Why Stumble Into Academic Success?: Use Pedagogy That Is Intentional

Presenter:

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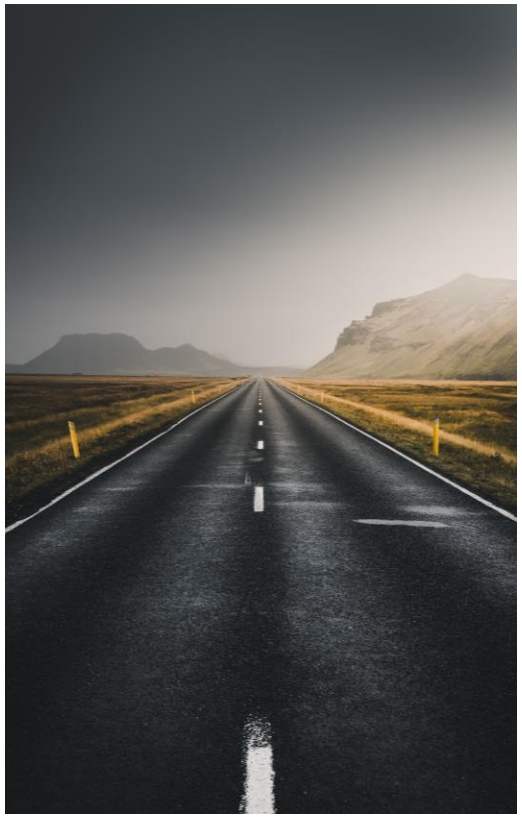
About Me:

- 30+ years in higher education
- Taught mathematics for STEM students
- Director of Learning Center
- Created and taught course curriculum for first-year student success courses
- Research focused on student persistence in introductory science coursework
- First-Generation EOF student



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Workshop Overview

Too often students 'stumble' into academic success. Instead of tailoring academic activities to promote student success, we often create activities that deliver content with the expectation of student academic success. Why not **design activities that are intentional** in their design to promote academic success. This workshop will **share information from my research that views student academic success from a student persistence and constructivist lens**. Participants will **discuss how academic pedagogy and student experiences** can engender student academic success, particularly in STEM majors. Participants will walk away from this session with information that will **support the development of classroom pedagogy to enhance the student's learning experiences and assist with persistence in the sciences**.

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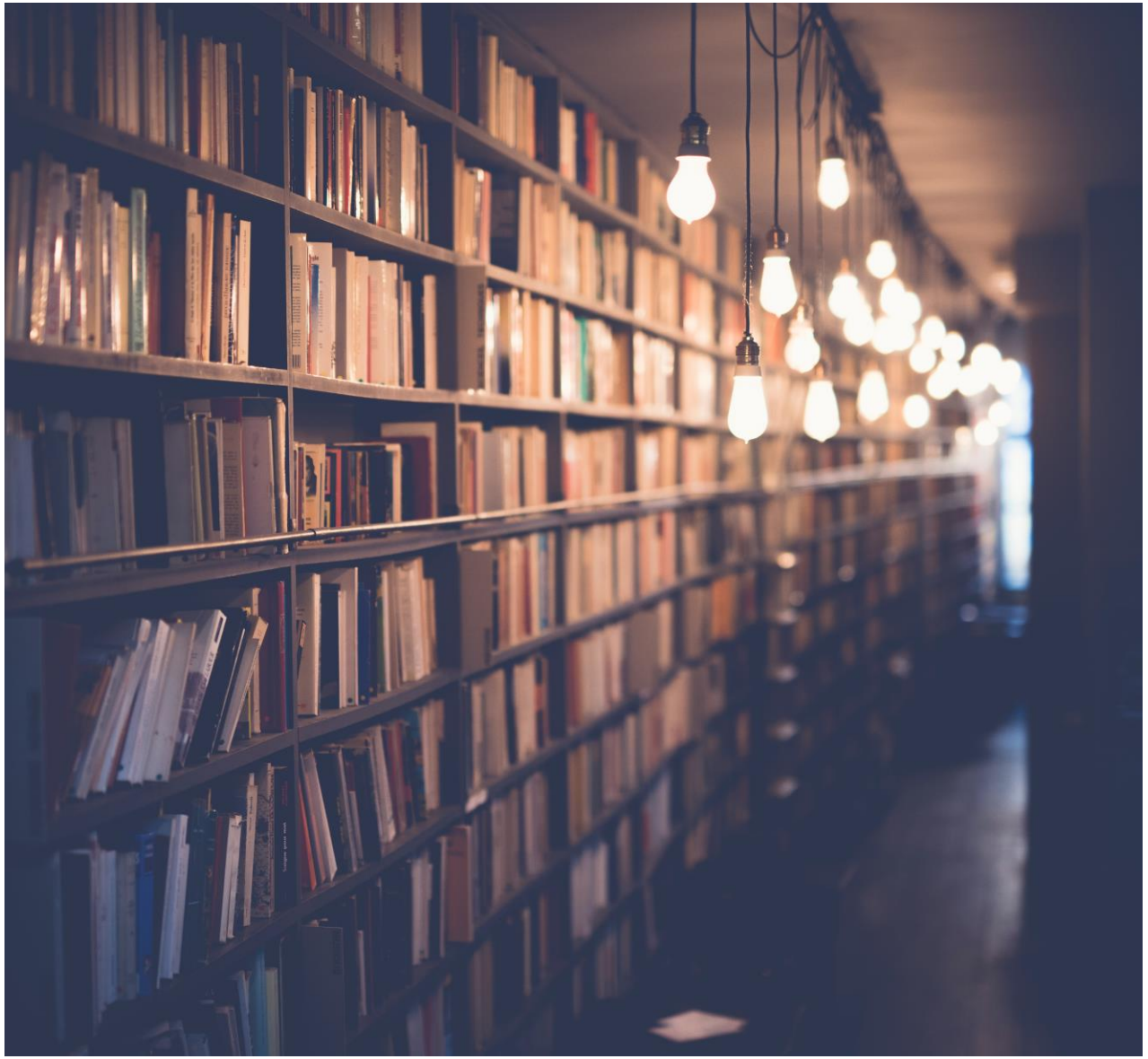
INTENTIONALITY!

Mary C. Brucker (2014) stated "… indicates that projects, research and new initiatives are performed with some rationale."

Why not design activities that are intentional in their design to promote academic success for our students.

Student Success in Introductory Science Coursework: A Solid GEMS Perspective

- Overview
- Theoretical Framework
- Significance
- Findings
- Implications



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Overview

- Examined the influence of Solid GEMS Chemistry pedagogical practices on Rutgers School of Environmental and Biological Sciences (SEBS) first-year Educational Opportunity Fund (EOF) student **success** in introductory chemistry and **persistence** in the sciences.

- Explored how student attitudes towards the sciences may be shaped by their experiences in introductory science coursework and how those experiences might impact subsequent enrollment in science courses – particularly Organic Chemistry.

Solid GEMS Chemistry

- Modeled after Xavier University's Project SOAR
- Created (1986) to address EOF student declining enrollment and unsuccessful completion of the introductory chemistry course sequence - General Chemistry 161/162
- Designed to enhance student ability to use abstract reasoning and critical thinking skills
- Originally designed as a first-year experience integrating math, science, and English
- Began as a summer bridge course but has since been adapted as an academic year introductory chemistry course for science majors

Theoretical Framework

Student Persistence Theory

– Vincent Tinto (1993, 1997)

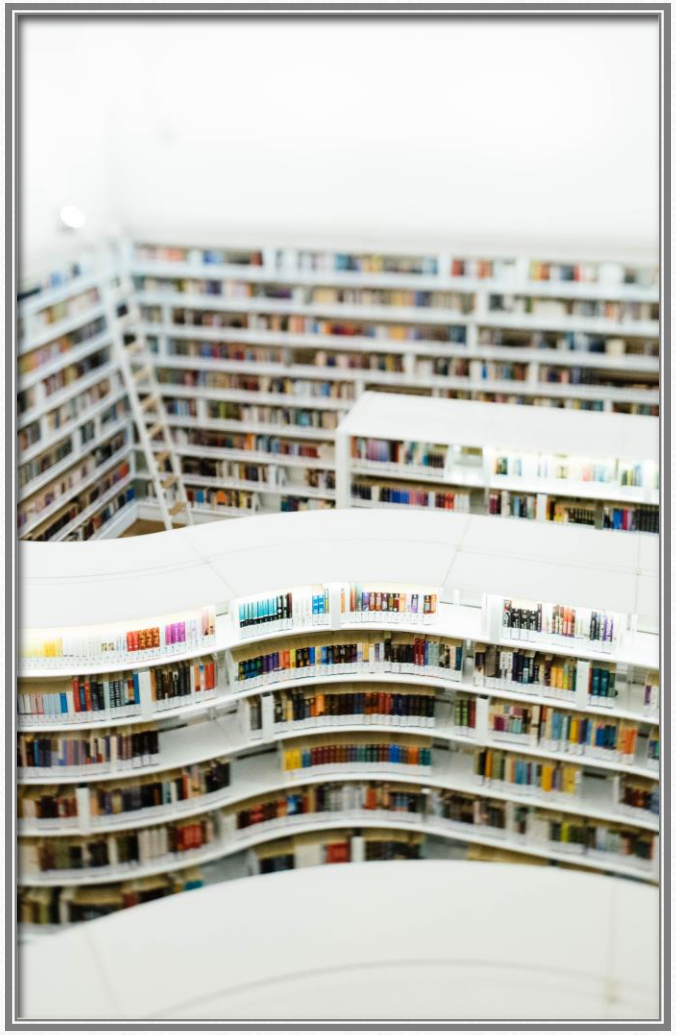
Examining Institutional Structures

- Commitment
- Expectations
- Feedback
- Support
- Involvement
- Learning

Constructivist Theory

– Jean Piaget (1964)/Lev Vygotsky (1978)

Autonomous (Piagetian)
Social/Human Interaction (Vygotskyan)



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Significance

- Increasing underrepresented/low-income student population necessitates the development of student-centered instruction that accommodates the educational needs of changing demographics
- Number of students who leave STEM majors is a concern for many colleges and universities, and the global competitiveness of our nation
- Rutgers, SEBS and the EOF administration have a vested interest in student success and persistence in STEM fields
- Useful in the design of instructional practices and programs to increase student retention in the sciences, particularly for underrepresented minorities

Findings

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Student Voices

Sarah remarks: "I feel like the time and the material [is] a lot less. Even on the quizzes, you don't need to know as much as you need to know on the [Non-Solid-GEMS quizzes]."

Shelia remarks: "[The Solid GEMS instructor] gives you a full lecture of everything that you have to know. And [the lecture] is longer so that [the professor can] talk more about the material. I feel like that is better."

Terri remarks: "The recitation teacher really polishes my knowledge of the material, because I ha[ve] to hear it a second time for me to get it."

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Student Voices

Sarah remarks: "I heard about people in regular [Non-Solid GEMS] Chem[istry] struggling. [Then] I'm pretty happy that I'm in this class [Solid GEMS] it's better for me. [The professor] does go really slow and explains most of the things better. So, even people who are in Non-Solid GEMS… friends come to my lectures."

Mark remarks: "Solid GEMS [is] broken up more. So you cover material in smaller bits of information that's more spread out. While General Chemistry [Non-Solid GEMS] is just like a lot of information that is jumbled in and you are supposed to absorb it."

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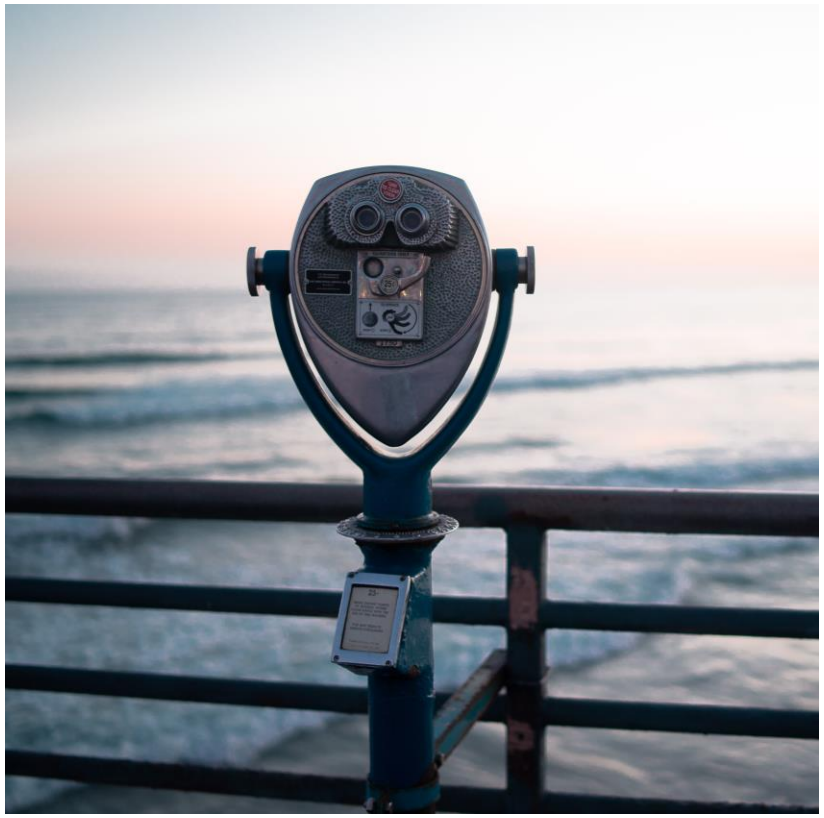
Overall

Students feel/believe that:

- Smaller class size facilitates learning through less intimidation
- Extended time, while not welcomed at first, is beneficial to understanding/learning the material
- Additional testing opportunities require less content knowledge between tests
- Faculty caring about learning makes them feel valued/supported

Sarah remarks:

"I am understanding everything so much better. I am doing good on the quizzes. I am like, oh yeah, I know how to do this. And, when I get my quizzes, I am like oh yeah. I feel good. I know this. This is why I get [good] grade[s]."



Academic Success Pedagogical Practices:

- Smaller Classes
- Extended Class Time
- Additional Test/Assessments
- Hands-On Learning/Problem Solving
- Faculty Interactions
- Instructional Artifacts

Activity

Think about a class, workshop, discussion or session where you walked away with knowledge/understanding. What did the presenter do? How did you feel before, during and after the sessions?

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1 + 1 = 2

We know this… But how do we present this in a way that will provide opportunity for enhancement of student learning outcomes?

Intentional Pedagogy

Breakout Rooms
White Board
Reaction Buttons
Chat Feature
Polling
Recording
Camera (Off/On)
Class Schedule/Length
Class Notes/Journals
Key Points List

What is in your toolbox of intentional pedagogy?

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In conclusion

A Jenicism...

"You cannot tutor your way into the sciences."

Be intentional to engender positive student learning outcomes!

Literature

Academic Preparation

Russell and Atwater, 2005; Adelman, 2006; Maltese and Tai, 2011

Educational Experiences/Practices

Seymour and Hewitt, 1997; Etkina et al., 1999; Spring et al., 1999; Maltese and Tai, 2011; Sabb, 2015

Institutional Climate/Faculty Interactions

Terenzini and Pascarella, 1977; Tinto, 1993, 1997, 2002; Tinto and Goodsell, 1994, Koenig et al., 2012

Gender/Ethnicity

Atwater, 2000; Titus, 2004; Trenor et al., 2008; Griffith, 2010; Maltese and Tai, 2011

Citations

Brucker, Mary. "Intentionality." Nursing for Women's Health, vol. 18, no. 1, Elsevier Inc, Feb. 2014, pp. 7–8, doi:10.1111/1751-486X.12087.

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Questions

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