

Flipped learning in a multi-site first year anatomy unit

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Flipping in an specialist anatomy unit.

A topic within a first year anatomy unit at ACU for **Speech Therapy students** was flipped in both 2015 and 2016. Results from two surveys related to the study are presented as well as a comparison of students responses on relevant examination questions between years with flipped content compared to years before the content was flipped.

Project Overview

Flipped learning is one approach to teaching that is thought to drive student centred, active learning (O'Flaherty *et al*, 2015; Presti, 2016). Flipped learning is theorized to drive student driven learning and engagement.

This study reports on student's perceptions of a 'Flipped Learning' experience, which was part of a large cross institutional study, with first year students studying bioscience units.

In this part of the study students were studying specialized anatomy within a Speech Therapy degree which is run on 3 campuses (Melbourne, Sydney, Brisbane) at the Australian Catholic University.

Method

Ethical approval was gained to survey students on their learning preferences and post flipping experiences using online survey tools.

One topic was identified to 'Flip' and the topic was 'flipped' following guidelines developed by the OLT flipped learning project group.

The anatomical area of the Pharynx was chosen; this included students learning the general anatomy (structure and function) of the region as well as the process and stages of swallowing.

Students experienced a two week 'Flipped Learning' module in week 10 of a 12 week unit on the Pharynx and swallowing control. Students participated in online self-paced learning activities containing self-testing elements before attending a 'flipped lecture'. The lecture was replaced by a 'Kahoot' based quiz style session that covered the topics in the online lesson. Face to face classes following the lecture revolved around students teaching each other content and utilising the feedback from the diagnostic questions in the online activity.

Additional to the surveys, 8 examination questions were identified on past examination papers that would be used in the present exams for comparison of groups.

In the first year (2015) all students across all campuses were invited to complete a 'learning experiences' survey. In the first and second years (2015 & 2016) all students were invited to complete a 'post-flipped experience' survey. Both surveys were conducted online using Survey Monkey.

Responses

Learning preferences survey (2015):

- Forty nine students completed the first survey consisting of questions about learning style and goals for learning. This was a response rate of 28%

Flipped Experience survey (2015)

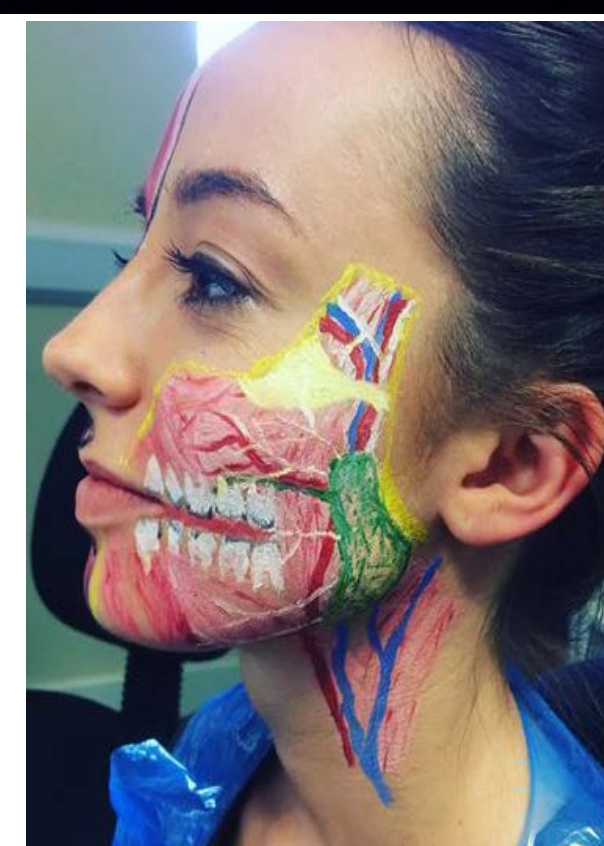
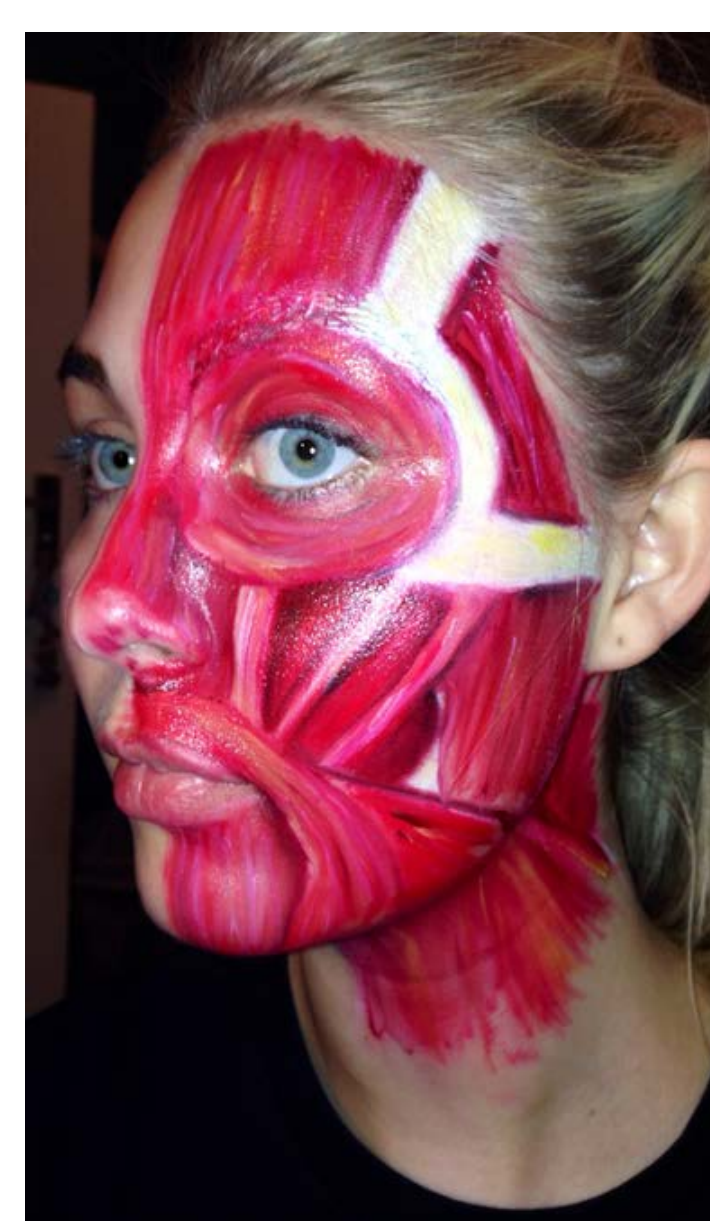
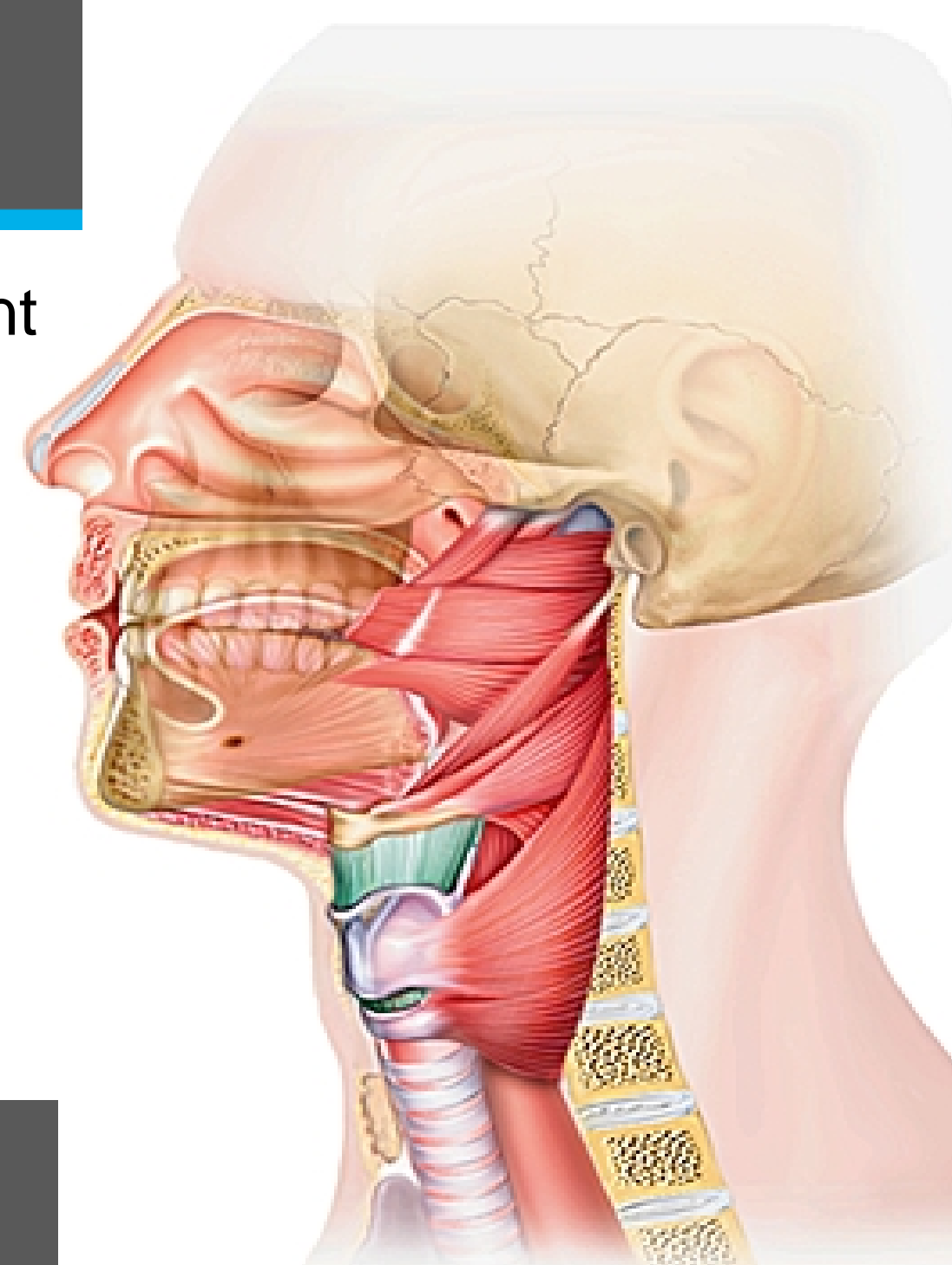
- Of the cohort only 33 students completed this survey. This is a response rate of 18.5%.

Flipped Experience survey (2016)

- Of the cohort only 32 students completed this survey. This was a response rate of 19.5%.

Student Opinions on Learning Preferences Survey

Type of content and level	NOT VERY TRUE <----->-----> VERY TRUE							AVRG
	1	2	3	4	5	6	7	
I prefer unit material that really challenges me so I can learn new things	0	1	1	4	25	11	7	5.33
I prefer unit material that arouses my curiosity, even if it is difficult to learn	0	0	3	7	15	11	12	5.46
I like to choose assignments that I can learn from even if they don't guarantee a good grade	3	9	8	15	9	5	0	3.67
When I study for this class								
I pull together information from different sources, such as lectures, readings, and discussions	0	0	0	8	9	18	13	5.75
I ask myself questions to make sure I understand the material I have been studying	5	7	13	7	10	6	1	3.65
I try to determine which concepts I don't understand well	0	3	1	4	19	12	10	5.35
If I get confused taking notes, I make sure I sort it out afterwards	0	4	9	11	11	8	6	4.57
Readings								
I make up questions to help focus my reading	10	16	11	6	4	2	0	2.67
When I become confused about something, I go back and try to figure it out	1	1	8	3	18	10	7	4.96
Lectures v online								
I prefer learning in a class where the teacher presents most of the information	0	3	4	11	12	8	11	5.04
I prefer having my lectures online and only attend classes which are more interactive	5	6	9	5	7	5	12	4.35
Times of learning								
I prefer to learn new concepts and terminology by attending class	0	1	3	8	10	15	12	5.45
Answering questions in class helps me apply new concepts and terminology	1	0	5	9	15	12	7	5.06
I learn new concepts and terminology more effectively by completing learning activities before coming to class	4	0	3	10	12	15	5	4.86
Workload								
I am prepared to increase my workload to learn more effectively	0	2	3	17	11	11	5	4.84
Completing learning activities before coming to class adds to my workload	0	1	2	13	10	14	9	5.24
Grades								
Getting a good grade in this class is the most satisfying thing for me right now	0	0	2	3	12	13	19	5.9
The most important thing for me is improving my overall grade; my main concern is getting a good grade	1	1	2	17	7	13	8	5.02
If I can, I want to get better grades in this class than most of the other students	1	0	4	7	15	10	12	5.31
I want to do well in this class because it is important to show my ability family, friends & others	1	6	4	10	7	10	11	4.84



Most responses
Second most responses

Flipped Experience Survey

Response	2016 group (n= 32)					2015 group (n=33)				
	not at all	<	=	>	Average	not at all	<	=	>	Average
It was clear to me that I would be expected to actively participate in class activities.	0	1	13	18	3.53	1	4	10	18	3.36
The online pre- and in-class activities were readily accessible.	1	1	12	18	3.47	0	6	10	17	3.33
Working with other students in class has improved my understanding of the topic(s).	0	3	12	17	3.44	1	6	14	12	3.12
The workload and timelines for the pre-class activities were reasonable.	1	5	10	16	3.28	0	4	12	17	3.39
The timing for the pre- and in-class activities catered for my study and personal commitments.	0	5	13	14	3.28	4	7	6	16	3.03
The flipped learning approach enabled me to work at a pace that matched my current knowledge.	1	1	16	13	3.32	2	6	10	15	3.15
My interest in the topic was stimulated by completing the flipped learning activities.	2	3	16	11	3.13	1	9	12	11	3.00
I actively participated in class by, e.g. answering questions, completing quizzes and hands-on exercises, discussing and presenting ideas, and/or group activities.	1	3	16	11	3.19	1	3	11	18	3.39
The flipped learning approach involved various activities that suited the way I learn.	2	4	15	11	3.09	5	7	8	13	2.88
The pre-class activity prepared me to participate in class (lecture/practical).	1	5	16	10	3.09	2	8	10	13	3.03
The flipped learning approach helped me to identify effective ways for learning a new topic.	2	5	15	10	3.03	4	8	11	10	2.82
Participating in flipped learning activities made me feel part of a learning group.	5	4	16	7	2.78	8	10	7	8	2.45

Examination Question Comparison

QUESTION TOPIC (EXAM)	BEFORE FLIPPING		AFTER FLIPPING	
	2013	2014	2015	2016
Functions of the pharynx	86.2	86.2	90.4	na
pharyngeal tonsil (adenoids)	81.5	81.5	88.5	na
Regions of the pharynx	87.7	87.7	84.6	na
Functions of the pharynx	18.5	18.5	69.2	na
Pharyngeal constrictor muscles	41.5	41.5	50.0	na
Swallowing stages	81.5	80.0	96.2	na
Features of the pharynx	35.4	66.2	48.1	na
Accessory pharynx muscles	50.8	63.1	30.8	na

Summary

- Pre-learning survey highlighted the importance of grades and also issued with students reading and normal preparation and problem solving strategies.
- Students had mixed responses on flipped experience with some preferring the traditional approach and others appreciating the new learning opportunities and increase influence of peer learning in their flipped experience.
- There are some similarities and differences between the two cohorts- this is yet to be explored.
- Interesting that for both groups there were mixed results on the experience helping them to feel more part of a learning group.
- Examination results in the post flipping group do show positive trends with learning.

Works Cited

- O'Flaherty, J., Phillips, C., Karanicolas, S., Snelling, C. & Winning, T. (2015). The use of flipped classrooms in higher education: A scoping review. *The Internet and Higher Education*, Volume 25; 85-95
- Presti, C. (2016). The Flipped Learning Approach in Nursing Education: A Literature Review. *Journal of Nursing Education*. May 2016, Volume 55, 5: 252-257.