

Program for Instructional Excellence (PIE)

Coffee Hour & Teaching Workshop:

Planning Ahead -- Designing Classes that Promote Engagement



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Workshop Objectives

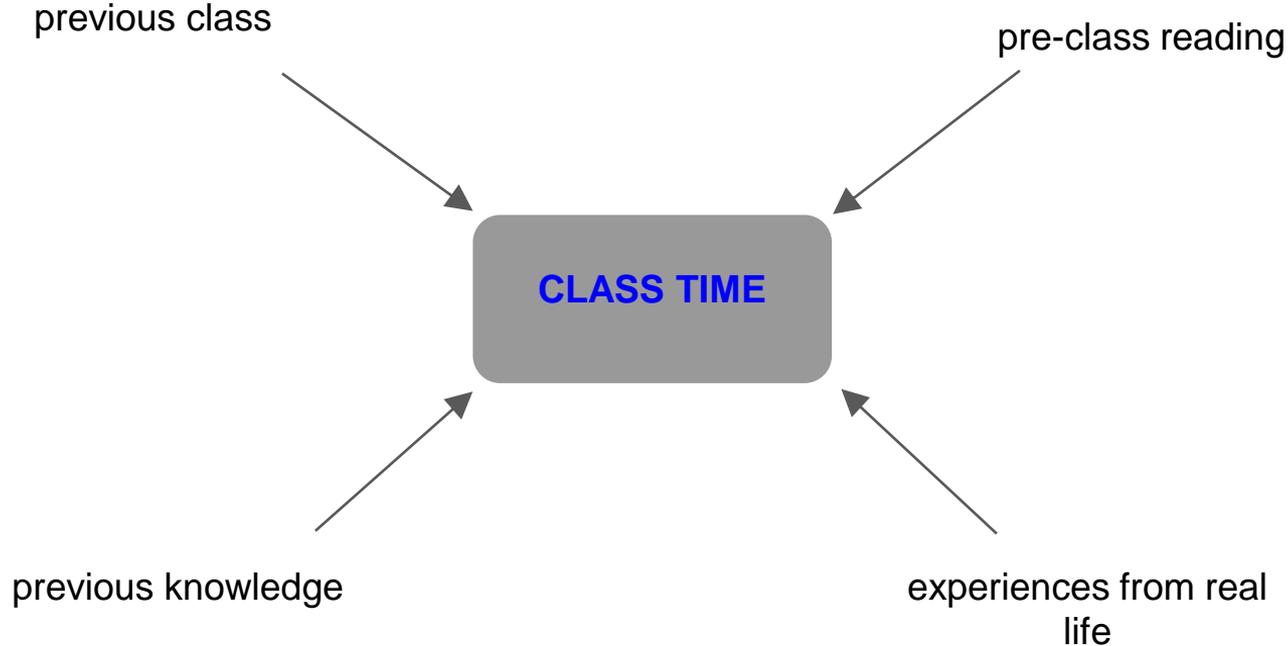
As a result of this workshop you will be able to...

1. Connect students with pre-class readings and assignments relative to material
2. Shift from passive to active learning through writing and discussion
3. Lead better discussions
4. Design classroom activities that foster participation



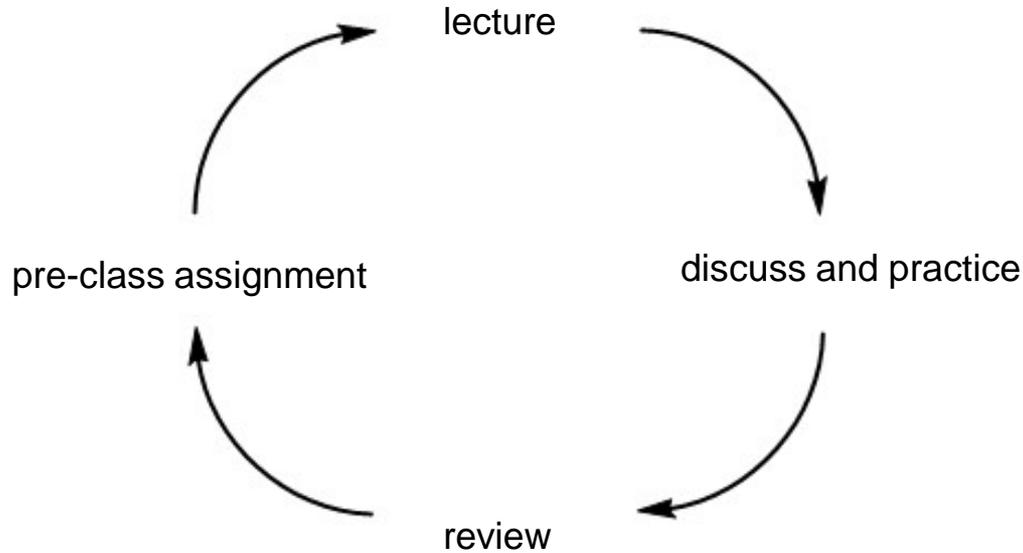
A review to contextualize this topic

What is class time?



A review to contextualize this topic

What is the flow of class time?



Understanding Your Students

Most students are not mini-versions of you!

“Show & Tell” students why classroom time is important for their learning

Create multi-dimensional classroom experiences - include 5 senses & emotions

Devote time for collaboration & group learning

Take your role as class leader seriously



Why does engagement need to be incorporated?

Students must understand from YOU, the instructor:

1. What happens in the classroom is not reproducible.
2. Classrooms are great places for visceral and emotional experiences.
3. Solving complex problems is a skill that can be developed face to face and with supervision.
4. Explain to students the value of discussion and learning to connect different points of views.
5. Class time is a good time to be a role model.

Classrooms are places for building community and encountering differences!!



Steps to Creating an Engaging Classroom

#1: Connect with Preclass Assignments

Designing a learning path where the excitement about engaging in class becomes the motivation to prepare.

Philosophy: Utilitarianism: the morally right act is that which produces the greatest amount of good (pleasure) for the greatest # of people

When assigning reading for class, provide a “Thought of the Day” along with it

Example: As you read about theory of Utilitarianism, identify an example in text. Then identify 2 examples in your everyday life over next 2 days & bring to class ready to share!

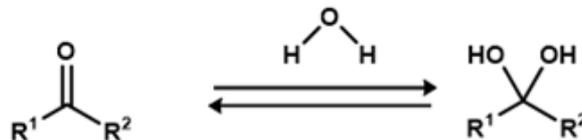
-This provides the following:

- Focus during reading
- Motivation to come to class prepared
- Makes concept personally meaningful

Chemistry: Understanding organic transformations

For organic chemistry: One needs to understand bonding, structure, properties, reactions and synthesis to understand natural systems

hydration of ketones



I. Identify the nucleophile and electrophile

II. Name the product:

If $\text{R}^1 = \text{R}^2 = \text{Me}$



Steps to Creating an Engaging Classroom

#2: Avoid Punitive Measures

Avoid taking frustrations out on students for lack of preparation but explain the value of discussion and learning to connect viewpoints.

Philosophy:

Did not complete assigned readings

Not able to contribute to class discussion

Provide time to those who are prepared to discuss in small groups?

Have those prepared “teach’ those not prepared?

Transparency: explain WHY you are handling class this way

Chemistry: Lack of preparation for problems assigned.

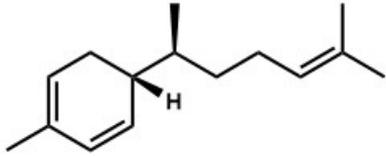
Book Problems for Chpt 18
18.23, 18.24, 18.27, 18.28, 18.31
18.32..

Pair up and work problems

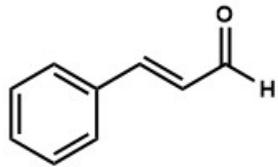
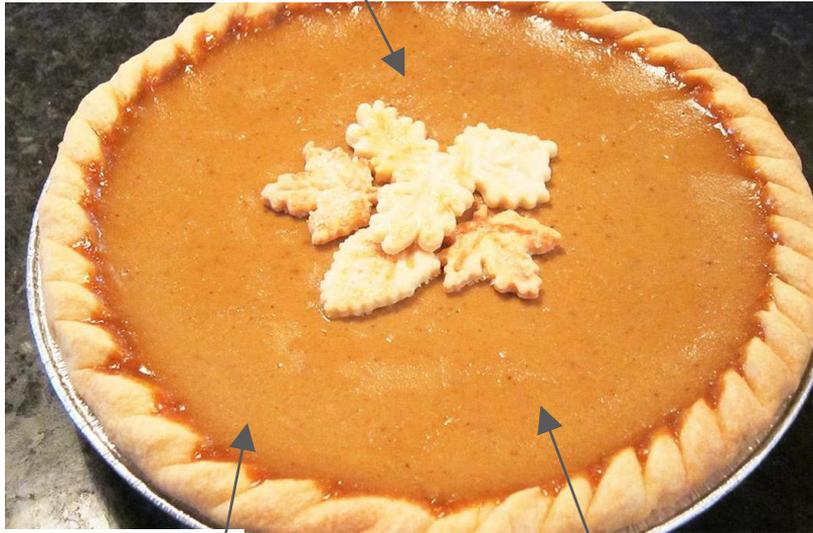
Let’s take a moment for sharing experiences. Graceful or otherwise. Go!



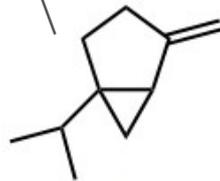
PIE & Coffee Break!



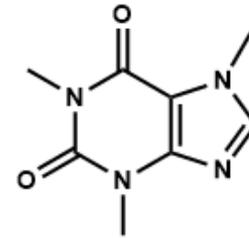
zingiberene



(E)-cinnamaldehyde



sabinene



caffeine



Steps to Creating an Engaging Classroom

#3: Create Prompts for Writing & Discussion

Shifts from passive to active and adds moments for recall and retention. It further aids in the process of learning. The key is to divide writing into questioning, listening and response.

Philosophy:

Students provide & discuss (or write for a few minutes) their own examples or questions about a given theory or concept

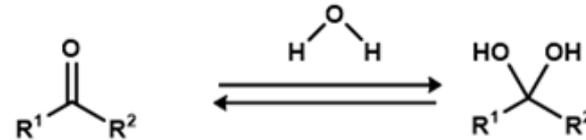
Example: Devote the first 10 minutes of class to discuss, or write about, the “thought of the day”...

-give personal examples of Utilitarian ethical theory

-identify problems/concerns you find with the ethical theory

Chemistry: Looking at the same transformation -

hydration of ketones



I. Discuss the kinetics in the reaction due to:

- Steric effects
- Electronic effects



Steps to Creating an Engaging Classroom

#4: Lead Better Discussions

Highlight the learning goals of discussion. Clarify that discussion is a group exploration and students should weigh the individual importance with how it will help progress.

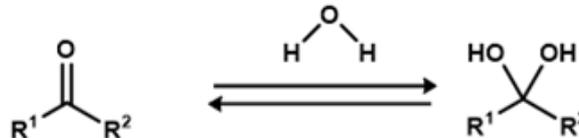
Philosophy:

Explain discussion is important for how we LEARN! Explaining concepts & ideas to others, and listening to others explain helps:

- identify what we do not understand
- uncover other viewpoints, ideas
- clarify our own understanding
- make it more personal
- create a learning community

Chemistry: What is the mechanism with which this reaction occurs?

hydration of ketones



Begin to start asking:
what is the flow of electrons,
bonds formed?

Explain in acidic and basic
conditions.



Steps to Creating an Engaging Classroom

#5: Design Classroom Activities

These activities include clickers and polling, peer review writing, studios and labs, games and simulations.

Philosophy: You are on a cruise, the boat sinks. You manage to get in a lifeboat. It is very full, but there is room for at MOST, 1 more person. 3 people are flailing in the water; a brilliant scientist, a carpenter, and your son. Who should be saved according to Utilitarianism?

Apply Utilitarianism: the morally right act is that which produces the greatest amount of good (happiness) for the greatest number of people

1. Scientist 2. Carpenter 3. Son

POLL: your individual answer

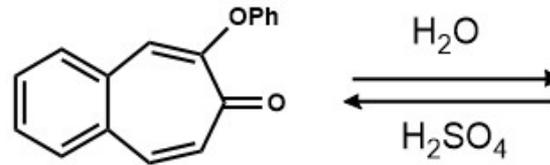
Discuss: with your neighbor

Repoll

Class/group discussion

Chemistry: the main point is discovery!

Can you explain the reactivity of this molecule.



Pair up and solve the following problems.
Submit answers to poll.
Team with the fastest time and most correct answers will receive 3 point on exam.



Steps to Creating an Engaging Classroom

#6: Reveal Your Surprise!

Class time should come with application, complication, extension and a surprise. The surprise is integral to taking the class to the next level.

Philosophy: Additional details:

The scientist is also recently accused of rape.

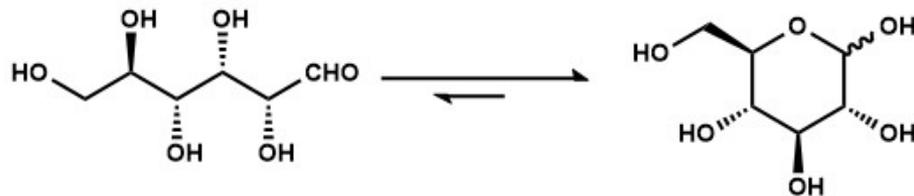
Your son has just received a very prestigious and hard-earned fellowship to attend medical school.

The carpenter's wife suffers from Parkinson's disease - he is the primary caregiver for her, as well as their 4 children

REPOLL!

1. Scientist
2. Carpenter
3. Son

Chemistry: Suppose you are allowed to change the molecule.



How does material A outlined in class feed into material B?



Workshop activity!

Develop your own versions of the following tactics for your classroom. Share with peers.

Classroom Activity

Surprise

References

Bowen, José Antonio, and C. Edward Watson. *Teaching Naked Techniques: A Practical Guide to Designing Better Classes*. San Francisco, Jossey-Bass, 2017,

Carey, Giuliano "Organic Chemistry", *10th Ed.*, New York, McGraw-Hill, 2017

Mazur, Eric, Balkanski Professor of Physics and Applied Physics, School of Engineering and Applied Sciences, Harvard Master Class, ["Confessions of a Converted Lecturer."](#)

