Our Mission

Principedia is a forum for discussion about how students learn from instruction in the Princeton University community and a resource for learning how to learn.

It gathers, organizes, and circulates knowledge about learning in the Princeton context to create a high-quality wiki which is comprehensive yet detailed, accessible, editable, and practical. This includes collecting information about expectations and demands of Princeton undergraduate course-work and as well as effective approaches, strategies, techniques, and tools for meeting these demands. Undergraduates, but also graduate students, staff, and faculty, can make unique and valuable contributions by reflecting on their own processes of learning and teaching, articulating this often tacit knowledge, and by engaging in thoughtful discussion and exchange.
What if we imagined the focal points, the nodes, of strategic learning support not as clustered in a learning “center” but as distributed across campus among students, staff and instructors? What if we de-centered the learning center?
For students to be effective as learners, they must align their purposes to the goals of the course and their strategies to the design of the course. HOW do they learn how to do that?
What is Principedia?

First-of-its-kind online learning support resource.

Emphasizes course-specific learning approaches and integrates them with more general advice about learning and studying.
## Principedia vs. Wikipedia

<table>
<thead>
<tr>
<th>WIKIPEDIA</th>
<th>PRINCIPEDIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Encyclo” or General</td>
<td>Local or Context-Specific</td>
</tr>
<tr>
<td>Crowd-Sourced</td>
<td>Community-Sourced</td>
</tr>
<tr>
<td>Sum of All Knowledge</td>
<td>Knowledge about Learning from Instruction at Princeton</td>
</tr>
<tr>
<td>Neutral Tone</td>
<td>Descriptive &amp; Analytical, Justified Opinions</td>
</tr>
<tr>
<td>All Major Opinions</td>
<td>Informed Best-Practices</td>
</tr>
<tr>
<td>Specific Rules for Participation</td>
<td>Specific Rules for Participation</td>
</tr>
<tr>
<td>Verifiability Using Sources</td>
<td>Verified by Experience &amp; Application</td>
</tr>
</tbody>
</table>
Principedia: Big Ideas

Course Evaluation

Wikipedia
The Free Encyclopedia
Crowd Sourced Knowledge Base
Principedia: Big Ideas

• Expertise about learning from instruction is distributed

• Learning demands & expectations constitute an “invisible curriculum”

• Course-specific learning support is most effective for students

• Promotes metacognitive awareness of learning methods and processes

• Engages students as partners in enhancing learning on campus

• Can aid in creating a more inclusive learning experience for all students

• Encourages student ownership of their learning
How might you adapt these ideas to your own center and campus context?

- Multiple possible starting points:
- What Community(s)?
- What goal or purpose?
- What knowledge domain?
- What unique features of your environment may guide your site? (ie: online teaching, service learning, STEM center…etc.)

- Write and share with your neighbor. -10min.
A course analysis contains descriptions of the design features of a course and aligned learning strategies.
Attributes

- Specific to single course offering (i.e., the topic, semester, and instructor)
- Wiki
- Specific prompts that guide writing and segment the article
- Encourages concrete and well-defined learning strategies
- Encourages making invisible expectations visible
“One hidden expectation in the course is that students were familiar with stories from the Bible. Many of the pieces of literature either directly referenced or contained allusions to Biblical stories, and students were questioned on them and their significance in precept and in Blackboard posts. A background skill that would be helpful for learning in this course would be an ability to read/a prior familiarity with Old English and/or Shakespearean English, as the first three pieces of literature were written in a very different style than modern English, with the last two works being only slightly easier to read and comprehend.”

ENG 200, Spring 15’
“The final programming assignment is a larger project, due on Dean’s Date. We were given a choice between a project on recognizing license plates and a project on face recognition. This will take much longer than normal assignments. Make sure to pick a partner you work well with on them (do not try to do it yourself). It is straightforward for the most part, but both assignments included an open-ended portion where you are supposed to experiment and analyze the results. Make sure to include detailed writeups in your Python notebook of your findings, as you are graded on your analysis of the material rather than whatever results you get.”

ELE 488 Spring 15’
A tour of Principedia

http://principedia.princeton.edu/
Select a course analysis

Select Department

Course Analysis Contest

Principedia Course Analysis Writing Contest
Contribute your strategies for success in your favorite class at Princeton and be a part of a growing community of scholars dedicated to revealing the Princeton Hidden Curriculum!

Prizes awarded for courses representing each division:
Four 1st Prize Winners: $125/ea
Four 2nd Prize Winners: Lunch @ Prospect House

For more information visit: http://principedia.princeton.edu/
Submit completed course analysis to principedia@princeton.edu by October 10th, 2017.

*Courses are humanized, Social Sciences, Mathematics, & Engineering. Students of course analyses are interviewed by the course (not the student's area of study).

Click to sign up!

Principedia’s Latest News

- Principedia Write-A-Thon October 7th
- Fall 2017 Contest — October 10 Deadline
- “Principedia was extremely helpful in my course choices both semesters, and I am currently using it to choose courses for next fall!” -Molly
- Welcome Back Princeton Students!
- Summer 2017 Principedia Write-A-Thon Monday, August 14 in McGraw

Recent Course Analyses

- Introduction to Macroeconomics
- Cell and Developmental Biology
- Statistics and Data Analysis for Economics
- The City and Social Change in the Americas
- An Integrated, Quantitative Introduction to the Natural Sciences I
- Introduction to Chemical and Biochemical Engineering Principles
- Visualizing Data
- General Physics I
- Optimization
- Introduction to Cognitive Neuroscience
Select a course analysis

Electrical Engineering

Image Processing - S 2015, Ramadge

Course Analysis Contest

Principedia Course Analysis Writing Contest
Contribute your strategies for success in your favorite class at Princeton and be a part of a growing community of scholars dedicated to revising the Princeton Hidden Curriculum!

Prizes awarded for courses representing each division:
Four 1st Prize Winners: $125/ea
Four 2nd Prize Winners: Lunch @ Prospect House

For more information visit: http://principedia.princeton.edu/
Submit completed course analyses to principedia@princeton.edu by October 10, 2017. Entries are Nominations/Social Science, Mathematics, Engineering. Divisions of courses. Entries are moderated by this course and the students are of faculty.

Click to sign up!

Principedia’s Latest News

- Principedia Write-A-Thon October 7th
- Fall 2017 Contest — October 10 Deadline
- "Principedia was extremely helpful in my course choices both semesters, and I am currently using it to choose courses for next fall!" - Molly
- Welcome Back Princeton Students!
- Summer 2017 Principedia Write-A-Thon Monday, August 14 in McGraw

Recent Course Analyses

- Introduction to Macroeconomics
- Cell and Developmental Biology
- Statistics and Data Analysis for Economics
- The City and Social Change in the Americas
- An Integrated, Quantitative Introduction to the Natural Sciences I
- Introduction to Chemical and Biochemical Engineering Principles
- Visualizing Data
- General Physics I
- Optimization
- Introduction to Cognitive Neuroscience
Course: ELE486
Instructor: Ramadge
S 2015

Description of Course Goals and Curriculum

Image Processing is a mathematically rigorous introduction to the fundamentals of image processing. Prof. Ramadge revamped the course in Spring 2015, and since then has organized the course into two major sections. In the first half of the semester, students are introduced to fundamentals such as how computers represent images, what are pixels, what is the pinhole camera model, and how to use mathematical tools such as convolution. In the second half, Prof. Ramadge covers basic probability and transitions into teaching how to use machine learning methods, such as principal component analysis, maximum likelihood estimation, and the support vector machine, for the purposes of image processing. The class is primarily driven by lectures, and for the most part the lectures cover modular topics, with topics occasionally taking more than one lecture. Prof. Ramadge supplements his lectures with his own typed up notes, which fully contain everything he covers in lecture more. Prof. Ramadge has a fast and mathematically detailed approach to teaching that can be challenging to keep up with. His lecture notes contain many exercises that are useful for practicing beyond the examples he gives in class. However, he has very reasonable expectations on problem sets and exams, and does not expect all details to be recalled from his notes.
Add a Strategy or Tip

Logged in as gstein. Log out?

Section
Description of Course Goals and Curriculum

Comment
Learning Strategies

- General Topics
  - [video] Bootcamp Group Study Method with Asanni and Raven
  - [video] Course Selection for AB Students with Nadia
  - [video] Mindfulness and Focus with Nicole Wang
  - [video] Paying Attention In Class by Hiba
  - 7 Strategies for Success
  - Freshman Checklist for a Smooth Transition to Princeton
  - How People Learn vs. How We Believe People Learn
  - Making the Transition to College
  - Putting Your Extracurricular Skills to Use in Your Studies
  - Study Group Handout
  - Taking Class Notes and Learning From Them
  - Technology Tips: Studying in the 21st Century
  - What Can I Do NOW To Prepare Myself for Dean's Date and Final Exams?

- Time Management
  - [video] Creating A Schedule for Reading Period by Kristin & Sophia
  - Get the Most Out of Your Study Time
  - Getting Past Perfectionism
  - Making Your Time More Productive

Search

Select A Course Analysis

Principedia’s Latest News

- Principedia Write-A-Thon October 7th September 27, 2017
- Fall 2017 Contest — October 10 Deadline September 27, 2017
- “Principedia was extremely helpful in my course choices...”
[video] Bootcamp Group Study Method with Asanni and Raven

The Bootcamp Method by Asanni and Raven

Select A Course Analysis

Select Department

Principedia’s Latest News

- Principedia Write-A-Thon October 7th September 27, 2017
- Fall 2017 Contest — October 10 Deadline September 27, 2017
- “Principedia was extremely helpful in my course choices...”
How People Learn vs. How We Believe People Learn

Most of us conclude that if we are learning easily, we are learning well. Recent research (some link is external) done here at Princeton), however, clearly demonstrates that effortful learning usually signals not only deeper learning, but more durable long-lasting knowledge. It's analogous to working out. Lifting heavier weights which require more effort will build muscle in much the same way investing effort in grappling with new information builds stronger knowledge structures.

Making learning difficult in strategic and desirable ways will enhance retention, retrieval, and transfer of knowledge. Desirable difficulties (link is external) are those which evoke or induce mental processes which strengthen encoding and facilitate retrieval by virtue of making the taking in and processing of information more effortful. For instance, we recognize that teaching someone else that which we are ourselves are striving to learn is a highly effective way for deepening our understanding and making our knowledge more retrievable in the future. But WHY is it effective? The theory is that doing so requires that we instantiate or “reboot” our knowledge structures into working memory when explaining, we must elaborate on what we’ve taken in using our own long-term knowledge, we often make new linkages or connections among nodes of knowledge (e.g. topics), and we think under new circumstances in new ways when interacting with others in the role of “teacher”. That’s not to say that teaching others in, for instance, a study group, is the only way to incorporate desirable difficulties into your self-directed learning; there are many ways to do so.
Guide for Students of Mathematics

I will first describe briefly how each year looks for a student in the Math department.

**Freshmen Year:** In order to be able to declare mathematics as a major students need to complete the two-course sequence MAT 215/217 or MAT 216/218. The latter sequence is designed for students with a significant exposure to rigorous proof-writing and covers more material at a faster pace. The first course is on Analysis and the second course is on Linear Algebra. Most of the students intending to study mathematics take these two classes their freshmen year, and a few other students will start with MAT 202/204 in their freshmen year and take the 215/217 sequence in their sophomore year.

Many students face challenges during the introductory sequence, especially if they have less exposure to rigorous mathematics, have never been to math camps, or have not taken college-level mathematics classes before. For students that have little exposure to theoretical math classes and proof-writing, freshmen year is an important year for them to develop and experiment with the strategies of learning and problem-solving in mathematics.
Our Process

- Idea
- Trying out different Course Analysis formats/prompts
- Community Buy-In
- Designing Architecture
- Development of V. 1
- Organizing Content Building Events
- Development of V. 2
Let’s design your crowd sourced resource!

• Using worksheet, design a crowd sourced resource for your campus – 10 min.
• Share with your table, generate more ideas, and identify similarities and differences – 10 min.

Guiding Questions:
• What need(s) on your campus could be addressed with this platform?
• What is the knowledge you want to collect and from whom/where?
Resources Needed to Launch and Maintain Principedia

**TIME!** began development in 2014

**Staff**
Nic Voge  
Geneva Stein  
Sorat Tungkasiri  
Paula Brett  
Ben Johnston  
Zehavi Husser  
Randall Perez  
Mohammad Shahrad

**Students**
Diana Chang  
Nicole Wang  
Nathan Agmon  
David Sprunger  
~10 additional editorial board members  
Many Learning Consultants and Tutors

**Developing Content**
Learning Consultant Training  
Tutor Training  
Write-a-Thon events (9)  
Contests  
Club/Team events

**Outreach**
Principedia Print Journal  
Connect with advisors  
Flyers/Social Media  
Word of Mouth

**Partnerships**
Registrar  
College Deans/Directors  
Engineering society  
More to come!
Initial Content Development

Goals:
• High quality
• Cover high enrollment courses
• Variety of disciplines

How:
• Event where the guidelines were stressed and the philosophy was explained
• Incentivize good writing with prizes
• Incentivize disciplinary variety with prizes
• Keep track of courses written and solicit specific courses as needed.
Challenges

• Community engagement
• Time / resources
• Faculty / Administrative concerns
• Technological, mobile-friendly design
• Others
Identify 5 resources you may need to implement your own crowdsourced wiki.

Identify 3 ways you might create institutional buy-in and community engagement.

Identify 5 possible challenges that may be broad or specific to your center/institution.

Let’s Troubleshoot!
Principedia: The Future

- Different modes of content
- Sustainable partnerships
  - Adding a faculty/instructor voice
- Leveraging institutional data
  - course offerings
  - course evaluations

Example of metadata.
Follow instructions on github ReadMe file and be sure to download the zip file (not desktop version).

Plugin Available on Github:

https://github.com/McGrawCenter/principedia

Instructions:
1. Install Wordpress
2. Install principedia plugin
3. Create Content
   a. Student Content
   b. Staff & faculty Content

Questions? Please email principedia@princeton.edu
Next Steps: Your Road Map to a Site!

Define three actions you will take when you get back to your institution to implement the creation of your own crowd-sourced -pedia.

Write them down and share at your tables!
Any Questions?

If you have ideas for us or would like a copy of this presentation please email us at: principedia@Princeton.edu

- Recognized for its innovation by a grant from TRPP Associates.
- Principedia was featured in a “TED-like” HEDs UP talk at the 2016 American Association of Colleges and Universities annual conference. Professor John Zubizaretta of Columbia College, wrote about Principedia,

"I found the idea of “wikification” of learning was a fascinating spotlight on learning as collaborative, constructive process that emphasizes the need to use technology and other pedagogical means to help students learn how to learn, how to be critically reflective about not just what they know but how they learned it, when they learned it best or worst, how they can apply and connect their learning, and why they are learning at all. “Wiki” strategies are founded on the notion that learning, writing, researching are continuously evolving processes."

- An in-depth discussion of the conceptual foundations of Principedia can be found in this interview.
- http://www.trppassociates.com/trpp-innovation-award.html
- https://www.youtube.com/watch?v=KJZXOSUP9oE&index=10&list=PL7KTuyliA6WtaSR_-RQTgElsgGAlYpSMa
- https://www.aacu.org/blog/institutional-cultures-development
From “The Knowledge-Creating Company” by Nonaka & Takeuchi (after Polanyi)