

Tips, Trends, and Techniques to Teaching Today's Students

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Objectives

- Examine academic issues that affect laboratory science educational environments
- Address student issues/trends applicable to laboratory science educational environments
- Describe solutions/adaptations for the changing student clientele in today's laboratory science educational environments

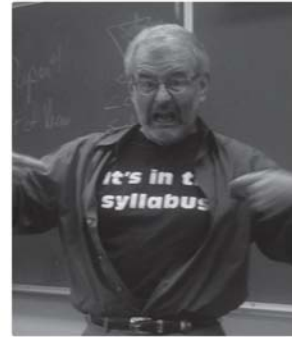
Academic Issues

- Victim – It's not my fault!
- Attendance
- Late work; aren't aware of deadlines
- Entitlement issues
- Took a phone call in the middle of a test!
- Students don't:
 - Review assignment expectations
 - Read the syllabus



Rodney E. Rohde, PhD
@RodneyRohde Following

@brendabarnes Uhm...yeah! Let's try to read the



CLEC 2017 Sessions

- Meet Generation Next – Understanding Today's Learners
- Teaching Today's Learners
- All Content Is Not Created Equal
- Issues Faced In Placing students With Non-Cognitive Difficulties on Clinical Practicums



What is a Millennial?

- Generation Y
- Born 1980 – 2000
 - Anyone under 35



Image source: <http://www.salesbenchmarkindex.com/bid/102051/10-Conversations-to-Retain-Millennial-Sales-Talent>

Projected Enrollment– Post-Secondary (2016)

Age Range	Percentage
20-21 years	25.9%
22-34 years	38.1%
35+ years	8.1%

- Fast facts:
 - Enrollment higher for students under 25 than for older students
 - Rate of enrollment increase projected to be lower for under 25 students compared to older students



IES, 2016a; IES, 2016b

“Many faculty members believe that students today are different from those in the past...Generational changes are rooted in shifts in culture and should be viewed as reflections of changes in society (Twenge, 2009, p. 398).

Millennials and Baby Boomers

Generation Y Rewards

- High-quality colleagues
- Flexible work arrangements
- Prospects for advancement
- Recognition from one's company or boss
- A steady state of advancement
- Access to new experiences and challenges

Baby Boomer Rewards

- High-quality colleagues
- An intellectually stimulating work place
- Autonomy regarding work tasks
- Flexible work arrangements
- Access to new experiences and challenges
- Giving back to the world through work
- Recognition from one's company or boss

Tipton, 2017

Typical College Student

- Overconfident
- High expectations
- Higher narcissism
- Lower creativity
- Less interested in civic issues
- Less inclined to read longer passages of text
- **Supportive of equality**



Gardner & Davis, 2013; Twenge, 2009, 2013, 2014

Cultural/Societal Shifts

- More focus on individual rights
- More acceptance of differences
- Here is what **I** did/ here is what **I** am doing – validate **ME**

Attitudes may be promoted more so from societal influences than birth date alone...

Twenge, 2009, 2013, 2014

CLS Student Success Rate

- **Setting:**
 - Diverse, urban university
- **Method**
 - Email-delivered survey to CLS students (N=220)
 - ✦ 27.7% response rate
- **Majority of respondents:**
 - ✦ Full-time
 - ✦ Post-baccalaureate
 - ✦ Asian (66.3%)
 - ✦ Hispanic (20.2%)
- **Of note:**
 - 40% worked 20+ hours/week
 - 45% commuted ≥ 40 miles/day
- **Survey categories:**
 - Primary obstacles toward graduation
 - Factors most likely affecting academic success
 - Factors most likely influencing a timely graduation
 - How to improve student success rate
- **Top result for all categories related to course accessibility**
 - Relates to meeting individual needs

Nasr & Jackson-Harris, 2016

Incivility

- **Disrespect for standards of classroom behavior as posted in the syllabus**
- **Examples:**
 - Late arrival,
 - Sleeping
 - Texting or other cell-phone use during class
 - Offensive language and comments
- **Faculty-faculty incivility**

There's no reason we can't be civil, is there? [Stated while chewing on an apple as his soldiers spear wounded enemies.]

Holdcroft, 2014; Wright & Hill, 2015

— Spartan King Leonidas (300)
www.gtkkoshow.com

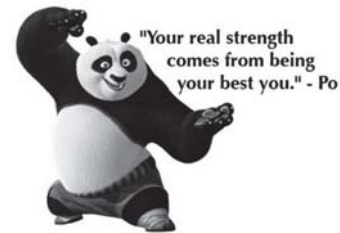
Other Issues

- **Student issues:**
 - *Intimidation*: threatening language, bullying, physical posturing, and anger
 - *Bullying*: Coercing a grade change by embarrassing, attacking, or humiliating the teacher
 - *Entitlement*: May be apparent in attempts to influence or reverse grades; place blame on others or situations for problems



Holdcroft, 2014

Be your best you...



(T)eachers' beliefs and commitments are the greatest influence on student achievement over which we can have some control... (Hattie, 2016, p. 25)

Teaching Influences with High Effect

- **Teacher Credibility = 0.90**
 - Compromisers:
 - ✦ Violate trust
 - ✦ Errors
 - ✦ Lack of engagement
 - ✦ Perceived as unfair
- **Teacher-Student Relationship = 0.72**
 - Positive influencers:
 - ✦ Fair expectations
 - ✦ Student involvement in classroom organization and management
 - ✦ Student accountability for expectations
- **Teacher Expectations = 0.43**
 - High, but reasonable
 - ✦ Challenge, but keep within reach



Effect size – magnitude of difference
Significance = Effect size * study size

Fisher, Frey, & Hattie, 2016

Global Aspects of Learning

- **Teacher clarity = 0.75**
 - What works best?
- **Factors that affect understanding**
 - Challenge
 - Self-efficacy
 - Learning intentions with success criteria



Fisher, Frey, & Hattie, 2016

Challenge

DIFFICULTY ≠ COMPLEXITY

DIFFICULTY

How much effort is needed to answer a question, address a problem, or accomplish a task?

How many people can answer a question, address a problem, or accomplish a task correctly or successfully?

Easy or Hard

COMPLEXITY

What kind of thinking, action, or knowledge must be demonstrated and communicated to answer a question, address a problem, or accomplish a task?

How many different ways can a question be answered, a problem be addressed, or a task be accomplished?

Simple or Complex

E.M.F., 2014

Why don't they like school?

"Teachers are frequently disappointed by the lack of student response to what ought to be richly stimulating activities and experiences. Study apathy and lack of motivation are frequently cited as factors underlying teacher stress, burnout, and lack of job satisfaction (Hattie & Yates, 2014, p. 3).

Thinking

- "The mind is not designed for thinking"
- Not lazy – conserving resources
 - Strive to solve problems by using memory
- Avoiding failure is a strong motivator
 - We are risk-averse
 - Bad is stronger than good
 - Information difficult – less motivation



Hattie & Yates, 2014

Considerations

- Complexity does not equal difficulty
- Links back to high expectations
- Passive learning situations may cause students to not engage?
 - Lecture situations where students take notes = low difficulty/low complexity
 - How to make it more complex?
 - ✦ Engage in study skills that use notes

Study skills
effect size = 0.63

Fisher, Frey, & Hattie, 2016

Self-Efficacy

- The belief in ourselves that we can do something
- Students with low self-efficacy
 - Avoid difficult tasks
 - Have weak commitment to goals
 - Feel failure is a personal deficiency
 - Slowly recover confidence after setbacks



Fisher, Frey, & Hattie, 2016; Hattie & Yates, 2014

Self-Esteem

- Not same as self-efficacy

self-es·teem

/ˈself əˈstiːm/

noun

confidence in one's own worth or abilities; self-respect.

"assertiveness training for those with low self-esteem"

synonyms: self-respect, pride, dignity, self-regard, faith in oneself, More

- Overconfident (narcissist) students may crack under pressure of sustaining high achievement
 - Mental health issues

Google, n.d.; Twenge, 2009, 2013, 2014



Recipe for...

- **Learning is tough**
 - Process itself causes feeling of uncertainty
 - Causes great stress on mental resources
- **Overconfidence is a natural tendency for students**
 - Students underestimate amount of time needed to master new skill



Hattie & Yates, 2014

Multitasking

- **We don't multitask, we *task-switch***
 - Comes at a cognitive cost
- **Appearance of multitasking**
 - Overlap of two or more tasks within capacity limits
- **Wrong option for:**
 - Learning
 - Acquiring knowledge
 - Thinking deeply
- **Good option for:**
 - Boring and non-demanding activities



Hattie & Yates, 2014

Mr. Two-Tongues



Individuals Prone to Overload

- Low levels of prior knowledge
- Deficient use of mental strategies
- Lack of coping strategies
- Unrealistic expectations
- Inability to engage with learning material
- Unfavorable learning conditions
- Assessment apprehension



Hattie & Yates, 2014

Learning intentions vs. objectives

- **Emphasizes clarity**
- **Answer these questions at end of every lesson**
 - What am I learning?
 - Why am I learning this?
 - How will I know I learned it?
- **Makes success criteria clear for the teacher and the student**

Fisher, Frey, & Hattie, 2016

Strategies



Increasing Self-Efficacy

Classroom Techniques

- Direct instruction + modeled examples
- Verbal persuasion
- Feedback
- Guided use of techniques
- Supervised use of techniques

Environmental Techniques

- Credibility – being fair
- Being there to help students reach targets
- Creating high levels of trust
- Welcoming errors

Fisher, Frey, & Hattie, 2016

Whoa...there goes a chicken!

- Overcoming attention span issues
 - Many students today:
 - ✦ Are unable to read long passages of text
 - ✦ Prefer interactive learning
- Strategies for engagement
 - Break lectures in short chunks by incorporating:
 - ✦ Video
 - ✦ Hands-on learning
 - ✦ Demonstrations
 - ✦ Lab activities
 - ✦ Discussions
 - ✦ Socratic questioning
 - ✦ *Anything that promotes engagement*

Attention span for learning new info = 15 minutes



Twenge, 2009, 2013, 2014; Hattie & Yates, 2014

ABO and Rh Blood Group Systems - Overview and Relevance

The ABO blood group system is the most important for transfusion consideration, with the Rh system a close second. A strong background in understanding the genetics behind these blood group systems will set the stage as we cover additional blood group systems.

Learning Objectives

Upon completion of this section the student should be able to:

ABO and H Blood Group Systems and Secretor Status

1. Define a blood group system with regard to blood group antigens and their inheritance. (CLO 2)
2. Explain Landsteiner's rule. (CLO 2)
3. List the cells, body fluids, and secretions where ABO antigens can be located. (CLO 3)
4. Describe the relationships among the ABO, H, and S_u genes. (CLO 2, 3)
5. Differentiate between type 1 and type 2 oligosaccharide structures, and state where each is located. (CLO 3)
6. Describe the formation of the H antigen from the gene product and its relationship to ABO antigen expression. (CLO 2, 3)
7. List the glycosyltransferases and the immunodominant sugars for the A, B, O, and H alleles. (CLO 2, 3)
8. Compare and contrast the A₁ and A₂ phenotypes with regard to antigen structure and serologic testing. (CLO 2, 3)
9. Compare and contrast serologic testing among A₃, A_x, and A_{pl} subgroups. (CLO 2, 3)
10. Predict the possible ABO genotypes with an ABO phenotype. (CLO 2, 3)
11. Describe the ABO blood group system antibodies with regard to immunoglobulin class, clinical significance, and in vitro serologic reactions. (CLO 2, 3)
12. Discuss the selection of whole blood, red blood cell, and plasma products for transfusions. (CLO 2, 3, 4)
13. Define the terms universal donor and universal recipient as they apply to red blood cell and plasma products. (CLO 2, 3)
14. Apply concepts of ABO compatibility in the selection of blood products for recipients. (CLO 2, 3, 4)
15. Illustrate the Bombay phenotype with regard to genetic pathways, serologic reactions, and transfusion implications. (CLO 2, 3, 4)
16. Define the terms secretor and nonsecretor. (CLO 3)

Rh Blood Group Systems

1. Explain how the D antigen was named Rh. (CLO 2)
2. Compare and contrast the current genetic theory of the inheritance of Rh blood group system antigens with theories proposed by Fisher-Race and Wiener. (CLO 2)
3. Discuss the biochemistry of the Rh blood group system, including the gene products and antigen structures. (CLO 3)

Objectives with Learning Intentions

Objective	Learning Intention
Discuss the inheritance of the ABO blood group system	Pay attention to the genes that drive the formation of the ABO blood group system and how the antigens are formed. Additionally, if you are given a phenotype of a patient, you should be able to predict the genotype including information from family studies.
List characteristics of ABO red cell antigens	Antigen characteristics are used to interpret results of grouping tests and help explain test results. Important characteristics include: <ul style="list-style-type: none"> • Specificity and immunogenicity • Prevalence • Number and location of antigen sites • Molecular genotyping

ASCLS, 2016

Objectives with Learning Intentions

Objective	Learning Intention
Explain the development of the ABO red cells antigens	How the antigens develop can also help with covering information about inheritance. Some factors you should be able to discuss include: <ul style="list-style-type: none"> • Biochemistry • Variable expression of antigens • Dosage • Antigen development based on age • Disease-related changes • Presence on other tissue • Soluble blood group substances
List characteristics of ABO antibodies	Antibody characteristics are used to interpret results of grouping tests and help explain test results. Important characteristics include: <ul style="list-style-type: none"> • Form of stimulation • Class of antibody

ASCLS, 2016

Project Planning

Planning takes center stage this week! With your goals for the project in mind, work on developing a formal plan for your Service Learning project. Pay special attention to using literature to justify why your project is important to your intended community as well as how you will determine if you met your project goal. You can get creative with evaluation and make it a fun part of your project! No overview this week as we will discuss our work during the student lab this week!

Learning Objectives

Upon completion of this section the student should be able to:

Objectives	Learning Intentions
1. Justify the purpose of your Service Learning project using literature. (SL 1)	Using your goals for the Service Learning project and available literature, explain how your project may benefit your intended community.
2. Outline your Service Learning project. (SL 2)	Choose a method to convey the plan for your project – who is involved, the activity you plan to do, ideas for set-up, and resources you may need.
3. Identify appropriate evaluation methods to determine effectiveness of your Service Learning project. (SL 3)	Decide how you will determine if you meet your project goals using a method that can collect data related to your project.

* The parenthetical information aligns each module level objective to the associated course level objective, designated as SL for this project.

Learning Tasks

	Discussions	Project Planning	Service Learning Journal
Instructions	Complete an initial post, as instructed.	Complete the assignment, as instructed.	Complete a journal post, as assigned.
Due Date / Time	Wednesday at 11:59 pm	Sunday at 11:59 pm	Sunday at 11:59 pm
Alignment	MCQ 1, 2, 3	MCQ 1, 2, 3	SL 1, 2, 3

Example Student Session

- Blood bank chat
 - Students generated a list of topics/questions they wanted to discuss
- ABO study questions assignment – group work
- ABO grouping hands-on lab
- Discussion response development – group work
 - Flipped technique
- Discussed topic/question list items not addressed by work done throughout the day
- Reflection – what did you learn?

Feedback

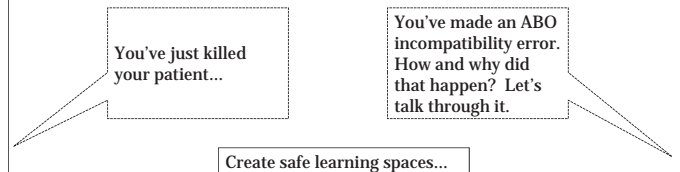
- Can be used to moderate high expectations and overconfidence
 - Two-test model is no longer effective – today's learners want more!
- Requirements:
 - Timely
 - ✦ Realistic assessment early in the process
 - Specific
 - ✦ Too much at once can be overwhelming
 - ✦ From peers (with instruction) may be more meaningful
 - Understandable
 - ✦ Aligned with student proficiency
 - Actionable
 - ✦ Good job! – not helpful

Feedback effect size = 0.75

Fisher, Frey, & Hattie, 2016; Twenge, 2013

Understandable and Actionable

- Errors are hallmark of learning
- Celebrating and expecting errors allows an additional opportunity for feedback
- If students aren't making errors, learning has been mastered



Fisher, Frey, & Hattie, 2016

Overcoming Incivility

- Do not compromise on behavioral standards
 - Clearly outline expectations in the syllabus
 - ✦ Specific regarding requirements to earn certain grades
 - ✦ Situations in which grades would be changes
 - ✦ Limit special accommodations
 - No make-up exams
 - Drop lowest test score
 - Clear policies for dealing with uncivil behavior
- Create a culture of respect
 - Model good behavior and communication strategies
 - ✦ Use of titles – Dr. Barnes, Professor Smith
 - ✦ Develop approaches for when disruptive behavior occurs
- Create a "safe space"
 - All ideas are welcome
 - Errors are not ridiculed
- Document, document, document incidents

Holdcroft, 2014; Twenge, 2013; Wright & Hill, 2015

Summary

- Understand student perspectives – students aren't "bad", they are reflection of current culture
- Help students learn in a way that meets current needs
 - Break up lectures
 - Include videos, hands-on experiences, guided experiences
 - Clear expectations and feedback
 - Safe learning spaces
- Maintain standards and fairness to improve credibility and clarity
 - No "special" treatment
 - No compromises on learning material



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