The flipped classroom: assessing achievement and engagement

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The flipped classroom is a teaching method in which students are expected to prepare for class lessons before class and then use class time to engage in more in-depth discussions and activities. This method shifts the in-class time from content delivery to student engagement and allows for more use of academic research and discussion of current areas of research.

Conclusions

Attendance
Attendance across all units using Flipped teaching was collated and compared to attendance of the unit when taught using a ‘standard’ model of teaching. The data shows that there is no significant change in attendance. This is important as there were concerns students would not attend as they had more access to material before sessions. See Fig 1.1

Engagement and Student Perception
Students were surveyed and interviewed to assess what their perceptions were of Flipped learning styles and how it affected their learning. Students were happy with the style and thought it was beneficial. Engagement with the resources used was also measured and showed an increase in access P=0.0004, N=10

Achievement
Measurements of achievement were made using assessed work within the Sports and Science areas, when these data sets were pooled there was a statistically significant increase in achievement P=0.0081 with the mean grade increasing from 55.4 to 66.0. See figure 1.2

Introduction

A Flipped Classroom is more than a blended learning session, it is a reversal of teaching that swaps the traditional knowledge transfer elements to the home or out of college environment and then shifts the in class time to a more student led and focused environment (Lage et al., 2000).

This can be achieved in a variety of ways, in this project it was achieved primarily through the use of video lectures that were watched before lessons. These gave basic elements of knowledge that were then used as the basis for in class teaching.

This should mean that students come to the class having already made use of the lower levels of Bloom’s Taxonomy and the student led and focused lessons should then facilitate access to the greater levels of contextualisation needed for the higher levels of Bloom’s taxonomy. There is a trend towards HE in FE students being mature students and with the increased costs of HE the quality of teaching is paramount to the student experience. This project hopes to evaluate the effectiveness of flipped learning in increasing achievement and student engagement.

Methodologies

Attendance
Data was collected from all units taught in a ‘flipped’ manner and were compared to the same units delivered in a standard style last year.

Engagement and Student Perception
Students were surveyed using a Likert scale and the data analysed statistically. Students were also interviewed using semi-structured interviews.

Achievement
Data was collected from summative assessments in sports and science units that were formally taught in a ‘Standard’ manner and were this year taught in a ‘flipped’ manner these were then pooled and analysed.

Analysis
Statistics were carried out using GraphPad Prism 5 to analyse any significance to changes. These were tested using Unpaired T-tests.

Results

Figure 1.1 Graph showing there is no change in attendance due to the use of a flipped class room style of teaching P=0.2551 N=6

The data shows that there was no alteration in the average attendance across all the courses involved in the project, This allayed some of the fears of staff that thought students would not attend.

Student Perception

Flipped lessons were prepared across a range of courses. Students were then asked for their thoughts about the methods used.

Student 1
"I felt more able to contribute to the discussion and was able to mediate on the topics before class. It also influenced me to digest a bit more of current issues captured in the media, past or present."

Student 2
"The sessions are much more helpful now, especially the application of theories to case studies and the academic literature provided is much more helpful."

Student 3
"The preparation means that during the session less time is spent listening and more time is spent discussing what we have found."

Student 4
"The sessions are much more helpful now, especially the application of theories to case studies and the academic literature provided is much more helpful."

A survey across all participants showed there was a statistically significant difference in favour of using Flipped learning styles (P=0.0286 N=35) in class.

Achievement

Achievement was measured using data from summative assessment methods, in this case, examinations. The data from two cohorts of Applied Science students and four sports coaching cohorts was pooled to give the graph below.

Figure 1.2 Graph showing increase in achievement of science and sports students in units delivered with a ‘Flipped’ Lesson style P= 0.0081 N=74

This shows a statistically significant increase in mean achievement in the pooled group. This suggests that flipped teaching has improved achievement. This could be due to the novelty of the method and further monitoring is needed.

Teaching perspective

1. This style of teaching requires lots of organisation as you are required to have lessons available to access at least one week before the lesson is delivered
2. Class time is freed from content delivery so the time has to be filled with activities, these can take time to prepare
3. Delivery of practical sessions can be more effective as there is less time devoted to the teaching so more can be done in each section
4. It allows for more use of academic research and discussion of current areas of research
5. Students seem to be engaged and enjoy using the technology

Recommendations

1. Find a format you are comfortable to record lessons and deliver in
2. Various software is available to capture the screen and web-camera recordings, Screencast-o-matic.com is free and works on PC and Mac
3. Leave basic mistakes in as this makes the recording more ‘lesson’ like and ‘humanises’ the session
4. Talk to students to ask what worked well and what didn’t as they will have lots of suggestions

References