



# REALISE

Realising Inclusive Science Excellence

February 2019

## Highlights:



[Resources:](#) Inclusive teaching strategies



[SciArt Showcase](#)



Student [Drop-Ins](#) are now in session



[What is REALISE?](#)

## Inclusive teaching strategies that work in classes of all sizes

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*By Anna Curtis & Ariel Firebaugh*

How do you implement inclusive teaching practices in high-enrollment courses? UNC Biology professor Kelly Hogan has spent the past decade developing strategies to create a welcoming but rigorous classroom environment for her students— all 300 of them! Her course is "flipped" (with more time devoted to activities than to lecture), yet structured. Clear learning objectives supported by frequent practice problems help students monitor their own progress. Meticulous record-keeping has persuaded Hogan that these tactics are helping to close achievement gaps in her courses.

Below are some of Hogan's tips and tricks from [recent article](#) in *The Chronicle of Higher Education*, and from a workshop she facilitated at the [2019 Conference on Higher Education Pedagogy at Virginia Tech](#). Small changes like these will help your class become more inclusive, whether you're teaching 20 students or 200!

**Strategies to help you reach every student:**

- **Humanize yourself** at the beginning of the semester. Talk about your favorite movies, foods, and vacation destinations. Students learn more when they feel connected, recognized as individuals, and part of a team. As the coach of the team, your personal involvement and personal story matter!

- **Add structure.** Instead of hoping students will "get something" out of a reading, direct students to key ideas by assigning guided reading exercises. Even the best students at premier universities struggle with basic time management, organization, and study skills. High achieving students may have never needed to study in high school, while average students may never have learned how and are working hard rather than smart. Every student could benefit from being shown *how* to learn effectively from a textbook.

- **Create community** by assigning regular group work. Groups can give students a sense of camaraderie and accountability. Additionally, [studies show](#) that the kind of cooperative learning associated with group work boosts individual performance.

- Mix up the groups only 1-2 times per semester so that the students have time to get comfortable with one another.
- When asking questions, call on groups instead of on individual students. The shared responsibility of solving a problem puts less pressure on individual students.
- Long lecture hall rows? Form groups of four: two students in the front and two students in the back.

Click [here](#) to read more tips from Hogan.

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## SciArt Showcase

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*Artwork from students in Jeremy Wojdak's 2017 BIOL 481 Scientific Illustration class.*

REALISE will host a **SciArt Showcase** in Spring 2019. This event challenges students to **communicate science through art** by creating original artwork explaining or exposing a scientific concept for a general audience. To help students reflect on their work, we are also asking each participant to write a short statement about their scientific inspiration and process. The showcase will be held in conjunction with the [Student Engagement Forum](#) in late April.

### **"Science art? This seems fluffy."**

Here's what we're thinking:

- **Humans are multisensory learners.** The drawings, digital media, sculpture, and dance pieces our students create for this showcase will help them connect with classroom content.
- **Science needs strong communicators.** We are asking students to distill complex information into a straightforward message. This is a skill that [employers want](#) and that society needs.
- **Art can lead to insight.** For example, a metal model helped Watson and Crick piece together the structure of the DNA double helix.

**Want to learn more about the connection between science and art?** Check out [this talk](#) by artist/geneticist Ahna Skop. When a professor told Skop she was "too creative for science," she was devastated, and considered leaving the discipline altogether. Now a tenured professor at the University of Wisconsin Madison, Skop's fluorescent images of dividing cells have illuminated the importance of an overlooked cell structure, and have appeared on the cover of [Science](#).

**Need more examples?** We've created a PowerPoint file with [some of our favorites!](#)

**How you can help:**

- Share the event with your students.
- Share excellent examples that you've seen of art being used to effectively communicate science.
- Share challenging concepts, data, or processes (from your courses or research) that might serve as a challenge for a student to communicate visually, or for which you'd love to have a visualization.

**Other ideas? Just want to help?** Contact [Todd Rutkowski](#) or [Ariel Firebaugh](#).

## SciArt Showcase: Next steps

### Workshops

Many of our students are already talented artists with expertise in particular media. For students eager to expand their skill sets as science communicators, we are hosting short workshops to expose students to different technologies or artistic methods. Here's what we have lined up so far:

### Graphic Design

CS 389 • 7:00-9:00 PM  
Wednesday, February 27th  
Wednesday, March 6th

### 3D Printing

Peery Hall B01 • 6:00-8:00 PM  
Tuesday, March 19th

### Are your students already ready to submit their artwork?

We're accepting submissions here: <https://tinyurl.com/realise-sciart>

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## Send your students to a REALISE Drop-In session for near-peer support

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*Leslie Molina-Arana (front right) shares scheduling tips with chemistry students Jacey Estep, Rebecca Salen, and Kayla Snyder at a Drop-In session.*

Spring 2019 Drop-In sessions are underway! A Drop-In session is a comfortable space for science students to gather and exchange advice and encouragement. No appointment necessary! Drop-In sessions are hosted by "veteran" Biology, Chemistry, and Physics majors who have weathered Radford's toughest science classes. Below is a schedule with Drop-In days, times, and locations by discipline:

# Drop-Ins

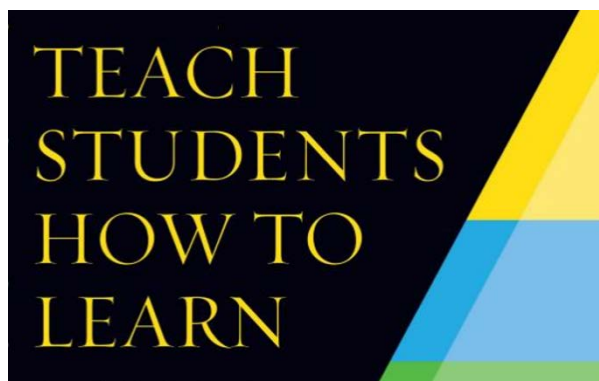
Chat, vent, or strategize with fellow science students at a REALISE Drop-In session.

Monday	Tuesday	Wednesday	Thursday	Friday
Biology 10:00 - 11:00	Physics 12:00 - 2:00	Biology 12:00 - 2:00	Biology 2:00 - 3:00	Biology 12:00 - 1:00
Physics 1:00 - 2:00	Biology 2:00 - 3:00	Physics 12:00 - 1:00	Chemistry 3:00 - 4:00	
Chemistry 4:00 - 5:00	Chemistry 4:00 - 5:00	Chemistry 5:00 - 6:00		

**Locations:** Biology: CS 267 • Chemistry: CS 263 • Physics: McConnell 231

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## STEMed Reading Group



**Last Friday of the month  
@ 1:00 PM in CS 286**

*Hosted by the Center for Innovative  
Teaching and Learning  
and the REALISE Program*

The Spring 2019 STEMed Reading Group book is *Teach students how to learn* by Sandra McGuire (Stylus Publishing, 2015).

By meeting regularly throughout the semester to discuss this text, we hope to create a community of scholarly dialogue around teaching, blending the best ideas of experts with the local wisdom and experience of our faculty.

Come when you can! The readings are modular, such that discussing any topic in isolation will still be valuable. **Faculty are welcome to attend any/all session(s).**

[Email us](#) for a free copy of the book!

Date	Topic
February 22	Chapters 4-6 The power of teaching Bloom's Taxonomy and the study cycle to students Metacognitive learning strategies at work Mindset matters
March 29	Chapters 7-9 Connections between motivation, positive emotions, and learning What faculty can do to boost motivation, positive emotions, and learning What students can do to boost motivation, positive emotions, and learning
April 26	Chapters 10-12 Partnering with your campus learning center Teaching learning strategies to groups Teaching unprepared students

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## Request for Proposals: **Kickbox Minigrants**

Want to learn more?  
**Check Out D2L!**

**Kickbox Minigrants** are a virtual "box" of resources that **kickstart** faculty-student making-themed or project-based learning pilot projects.

Awards are up to **\$500**.

**Reach out before you write:**



[Tara Phelps-Durr](#) or [Jeremy Wojdak](#) can work with you to clarify grant guidelines and make suggestions that might sharpen your proposal.

We are compiling a growing library of shared resources on the REALISE program's [D2L page](#). On tap:

- Writing welcoming syllabi
- Group work
- Project-based learning
- Microaggressions
- The Kickbox Minigrant RFP
- REALISE project details
- ... and more!

Contact [Tara](#) to be added to the REALISE D2L page.

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## What is REALISE?

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**The challenge:** From 2013-2015, Biology, Chemistry, and Physics retained ~50% of new majors. Another subset persisted, but didn't thrive academically or engage in the experiences we know are most impactful for our students.

**The goal:** To improve student success through strategic, evidence-based reforms targeting freshman, sophomore and transfer students.

**The rationale:** We know close student-faculty relationships, mentored research, student STEM clubs, and the like are amazing for our students. But we lose ~1/2 of our students before they can participate in our most valuable experiences. More students will succeed if we can provide those experiences earlier, and critically, provide them within courses where they are available to everyone.

**What REALISE offers faculty:**

- Support to pursue impactful and inclusive educational practices, such as project-based learning and course-embedded research projects.
- Opportunities to just talk with your colleagues about what works for them, in their classrooms.
- Time – time to reflect, think, plan, and implement the kind of lessons you wish you had the time to do.

**What REALISE offers students:**

It may be surprising, but most students drop out of STEM not from disinterest or inability to meet the academic challenges, but because they don't feel like they belong, or don't feel



welcome. Thus, REALISE is trying to generate stronger social and academic support networks among student peers and between students and faculty.

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## An open invitation...

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Whether you are interested, excited, nervous, or skeptical, we'd love to meet with you on-on-one to chat about how we can:

- Help you share your own expertise and experience with others.
- Use your concerns to improve the project as we go.
- Help you find what you need to try something new in your course (e.g., materials, time, technical/instructional expertise).
- Help you identify a part of the initiative that resonates with what you already do and value.
- Plan for how you can get involved.
- Figure out what the heck "Inclusive Excellence" means.

Contact [Sarah](#), [Tara](#), or [Jeremy](#) and we can share ideas over coffee.

Contact [Ariel Firebaugh](#) to be added to or removed from the newsletter subscriber list.

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