features

Product features and approach to adaptivity:

- [Education Through eXploration](#): partnership with Arizona State University using the philosophy of teaching science as exploration of the unknown, not just mastery of the known
- Curriculum innovation: a personalized learning journey that threads the learning objectives of a traditional disciplinary course through real-world science problems
- Project- & enquiry-based: students are motivated by interactive & personalized learning assets (or Projects) such as a Life Detection Lab, Mendelian Classification, and Starfield Search for Life
- Simulations: courses contain some 20 simulations to help students explore and understand complex concepts
- Adaptive: Smart Sparrow platform uses adaptive feedback and adaptive pathways to guide students through problem-solving activities

- Customization: curriculum is modular, can be sequenced and adapted (using the Authoring Environment) to fit to any blended and fully-online delivery
- Analytics: visualize common misconceptions & support students in real-time or retrospectively evaluate the effectiveness of the courseware
- LMS Integration: LTI interoperability ensures integration with all modern LMS including Blackboard, Canvas, and Moodle enabling single sign-on
- Access: \$25 per student for unlimited access to the full course
- Accessibility: the courseware is Level AA WCAG 2.0, and Section 508 Compliant
- Support: includes instructor manuals, technical support, faculty training, LMS integration support, faculty professional development (workshops & webinars), and teaching assistants to support students
- Evaluation: all deployments are supported by the Inspark R&E Team (Arizona State University, University of Texas at Arlington, University of California Berkeley, Carnegie Mellon University) incorporating our Learner Success Model measuring outcomes such as scientific reasoning and critical thinking

Courseware content source:

- Collaboration between universities such as Arizona State University (the Inspark Teaching Network) and the Smart Sparrow Learning Design Studio
- Currently piloted by over 40 Teaching Partners, such as Arizona State University, Miami Dade College, Lone Star College, American Public University System, and Central Piedmont Community College, feeding iterative cycles of courseware improvement
- Courseware is owned by Inspark and available to use and adapt

## Case Studies and Testimonials

- Watch [our instructor testimonial videos on YouTube](#)
- Watch introduction videos to [BioBeyond](#) & [HabWorlds](#) courses
- Visit the [Inspark website Case Studies](#)

If you would like to contact any of the faculty/institutions from these notable Inspark Teaching Partners below, please let us know and we would be happy to make introductions.

### Miami Dade College

Miami Dade College is a lead Teaching Partner on this project. Inspark has been part of their professional development program for two years running with 20 instructors already using the courseware in their courses. Professors have been involved in:

- Professional Development workshops and conferences
- Inspark research and evaluation, measuring improvements in scientific reasoning
- Multi-day campus wide events, called Aliens Among Us at InterAmerican campus, centered on critical thinking and inspired by the *HabWorlds* course

### Instructor Spotlight

Inspark Offering: *HabWorlds* & *BioBeyond*

Course Names: General Education Biology Lab (BSC 1005), Energy in the Natural Environment (PSC 1515), Introduction to Oceanography (OCE 1005)

Discipline: Biology & Physical Sciences/Natural Sciences

Instructors: Rene Revuelta & Alfredo Leon



Teaching Mode: Blended

Number of Students: 40 and 80 student sections

Feedback:

*"The Inspark project offers educational justice: if it was not for the Inspark project my students would not have access to this kind of high-quality, intellectual, and hands-on learning experience."*

*The Inspark courseware is really a next-generation textbook, workbook, laboratory book. And it is the textbook for my students. The courseware truly engages my students: Inspark brings – and shows – the importance of formulating questions and exploration to the classroom.*

*The courseware is challenging, scientifically rigorous, and rich in content."*

## **McGill University**

Professors at McGill University have been offering a series of innovative in-class activities centered around the Inspark courseware.

### **Instructor Spotlight**

Inspark Offering: *HabWorlds*

Course Name: Astrobiology (EPSC 182)

Discipline: Planetary Sciences

Instructors: Nicholas Cowen & Boswell Wing

Teaching Mode: Blended

Number of Students: 140

Feedback:

*"We ran a flipped classroom of 140 students with Habitable Worlds as the "textbook". The online learning allowed us to be more interactive in class, and we could skip many of the quantitative parts, knowing that the students were getting that through HabWorlds. It was fun to see the kids come in every week having learned a bit more and without having to teach them every little detail."*

## **Mohave Community College**

Mohave Community College in Arizona has been instrumental in helping improve the *BioBeyond* course with multiple Faculty Feedback Sessions. Professors have joined workshops and conferences.

### **Instructor Spotlight**

Inspark Offering: *BioBeyond*

Course Name: Biology Concepts with Lab (BIO 100 & BIO 100L)

Discipline: Biology

Instructor: Melissa Ha

Teaching Mode: Blended

Number of Students: 24

Feedback:

*"Inspark offers students high-quality course materials at minimal cost relative to traditional textbooks. In fact, Inspark courseware supersedes traditional textbooks in its ability to engage students and personalize content."*

## **Bristol Community College**

Bristol Community College, in Fall River Massachusetts, has been an early adopter of *HabWorlds* and has successfully offered the courseware in a fully-online setting with support from Inspark.

## Faculty Spotlight

Inspark Offering: *HabWorlds*

Course Name: Introduction to Astrobiology (AST 192)

Discipline: Astronomy

Instructor: Stephan Martin

Teaching Mode: Fully-online

Number of Students: 25

Feedback:

*"Habitable Worlds has not only given my students a firm grounding in scientific principles and process, but it's given them a taste of the thrill of discovery as they search the skies for signs of life!"*

*The Inspark support my students and I received was essential to our success as a class. As a result of their quick professional response, we had next to zero downtime for our online course."*

## Glendale Community College

Glendale Community College, part of the Maricopa County Community College District in Arizona, has helped with curriculum adoption of *HabWorlds* with the system and articulation between the community colleges and Arizona State University. Professors have been involved in:

- Professional Development workshops
- Cycles of course improvement and Faculty Feedback Sessions
- A sabbatical to take *HabWorlds* and adapt it to a standalone Astronomy course

## Faculty Spotlight

Inspark Offering: *HabWorlds*

Course Name: Life in the Universe (AST 106)

Discipline: Astronomy

Instructor: Sally Watt

Teaching Mode: Blended

Number of Students: 48

Feedback:

*"Using Habitable Worlds has changed the way I teach. The development of a "flipped" classroom approach for my Life in the Universe course using Habitable Worlds has allowed me to lecture less and employ more active engagement activities in the classroom. Students apply the skills they are learning to real-world applications. I feel that the students gain an incredible amount of astronomy knowledge and have mastery of the calculations and the science behind them."*

## Arizona State University

ASU is the lead academic partner for this project in addition to being the hub of subject matter expertise for courseware development. *HabWorlds* was developed at ASU and taught as a fully-online compressed seven week course. *BioBeyond* is now also being offered.

## Faculty Spotlight

Inspark Offering: *HabWorlds* & *BioBeyond*

Course Name: Habitable Worlds (SES 106) & The Living World (BIO 100)

Discipline: Astrobiology & Biology

Instructor: Ariel Anbar

Teaching Mode: Fully-online

Number of Students: 400 & 200

## Student Feedback

*"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."*

*"... each new idea and concept [was presented] in small, bite-sized modules, which included highly interactive tutorials and reinforcement exercises. This was a revelation for me, I felt like I was truly learning instead of just memorizing and regurgitating."*

*"[this] innovative approach to teaching made the impossible seem possible...Prior to his class, I had no interest in any form of science. Now I find myself scouring the Internet for news about newfound solar systems and the possibility of another habitable world."*

*"I'll never look at the stars or planets or atmospheric cycles or consider the search for life the same again! If your goal was to open our eyes, well, congratulations you did!"*

## Preliminary Evaluations

### *HabWorlds*

#### Instructor Survey

For 6 instructors that piloted *HabWorlds* in Fall 2015, the average satisfaction, on a scale of 1 (highly dissatisfied) to 5 (highly satisfied), **the average response was 4.83**. The question was: "Overall, how satisfied have you been when using *HabWorlds* in your course(s)?"

#### ASU Student Learning

Overall, **two thirds of students received 90% or higher** on the *HabWorlds* Project, the main application of their learning and major assessment in the course. Through this summative activity, students demonstrate that they have retained important concepts and that they can apply them in a novel situation.

#### ASU Student Surveys

At the end of the semester, students rated their agreement with the statement: "This course was a good way of learning about the subject matter," **at 4.4 out of 5** (n = 821). Similarly, they rated their agreement with the statement: "This course had a positive effect on my interest in science," **at 4.2 out of 5** (n = 819).

Students responded to the Classroom Undergraduate Research Experience (CURE) survey<sup>5</sup> before and after completing the course. There was a **statistically significant increase** in students agreeing with the statement:

- "I can do well in science courses."
- "Even if I forget the facts, I'll still be able to use the thinking skills I learn in science."

Preliminary evidence also suggests that students leave the course with a:

- greater understanding of the scientific process
- greater confidence in their own scientific abilities, and
- a good understanding of the specific concepts underlying the search for exoplanets.

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<sup>5</sup> Denofrio, L.A., Russell, B., Lopatto, D. and Lu, Y., 2007. Linking student interests to science curricula.

## BioBeyond

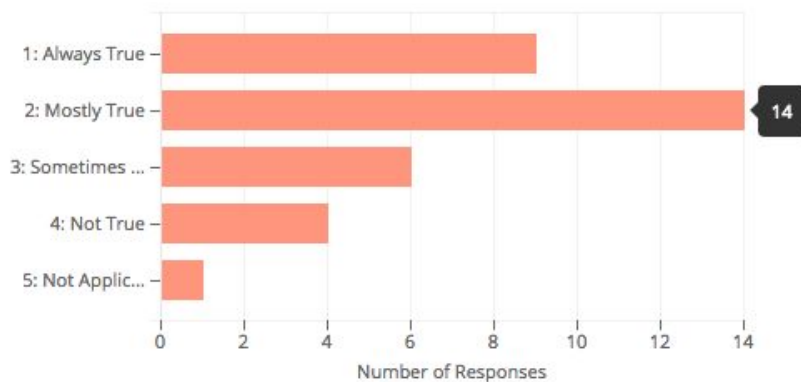
### ASU Student Learning

Independent evaluations are still ongoing with [SRI Education](#). A series of impact studies were run in Fall 2016 with some preliminary results available. For example, students using the Inspark pre-post biology concept inventory quiz, offered with the ASU Online Fall A deployment, showed a statistically significant improvement in performance.

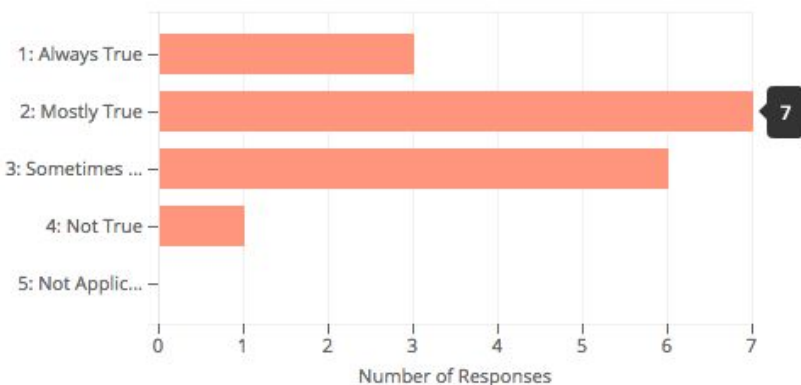
### Student Survey

To the question, "*BioBeyond* is more helpful than a textbook", the majority of students said *BioBeyond* was superior to a textbook and lead to a better understanding of the content.

#### Miami Dade College



#### Mohave Community College



In an additional survey, to the question, "How did *BioBeyond* influence your ability to understand the content of the course?", students answered:

- I understood the content much better because of the *BioBeyond*. (7)
- I understood the content slightly better because of the *BioBeyond*. (3)
- *BioBeyond* had no influence on my understanding of the content. (3)
- *BioBeyond* made content slightly more difficult to understand.
- *BioBeyond* made the content significantly more difficult to understand.
- I did not access *BioBeyond*.

To the question, "How did the quality of the *BioBeyond* compare to textbooks/materials that you have used in the past (including high school)?", students answered:

- The *BioBeyond* was significantly better. **(5)**
- The *BioBeyond* was slightly better. **(4)**
- The *BioBeyond* was comparable previously used materials. **(1)**
- The *BioBeyond* was slightly worse. **(1)**
- The *BioBeyond* was significantly worse. **(1)**
- I did not access the textbook.