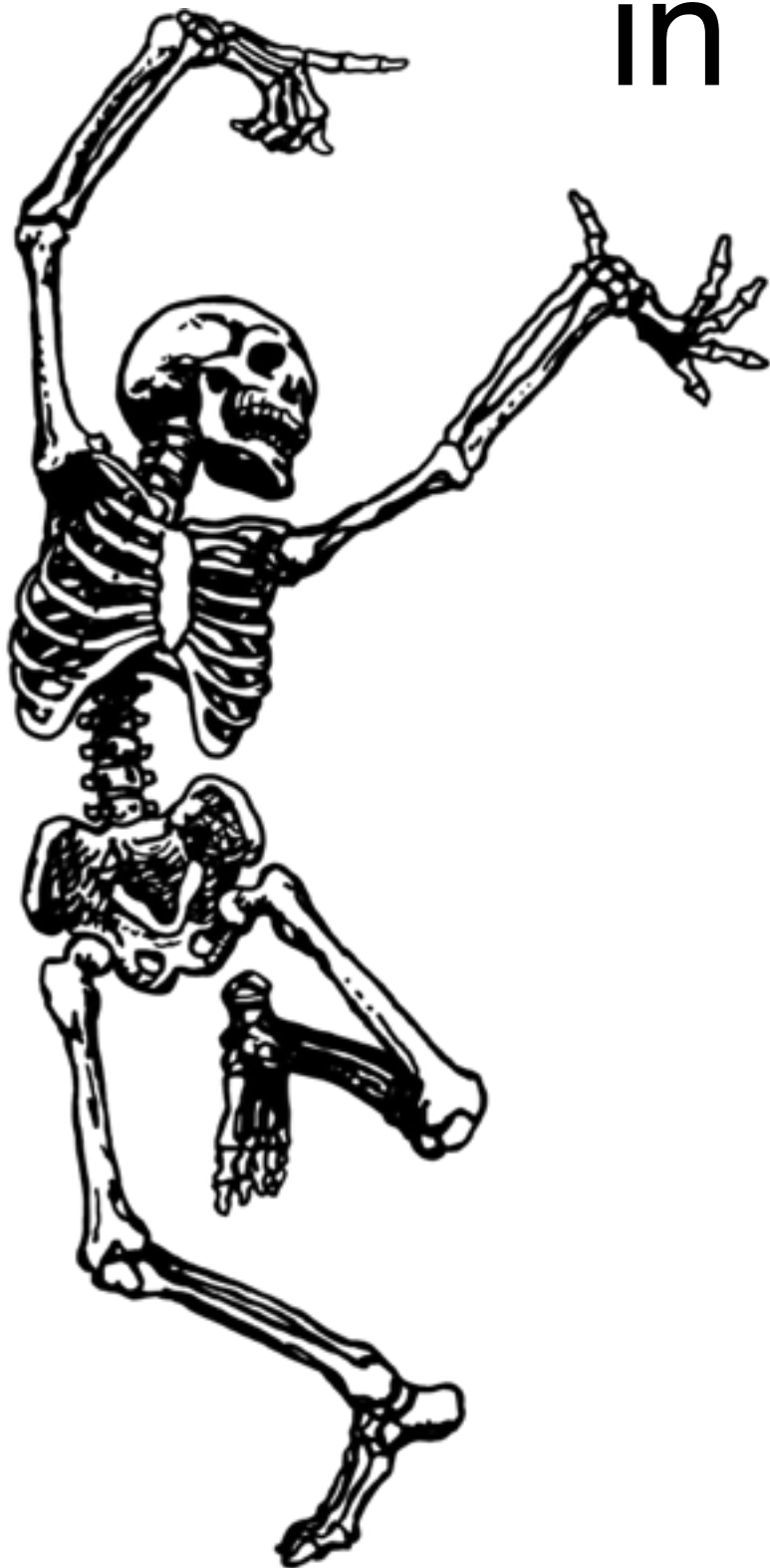


Enhancing Active Learning in a Medical Gross Anatomy & Embryology Course: A Flipped Classroom Approach



2nd Annual REACH Medical Education Day
April 20, 2016
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Department of Anatomy & Cell Biology

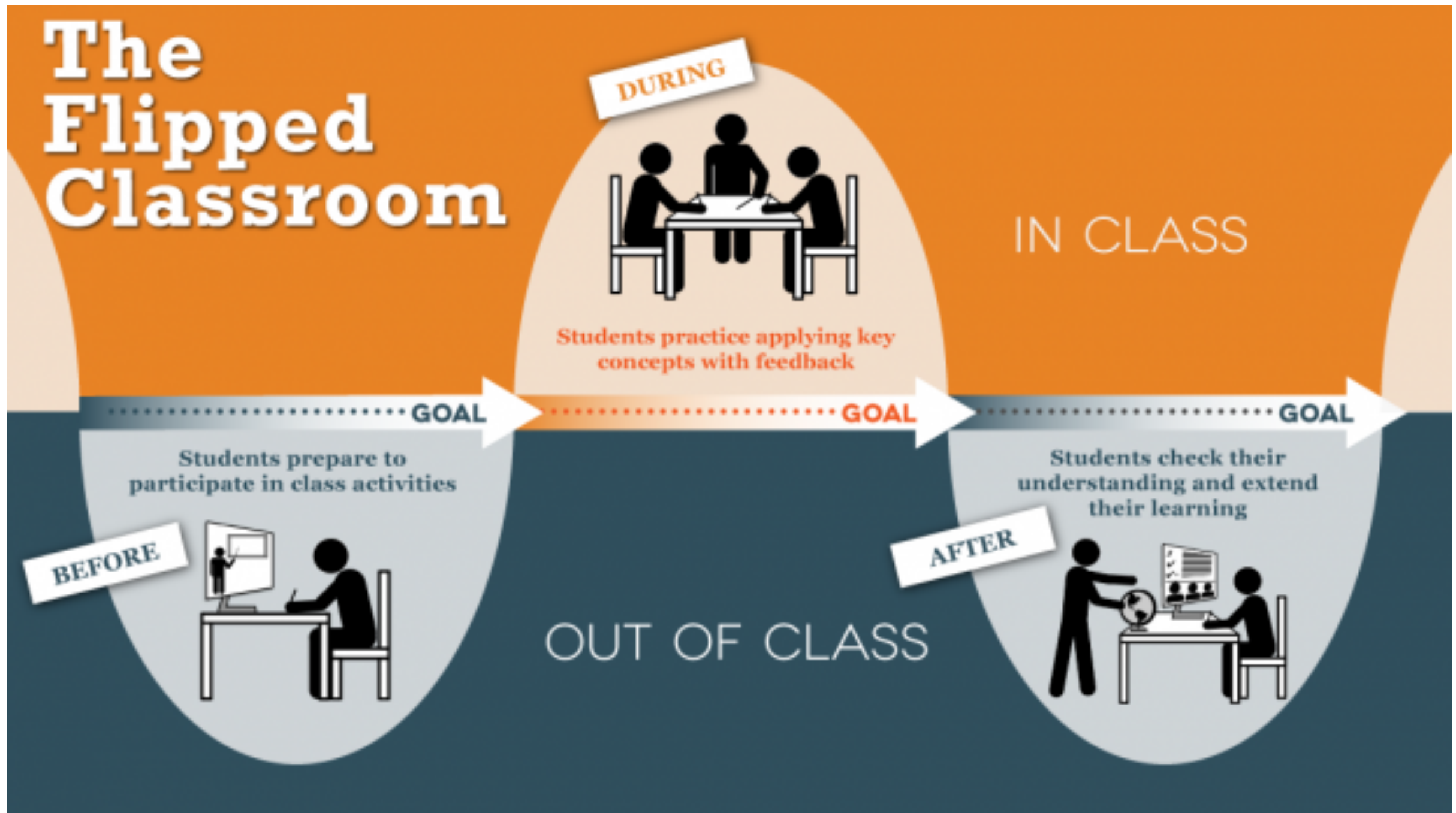


Rationale

- Population impacted: M1 cohort (Class of 2019)
- Need: Students consistently requested additional Anatomy “lectures” in course evaluations every year
- Solution: Include two 50-min flipped classroom sessions in the course schedule to:
 1. Fulfill this student need
 2. Tackle more difficult gross anatomy topics
 3. Further enhance the inherent active learning component of the course



What is a *Flipped Classroom*?



**April
2015**

Faculty Development

Dr. Leigh Patterson & Dr. LaToya Griffin

Adjust Course Schedule

**Consolidated lectures
No increase in course footprint**

Design Sessions

**Session 1: Brachial Plexus
Session 2: Pterygopalatine & Infratemporal Fossae**

Materials Released

**YouTube & Acland Online Anatomy Video links
Course pack readings**

Flipped Classroom

Small group activities and class discussion

Student Evaluation

**Google Form surveys for each Session
Free food = more completed surveys**

Analysis

**Google Form Reports
Correlation & Multiple Regression Analysis**

**March
2016**

Small Group Work

Discussion

Gross Anatomy Review



Clinical Scenarios



Student Evaluation

Flipped Classroom Survey Questions

1. I prepared for the flipped classroom:
Yes or No
2. Prior to attending the session, I watched the videos:
0 times; 1-3 times; 4-6 times; >6 times
3. After attending the session, I went back and watched the videos:
0 times; 1-3 times; 4-6 times; >6 times

Questions 4-11 Likert Scale

1= strongly disagree; 2=disagree; 3=no opinion; 4=agree; 5=strongly agree

4. Instructions for the flipped classroom were easy to understand.
5. The flipped classroom session was well-organized.
6. The flipped classroom session was fun.
7. The flipped classroom session enhanced my understanding of content anatomy.
8. The flipped classroom session enhanced my understanding of content clinical anatomy.
9. The flipped classroom session promoted active learning within the small group.
10. Participation in the flipped classroom session improved my exam performance.
11. I would like to have more flipped classroom sessions in this course.
12. Please list overall strengths of the flipped classroom session.
13. Please list overall weaknesses of the flipped classroom session.
14. Please share any additional comments.

Session 1 - BP

Session 2 - PPF/ITF

Pre-session

Materials: Florida State University
Brachial Plexus I & II Videos
+
Coursepack readings

Survey Questions Prepared: 100%

Avg video views: 1-3 times/student

Acland Anatomy Online
Trigeminal Nerve & PPF Videos
+
Coursepack readings

97.4%

1-3 times/student

During session

Small Group Activities

Group Wrap-up

Gross anatomy review



Clinical Scenarios



Discussion



Survey Questions

Enhanced anatomy understanding
Enhanced clinical anatomy understanding
Promoted active learning
Fun

Session 1*

91%
92%
91%
94%

Session 2*

91%
88%
90%
94%

*Total % = agree + strongly agree responses

Post-session

Survey Questions & Assessment

Reviewed videos after attending session
Average exam performance-content
Average exam performance-overall
Percent survey completion

Session 1

42%
79%
79%
90%

Session 2

50%
85%
81%
90%

Results

	Model	Independent variables	<i>n</i>	Regression Coefficient	<i>P</i> -vaule	R ²
Session 1	1A	Promotes active learning	75	0.55	0.0008	0.14
	1B	Enhances anatomy understanding Enhances clinical anatomy understanding	75	0.45 0.55	0.0020 0.0012	0.40
Session 2	2A	Promotes active learning	73	0.42	0.0029	0.12
	2B	Enhances anatomy understanding Enhances clinical anatomy understanding	73	0.50 0.35	0.0019 0.0235	0.42

Multiple Regression Models: Independent variables as potential predictors of student perception of improvement in exam performance due to flipped classroom participation (survey question #10). While all models show significance, enhanced understanding of basic and clinical anatomy are collectively the strongest predictors across both sessions. $p < 0.05$.

Strengths & Weaknesses



Survey questions #12 & 13 gave students a chance to describe the strengths and weaknesses of each session in their own words

Future Plans

The following curricular changes will be made based on faculty and student feedback:

1. Session time will increase from 50 minutes to 90 minutes
2. Two more sessions will be added to have one session per exam section
3. Materials will be posted to BlackBoard at beginning of each exam section, allowing ample time to review prior to session
4. In-session learning assessment will be added using ExamSoft application on iPad

Year-end goal: Submit educational research manuscript

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