Designs, Maps, and Tools: A Model for Supporting Intentional Teaching

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Center for Innovative Teaching and Learning
Teagle Foundation’s Goal
to prepare future faculty for effective teaching

Our Approach

• Learn the value of an inquiry stance in teaching
• Continue to develop their identities as scholars in their field
• Understand how their discipline contributes
• Have access to the assets of other disciplines and inter-disciplines
Implications

• For faculty learning
• For program alignment
• For campus community
## Convergence of 2 Strands of Research

<table>
<thead>
<tr>
<th>SOTL</th>
<th>Learning Sciences</th>
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<tbody>
<tr>
<td>Disciplinary experts take up highly contextual studies, deeply informed by their knowledge domains and their classroom realities, to describe and revise their teaching and their students’ learning, and share findings.</td>
<td>An interdisciplinary field that focuses on theoretical understandings of how people learn, and pragmatic issues involving the design and implementation of learning innovations, and improvement of instructional methods.</td>
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</table>
The Trading Zone:
• New Colleagues
• New Languages
• New Methods
• Peer Reviewers
• Unpredictable Spread of Ideas

Faculty Mentor

AI Cohort From Her Department

3 College Departments: Humanities, Social Sciences, Sciences

Learning Sciences & Assessment Team
IU’s Teagle Collegium
Our Focus Today: Supporting Intentional Teaching

- **Theory**: provide a lens to interpret classroom practice
- **Interdisciplinary Talk**: prompt grad students to question assumptions
- **Assessment**: provide tools to evaluate *formatively* what was working (or not)
Goal of collegium:
Support intentionality in teaching

...and we did it!
What is intentionality...and why does it matter?

• Instructors often teach in ways that reflect their own experiences as students.
  – This means that, more often than not
    • Imitating practices that may not be effective
    • Unsure WHEN a particular practice might be useful (or not)
    • Unsure how to make productive changes when problems arise.
2. In what ways did the Collegium affect your teaching and/or your preparation for teaching?

It helped me realize that being an effective teacher is much more than being a great lecturer and having your facts straight. Now making instructional decisions **for a reason**...

....helped me realize that being an effective teacher is much more than being a great lecturer and having your facts straight....
Teaching with intentionality

• Articulating learning goals
• Understanding something about *how people learn*
• Knowing how to *keep track of students’ thinking*
• Being exposed to a broad range of pedagogical practices
Did students start to teach with intentionality?

I’ve been much more intentional about identifying problems and challenges and designing specific responses to those problems.
Did students start to teach with intentionality?

• Yes

• 9 out of 11 AIs explicitly mentioned changes in intentionality (in post questionnaire)
  – They *talked about* intentionality as a significant change in their practice.
  – They started to *critique* previous ways they had taught (and been taught) and started to think about alternative methods.
  – They began to develop ways to evaluate the effectiveness of their own teaching.
What does talk about intentionality sound like?

1. What is the most important idea or practice you gained from your participation in the Teagle Collegium this year?

   The best practice I’ve gained is critical self-reflection. I now plan activities based on learning goals, and then assess if they worked. I am also very grateful for the ideas of modeling thought-patterns and activities. Being more reflective has helped me improve activities and my interaction with students, because I can be more efficient in how I explain knowledge while also engaging them more.

   I now plan activities based on learning goals, and then assess if they worked.
Innovate a teaching solution and assess the success of the innovation

1. What is the most important idea or practice you gained from your participation in the Teagle Collegium this year?

Identify misconceptions/difficult material, innovate a teaching solution and assess the success of the innovation, especially when it comes to signature pedagogies. The whole reflective process.

Innovate a teaching solution and assess the success of the innovation
What does talk about intentionality sound like?

1. What is the most important idea or practice you gained from your participation in the Teagle Collegium this year?

Empowerment. Gaining the tools to understand learning, design meaningful tasks for students, and understanding how those tasks achieved my goals means that I can adapt and change when something isn’t working.

...design meaningful tasks for students, and understanding how those tasks achieved my goals means I can adapt and change when something isn’t working.
How we did we get there?
Understanding Learning and Instructional Theory provides a lens to interpret classroom practice
Designing Learning Environments to Foster Intentionality

Knowledge-centered

Learner-centered

Assessment-centered

Community-centered

Does the structure of a learning environment invite the kind of learning we want to see?
Aligning environments with objectives

Relating alignment to teaching

• Grad students reflected on where their teaching was centered.
• Grad students reflected on how their teaching aligned with goals to teach process skills and content.
Reflect on where students’ teaching lies

“I feel like all of my class and all of my assignments are – ...extremely...open...and ... every semester I get a lot of resistance to that. ...I feel like I don’t’ know how to constrain a cultural analysis process”

Communication and Culture student
Compared to

“I feel like I’m definitely in the upper left quadrant. Constraining and rich. But that’s also what’s valued, especially at lower levels if that’s what we’re talking about.”

Biology graduate student
What was needed

• Ways to parse out differences and similarities in teaching across the disciplines.
• Ways to improve alignment of objectives with teaching methods.
• Fundamental to these needs—a common language
Creating opportunities for Interdisciplinary Talk

prompts students to question assumptions
How does interdisciplinary talk contribute to reaching program goals?

• Learn the value of an inquiry stance in teaching
• Understand how their discipline contributes
• Continue to develop their identities as scholars in their field
• Have access to the assets of other disciplines and inter-disciplines
Opportunities for Interdisciplinary talk

Collegium meetings helped AIs discover disciplinary differences in:

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<tr>
<th>Discourse</th>
<th>Methodology</th>
<th>Epistemology</th>
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How might understanding disciplinary differences in discourse lead to intentional teaching practices?

**Biology AI 1**: “I was really stuck—and it could be because I am a scientist and it’s been a long time since I’ve thought about this but they were talking about science discourse and how that’s different than, um, other ways of speaking or other ways of writing and I was struggling with trying to come up with an idea in my head of how that’s true.”

Discourse within one’s own discipline is different from other ways of thinking, speaking, and writing.
An example of disciplinary differences in discourse

“That’s a great example! You want them to be more professional, but in another field that might have been professional. What you mean is professional in this context speaking to this audience.”

How “case narrative” is received by the instructor depends upon the values and traditions of the discipline.
Teagle activity: Concept Mapping

Concept Maps:

- Represent knowledge
- Highlight relationships among concepts
- Values creation process not just end result
Disciplinary Differences: Discourse

Biology

Communications & Culture
Disciplinary differences: Methodology

Communications and Culture AI: “I’m asking them to reflect on a response to and apply something recent that we learned... I even say, you know, you could just react to our classroom discussion, if there’s something you disagree with and write about why you disagree with that. Why does that challenge what you think?”

Biology AI: “You’re asking them to [think] in the scientific method. Um, you’re writing papers thinking you need to be professional-slash-not emotional and not creative writing. Um, we want you to be learning a lot of the basic knowledge skills so that analysis becomes second-hand, and that will become more natural so that you can do that in the upper-level classes, hopefully.”
Disciplinary differences: Methodology

Communications & Culture

Biology
Disciplinary Differences: Epistemology

**Biology AI:** “We’re limited in our ability to figure it out... But the goal is to get at the reality, that **there is a reality that’s outside of us...**”

**Communication and Culture AI:** “I’m not trying to in any way devalue what any one of you do, or say it’s not important. I’m just saying that, for us [in cultural studies], it is important to remember that **nothing is that absolute.** That everything is always bound up in culture. That it’s bound up in how we’re labeling, it’s bound up in how we’re interpreting. I mean, I love science!... [laughter] But it’s still, it’s still a knowledge base...”
Supporting the development of formative assessments provides tools to evaluate what was working (or not)
Cross-disciplinary inquiry supports intentional teaching

Objectives
• What was the teaching/learning challenge you identified in your course or lesson(s)?

References
• What literature supported your teaching intervention?

Implementation
• What major approaches did you choose to address the teaching/learning challenge?

Assessment
• What evidence of student learning did you collect in your assessment(s)?

Analysis and Reflection
• What did the learning assessments tell you?
Objectives
**Biology:** Student-centered and process-based approach to teaching plant phylogenetic analysis
Biology: Student-centered and process-based approach to teaching plant phylogenetic analysis

- Pre/post knowledge survey
- Scaffolded exercises

For each of the following three traits, circle the option which describes what species D would have looked like according to this phylogenetic tree:

Cone length:  a. Short  b. Medium  c. Long  d. Can’t tell from diagram
Leaf arrangement:  a. Spiral around stem  b. Flat, in two ranks  c. Can’t tell from diagram
**Biology**: Student-centered and process-based approach to teaching plant phylogenetic analysis

**Objectives**
- Pre/post knowledge survey
- Scaffolded exercises

**Implementation**
- Exam performance
- Pre/post knowledge survey
- Student feedback

**Assessment**

![Bar Chart]

Average student scores:
- 2007-2009: 73.2%
- 2010: 77.5%
- 2011: 85.2%

Comparison: Ave of non-phylo Q (blue) vs Phylo Q Ave (red)
Biology: Student-centered and process-based approach to teaching plant phylogenetic analysis

- Pre/post knowledge survey
- Scaffolded exercises
- Exam performance
- Pre/post knowledge survey
- Student feedback

“What prepared you the most for the phylogenetic exercises of Lab 10?”

Pie chart showing:
- The new phylogenetic exercises: 53%
- Reading Lab 10 in advance: 26%
- Experience from other courses: 7%
- The new phylogenetic exercises - specifically in-class collaborative work: 5%
- Lecture and/or lecture notes: 5%
- Reviewing terminology every week: 5%

Implementation:

- Pre/post knowledge survey
- Scaffolded exercises

Assessment:

- Exam performance
- Pre/post knowledge survey
- Student feedback
Communication and Culture:
Use cooperative learning to help students recognize, criticize, and reproduce fallacies of argument

• Assignment: identify and summarize a current fallacy
• Write fallacy exam questions
**Communication and Culture:**
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- Assignment: identify and summarize a current fallacy
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- Quiz performance
- Exam performance
- Student feedback

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<tr>
<th>Data</th>
<th>Causal Fallacies</th>
<th>Circumstantial Fallacies</th>
<th>Synthetic Fallacies</th>
<th>Formal Fallacies</th>
<th>Propaganda Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1/19</td>
<td>1/24</td>
<td>1/26</td>
<td>1/31</td>
<td>2/7</td>
</tr>
<tr>
<td>Class Avg.</td>
<td>60%</td>
<td>75%</td>
<td>80%</td>
<td>86%</td>
<td>93%</td>
</tr>
<tr>
<td>Presenter Avg.</td>
<td>75%</td>
<td>90%</td>
<td>92%</td>
<td>96%</td>
<td>93%</td>
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Communication and Culture:
Use cooperative learning to help students recognize, criticize, and reproduce fallacies of argument

Objectives
• Assignment: identify and summarize a current fallacy
• Write fallacy exam questions

Implementation

Assessment
• Quiz performance
• Exam performance
• Student feedback

“The value of the fallacy quizzes was that in studying for them you had to grasp the concepts and challenge yourself to think hard to understand them. In producing my own examples for fallacy quizzes, I needed to truly grasp the fallacy and think critically to find appropriate examples.”

“The fallacy quizzes were very useful because it helped us better analyze the things we read. While I don’t remember all of them, I remember some, so it is something I’ll take from this class.”
**Objectives**

**Anthropology**: use coaching to help students critically analyze images of Native Americans

**Implementation**

• In-class discussions
• Weekly journaling

**Assessment**
Anthropology: use coaching to help students critically analyze images of Native Americans

- In-class discussions
- Weekly journaling
- Assessment of journals
- Student evaluations
Anthropology: use coaching to help students critically analyze images of Native Americans

Objectives
• In-class discussions
• Weekly journaling

Implementation

Assessment
• Assessment of journals
• Student evaluations

Elements of Critical Thinking

- Think More Critically
- Improved Understanding: Reasons Behind Rep.
Teagle Fellows are publicizing their SOTL work

"Impacts from SOTL training for graduate teaching assistants: A case study of a student-centered approach for teaching phylogenetic analysis."

“The relationship between pedagogy and final student learning outcomes in a non-majors biology course.”

"The Fallacy of Over-Assessing: An Inquiry Into Quizzing as a Tool for Cooperative Learning."

“The Teaching Legacy: Preparing Future Faculty to Set a New Tidemark.”

"A step-wise approach when introducing students to primary literature increases student comprehension.”
Interdisciplinary Talk: “Communication between different groups or people outside your field can give you valuable insight into issues you may be having.”

Assessment: “The Collegium made me consider ways I can test the effect of different teaching strategies, so that I actually have some sort of way to measure what is happening in the classroom, rather than just relying on my general perception.”

Three supports for Intentional teaching

Theory: “Teagle, by constantly encouraging us to answer questions about the reasons and consequences of our practices helped me rationalize some of my teaching practices, while it also led me to change or abandon some others.”
Challenges became resources

• Lack of disciplinary unity within departments
• Lack of common vocabulary across disciplines and departments
AIs Suggest Growing the Collegium

Future directions & Recommendations

At the University level

> Transfer innovations and insights to other AIs not involved in the Collegium
> Develop and encourage AI training programs/courses that introduce the main concepts from the Collegium

In the classroom

> Encourage more inquiry based class time and fewer formalized lectures
> Identify problem areas within the course material and proactively seek teaching methods to address them
> Facilitate year-to-year transfer of knowledge from one cohort of AIs to the next, and create AI notes that identify student misconceptions for each section of a course

Within the Collegium

> Encourage more direct interaction with interdisciplinary AIs through classroom visits or small group work/discussion

Potential Transferability

- For scaffolding faculty inquiry into teaching
- For alignment and coordination among multi-section courses
- For building a campus community

- Caveat: We don’t know whether this leadership-style FLC would transfer well to a decentralized, participant-led FLC.
Potential Transferability
For generating shared meanings in multi-disciplinary communities

• introduce new ways to describe and interpret teaching and learning activities that create a need for a shared vocabulary to represent teaching concepts and experiences
• engage participants with this framework so that they can recognize the need for a shared language
• establish a sufficiently safe space for interactions that build such a common language
Thank you!