FLIPPING THE MATHEMATICS CLASSROOM

also known as Flip or Flop Presenter: Joe Terwillegar

FOR YOUR ENTERTAINMENT



WHAT IS A FLIPPED CLASSROOM

- Students are expected to learn material or attend lecture as "homework"
- Work on assignments or on activities in class



WHY I SWITCHED TO A FLIPPED CLASSROOM

- Students struggle to find assistance
- Less excuses for not "getting" it
- Math is like a sport
- What is more important
- Consistency
- Less cheating
- More Collaboration
- Sylvan
- How I learn
- Just made sense to me

Mathematics Is Not a Spectator Sport

How We Learn:

10% of what we READ 20% of what we HEAR 30% of what we SEE 50% of what we SEE and HEAR 70% of what is DISCUSSED with OTHERS 80% of what is EXPERIENCED PERSONALLY 95% of what we TEACH TO SOMEONE ELSE

~ William Glasser

HOWIDOIT

- I use screen cast o matic for videos (many other screencast options for tablets and computers)
- I use a MOBIview and interwrite workspace
- Students are assigned to watch video before class
- I answer any questions from the video and do a few problems as a group
- Give students the assignment
- Classwork check at end of the hour
- Time remaining is used to intro next section

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STUDENT FEEDBACK

- First apprehensive
- 94% stated it was better than traditional
- Most said this was their first math class they enjo attending
- 80% said they gained confidence
- Numerous students tell me they wish their colleg professors did this

I KNOW YOU HAVEN'T FILLED OUT YOUR STUDENT FEEDBACK FORM YET...

I WILL FIND YOU

MORE THAN ONE WAY TO TANGO

- Readings
- Presentations
- Pre-Discussion Questions
- AP Biology example

Dancing Mathematician



ADVANTAGES

- Students test scores improved by an average of 8% during first year
- Students receive greater amounts of guided practice and remediation from trained professionals
- Behavior improved
- Once material is made, less prep work
- Instant feedback on student retention



CASE STUDY

- 200/15,000 surveyed flipped
- More time on authentic research
- Study in college Chemistry course found students achieved higher scores on exams in the flipped classroom
- Pitfalls include
 - Ensuring Students are doing homework
 - Homework must be carefully tailored
- Herreid, C., Schiller, N., Herreid, K., & Wright, C. (2014). Case Study: A Chat With the Survey Monkey: Case Studies and the Flipped Classroom. *Journal of College Science Teaching J. Coll. Sci. Teach., 044*(01).

MORE ADVANTAGEOUS STUDIES

- Move at own pace
- Teachers have better insights into students difficulties and learning styles
- Customize and update curriculum, and it is provided 24/7
- Classroom time can be used more effectively and creatively
- Increased student engagement
- Supported by leaning theory
- "21st century learning"
- Fulton, K. (2012). Upside down and inside out: Flip your classroom to improve student learning. Learning & Leading with Technology, 39(8), 12–17

EXAMPLES IN THE COLLEGE CLASSROOM

- <u>Professor Leonard</u>
- Khan academy
- <u>Patrickjmt</u>
- <u>MIT OpenCourseWare</u>



QUESTIONS



