

Action Research Project:

Investigating the purpose, use
and usefulness of *Flipped
Learning* in Years 11, 12 & 13

Authors:

Mr Chris Pleasant

Harry Morgan, Hollie Culham, Dan Beer,
Hopi Fernandes, Emily Coles

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Rationale

As pupils progress through their school career, the quantity and rigour of content increases which presents numerous challenges for staff and pupils. Pupils may find it hard to understand the content due to it being more challenging at GCSE and particularly A Level. As the understanding is more difficult, lessons can be more time consuming. This could mean that pupils are spending the majority of the lesson learning the content with less time to develop their analytical and critical skills. This led us to investigate the value of Flipped Learning for GCSE and A Level students. Flipped Learning is a pedagogical approach in which direct instruction moves from the group learning space to the individual learning space where the educator guides students as they apply concepts and engage creatively in the subject matter. Our research group wanted to find out if Flipped Learning can be implemented outside of lessons and practised in lessons to successfully improve the learning experience and grades of Year 11, 12 and 13 students at Rainham Mark Grammar School.

Literature Review

Research into the implementation and effects of Flipped Learning is somewhat limited due to the short period of time in which technological enhancements have allowed for it to emerge as a practical and accessible tool. However, from the research conducted thus far, a positive trend emerges which appears to correlate improved student feedback, retention of knowledge and assessment performance with the effective use of Flipped Learning (Chyr et al, 2016).

According to recent research, over the past two decades, teaching and learning processes have been influenced by technological, instructional and pedagogical advances (Chou & Tsai, 2002; Kavanoz, Yüksel & Özcan, 2015). Nowadays, students' demands are transforming because their study habits and learning strategies have already changed due to the pervasiveness of the Internet (Persico & Pozzi, 2015). Moreover, a web-based learning environment is helpful for improving learners' help-seeking behaviours and influences their learning processes (Mäkitalo-Siegl & Fischer, 2011).

Furthermore, compared with traditional lecture-based learning, Flipped Learning can facilitate students' cognitive engagement and guide them to interact more efficiently with the learning content (Ibrahim & Callaway, 2014).

Evidence to support such claims can be found from the work of Fulton (2012) who found that 87 percent of parents and 95 percent of students said that they preferred flipped learning to the traditional lecture format. Some students said they preferred

interacting with others to sitting through classroom lectures, others said they liked re-watching the videos when they needed to, while others said they appreciated always having help available. Teacher-student relationships also appeared to have improved with the implementation of flipped learning (Fulton, 2012). Research in a school in Michigan further support this as Maths teachers created videos outlining the steps in a set of sample problems, posted the videos online, and asked students to watch them at home. Approximately 82 percent of students use their own devices to watch the videos at home. As a result, graduation rates improved from 80 to 90%.

Despite the positive research emerging from American schools, there are clear difficulties and challenges with Flipped Learning as there is with any other pedagogical approach. For example, students may suffer alienation and isolation when they study in an online environment (McInnerney & Roberts, 2004; Tsai, 2013a) as there is limited ability to discuss issues with peers. Furthermore, Smallhorn (2017) conducted research into university students in Australia and found that while engagement and attendance improved when using Flipped Learning, it had no significant effect on outcomes. We must also be mindful to the challenges posed to teachers using this model as "teachers who wish to directly transform their traditional teaching methods into a digital presentation, without re-designing the course and teaching methods, may find it is hard to achieve satisfactory learning effects." (Chyr, 2016). Therefore, it is a time consuming venture to 'Flip' the classroom as teachers

must consider a multitude of ways in which to further support students in the classroom.

Methodology

For our research project into Flipped Learning, we decided as a group that we would collect the data using a combination of questionnaires and interviews. We would give questionnaires to a sample of Year 11, 12 and 13 students, as they would be the students most likely to be able to use Flipped Learning in lessons. We would also conduct interviews with a sample of teachers from a range of subjects, which would give us their opinion in detail on how it could or could not be used, as they would be the ones to implement the learning system.

Questionnaires – Year 11, 12 & 13 students

We chose to use questionnaires with the students as they would give us a quick response and clearly tell us how students would feel about a different learning system. We designed it should include a combination of closed and open questions which were clear and concise. This made it easy for the student to complete the questionnaire and the mix of questions allowed us to receive an answer with some detail as to why students felt a certain way. When writing the closed questions we had to ensure that all possible or likely answers were included and also that all students were able to answer the questions no matter which subjects they took. This made sure that all the students could answer the all the questions. The questionnaires gave us statistical data, which we transferred into graphs.

The sample was chosen randomly and 10 students were chosen from both Year 12 and 13 while 5 students were chosen from Year 11. We chose more people from the Sixth Form as these students would more likely be affected and benefit more from Flipped Learning. However GCSE subjects could implement this system also.

The students completed them in morning registration with a student researcher there to make sure they understood all the questions and give accurate responses. This gave us a total of 25 student responses.

Questionnaires – Year 13 Sociology students

Students from both Sociology groups (23 students in total, 92% of the cohort) completed a questionnaire during their lessons. The questionnaire contained a mixture of open and closed questions, with the opportunity for students to expand upon their answers. This questionnaire assumed that Flipped Learning was already occurring, and the questions focused largely on successful techniques, suggestions for development and potential weaknesses of the method.

Interviews - Teachers

We carried out 2 group interviews with 7 teachers in total (one group of 3 and one group of 4) and used a semi-structured approach. This meant we could ask a set of questions that were the same for both interviews but allowed us to ask further

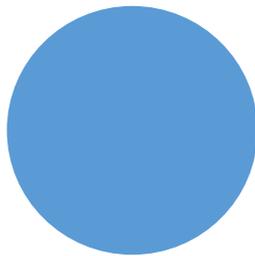
questions so the participants could expand on their answers. Semi-structured interviews are also a more relaxed approach making the interviewer and interviewee feel more at ease, in order to encourage more honest and valid responses.

We took a sample of willing teachers from different subject areas. This meant we received a range of responses on how different subjects would utilise Flipped Learning and if they thought they could make it work or not in their lessons. Each group interview was led by 3 student researchers.

Results

Year 11 - Data Analysis

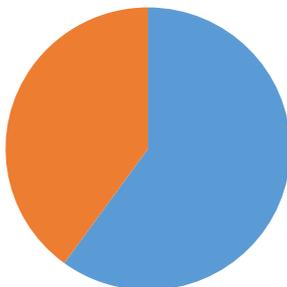
Would you benefit from learning material about an upcoming topic before the lesson?



■ yes
■ no

Most year 11 pupils have suggested that it would be useful to have some knowledge going into a lesson, researching a topic beforehand. Some suggested that this would be of particular use for more challenging topics and provide a better opportunity to apply their knowledge in the classroom.

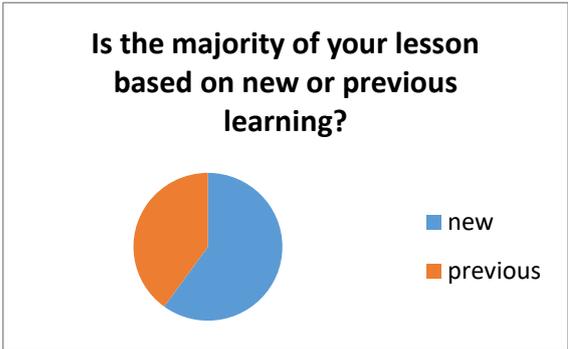
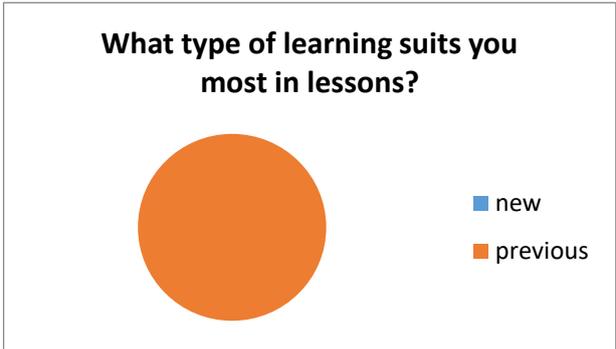
Would Flipped Learning appeal to you?



■ yes
■ no

Most pupils argue that Flipped Learning would appeal to them, suggesting that re-affirming learning in lessons would give them greater confidence and make lessons more interesting.

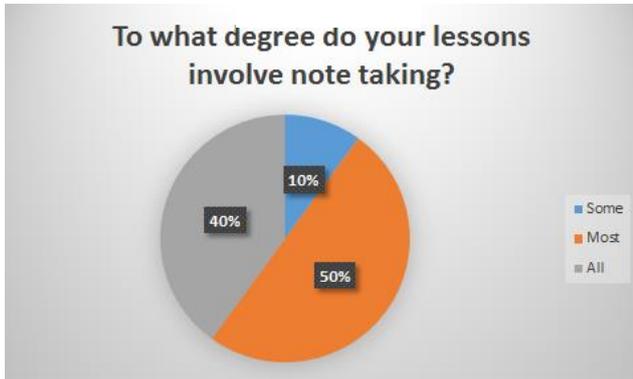
However, some pupils have shown concerns about the amount of work they would have to do outside the classroom, implying that they already have too much work to do.



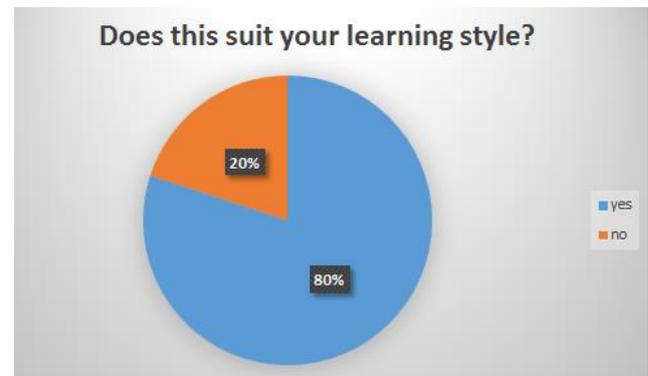
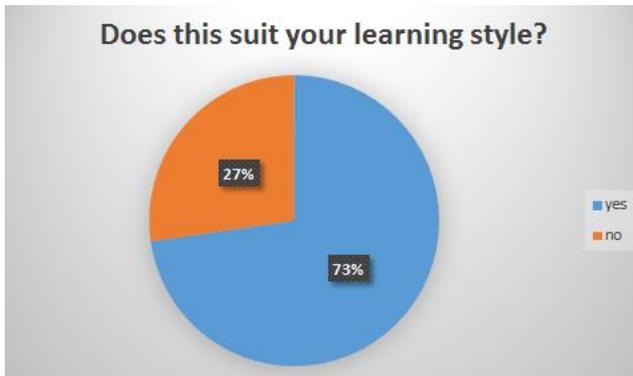
Currently the majority of lessons focus on new learning, something which Flipped Learning goes against. However, they do all express interest in learning more previous learning in lesson time. This suggests that learning new content outside of the classroom and reinforcing it in the classroom, as Flipped Learning suggests.

Years 12 and 13 - Data Analysis

Year 13

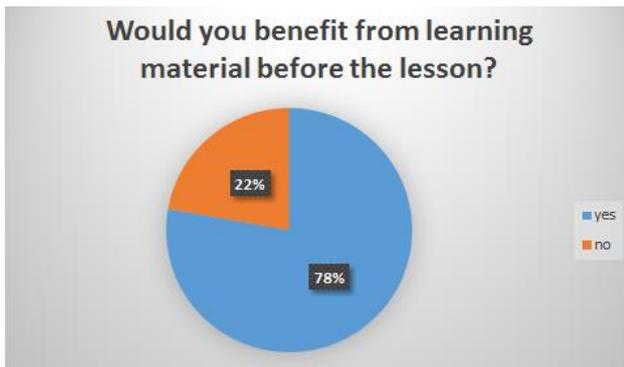


Year 12

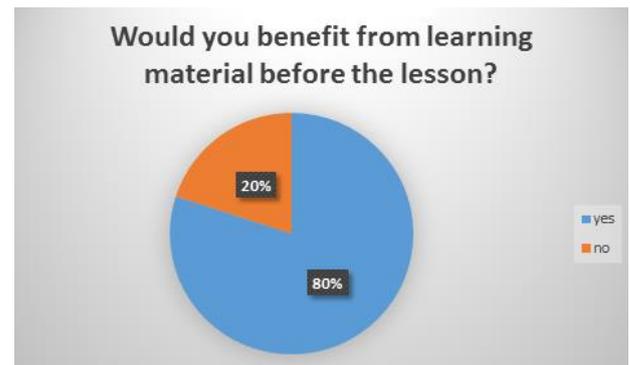


The majority of lessons (90% for year 13, 80% for year 12) do involve note taking to some extent, and this is a style favoured by most sixth form students (73% for year 13, 80% for year 12).

Year 13



Year 12



Students believe that it would be of more use to them to have learnt the material before the lesson (78% year 13, 80% year 12). This could contrast with the current most popular lesson structure of note taking, which is preferred, but arguably not the most beneficial.

Year 13

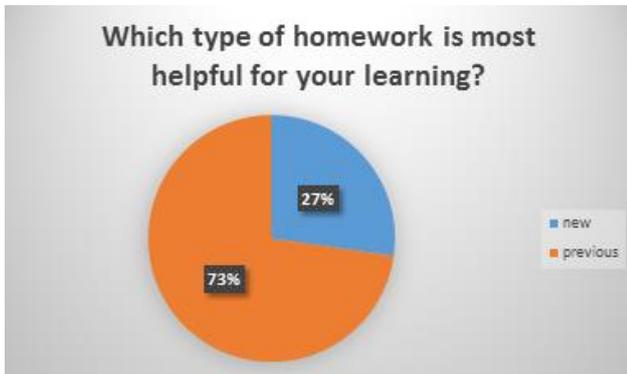


Year 12

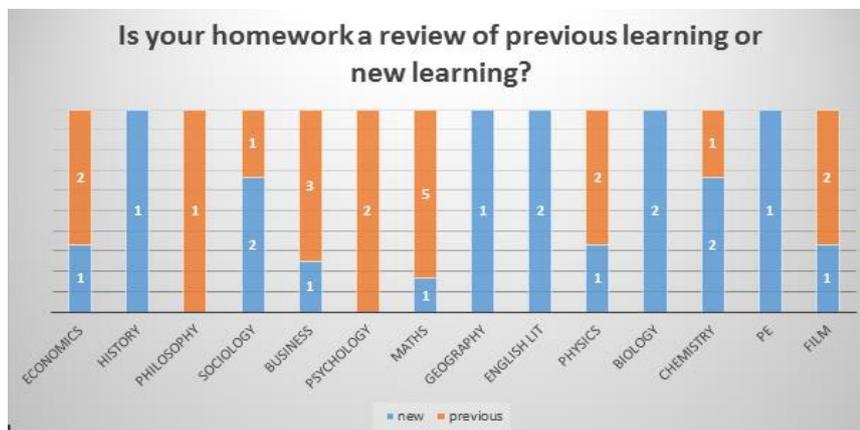
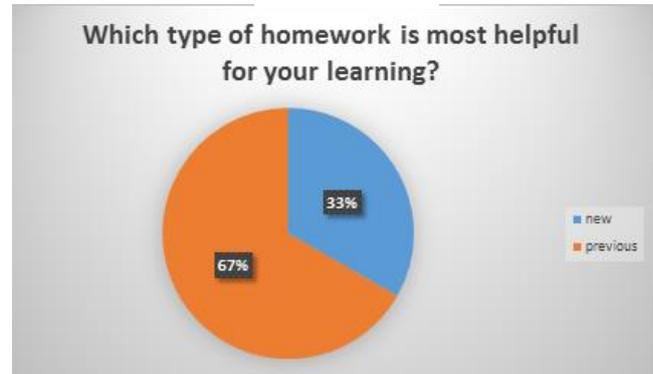


Still, 50% of year 13s suggest that note taking is their favourite method of learning in the class room, contrasting with year 12s who prefer a mix of note taking and group work. This could be a sign of growing independence of students as they age.

Year 13

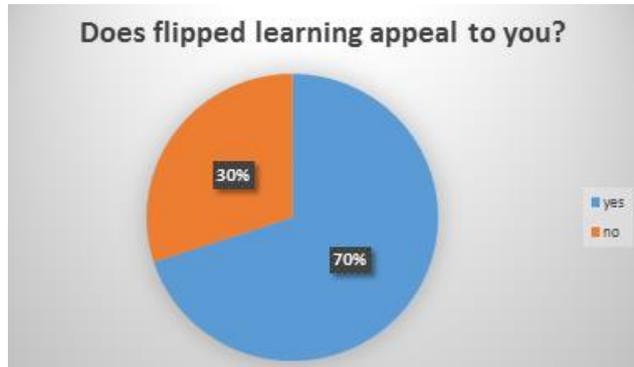


Year 12

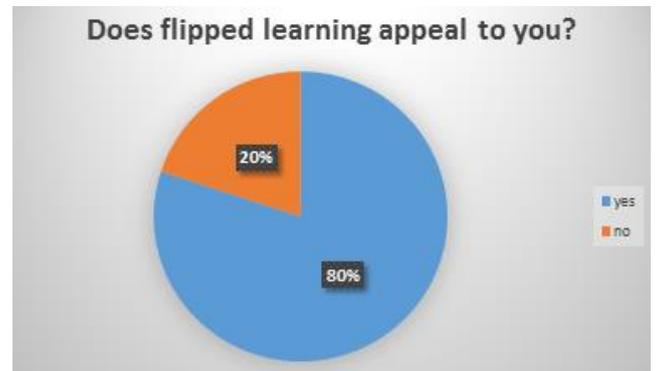


Students argue that homework based on previous learning is the most useful (73% year 13, 67% year 12) suggesting that they prefer to reinforce class room learning with homework based around it. However, across 14 subjects the majority of homework is based new learning (55% for year 12 and 13 combined). Maths, philosophy, economics and business studies show the highest proportion of students who believe that homework is a review of previous learning.

Year 13



Year 12



We gave students a brief definition of Flipped Learning to see if it would appeal to them. Both year 12 and 13 were enthusiastic about the proposition, which is reflected in the results of the questionnaire (70% in favour for year 13, 80% in favour for year 12).

Year 13 Sociology - Data Analysis

It is agreed by the majority of Sociology students that Flipped Learning is already being employed in lessons.

91% of sociology students have found this to be a better method of learning, securing their knowledge, rather than a traditional lesson.

The methods vary from making notes from the textbook to watching teacher-made videos. On average, students have rated these 7.3/10 for usefulness.

All but two students in our sample of 23 argued that Flipped Learning could be applied in all of their subjects, and some have their own ideas of how. For example, it may be beneficial to make notes prior to the lesson for subjects such as PE, Business, History and English.

48% of students worry that failing to complete work before the lesson is the major flaw with Flipped Learning. Other issues pointed out include the limited availability of resources for students outside of the classroom, as well as not understanding the content initially without the immediate aid of a teacher.

However, the last two issues are easily corrected: online resources are constantly growing and there is the option of creating your own material for students to use. Furthermore, Flipped Learning is designed to give students more opportunities to ask teachers about the content, arriving to lessons with questions about what they have learnt. Classroom activities such as group work, quizzes and exam questions can all be used to ensure content has been absorbed by students, which they consider is a more productive use of lesson time.

Teacher Interviews – Data Analysis

We interviewed 7 teachers across a variety of subjects. They all had previous knowledge of flipped learning and understood some benefits and downfalls. Some teachers are already implementing flipped learning in their lessons, for example, in Maths they make use of online resources and subscription services.

Furthermore, Art teachers suggest that older students can lead lessons and teachers can act as guides. This could be implemented in other subjects where students learn content before lessons and apply what they know in them.

However, Maths teachers were concerned that flipped learning increases the risk of some students misunderstanding a topic. This could be rectified by plugging any gaps in knowledge with classroom activities and exercises.

Teachers put forward the anxiety that flipped learning required students to be proactive and self-motivated and questioned whether they would do the work and actively take in the information. However we found in our Year 13 Sociology questionnaire that students were more enthusiastic about flipped learning, as the style reflects that of university.

Evaluation

Overall the research project enabled us to gain a very good insight into the topic which we initially set out to research: whether Flipped Learning could be a useful strategy for Sixth Formers and GCSE students. However, having completed the research, it would be pertinent to evaluate the processes we used as objectively as possible.

Our evaluation is conducted using three monitors: practical issues, methodological issues and ethical issues.

Practical Issues

Previously to starting the project, the **knowledge** which the student researchers had of both conducting practical research and the subject matter (Flipped Learning) was very limited. A steep learning curve ensued which was aided by two in-school workshops to identify key aspects of conducting good quality research and writing up our findings. Independent research was also conducted to look into what successful Flipped Learning might entail.

One major problem which we encountered was **attendance and commitment** from some of the student researchers. Only two of the researchers were involved throughout the whole process; we had issues of non-attendance. This necessitated changing numerous deadlines and was frustrating for the most committed members of the research group. However, ultimately, we do not feel that this reduced the quality of the research.

Due to staff commitments and unpredictable events, some teachers were unable to attend the interview, which reduced our sample. However, valid data was undoubtedly gathered.

Ethical Issues

Students and teachers were informed of the purpose of the research and gave their implicit informed consent by completing the questionnaires and interviews. The individual identities of both teachers and students have been kept confidential. There are no ethical problems.

Methodological Issues

Employing both quantitative (questionnaires) and qualitative (interviews) methods of research and data analysis, we were able to check the reliability and validity of the data. This technique known as **triangulation** proved valuable.

Questionnaires were distributed randomly (through the register) to 25 students from Years 11, 12 and 13 (5 from Year 11; 10 each from Years 12 and 13). Whilst this makes the sample size relatively small, the random selection should contribute towards ensuring that the data is representative. In addition, a conscious choice was made to focus on detailed, qualitative responses in order to gain more meaningful and rich data, which necessitated keeping the sample size relatively small for practical analytical reasons. Thus the data obtained from the Questionnaires should be considered valid.

The teacher interviews (7 teachers across 2 group interviews) provided more rich data. However, it should be acknowledged that a group interview presents the risk of peer pressure and impression management. However, it was felt that in the open

environment created by the student researchers, teachers did appear to be honest and frank in their contributions.

Conclusions and Recommendations

Our conclusion was that students and teachers felt that Flipped Learning could make a valuable contribution to the learning of GCSE and A Level students within Rainham Mark Grammar School. Students find the idea of Flipped Learning appealing, and those who had experienced it had found it to be beneficial to their learning.

Considerations and Factors in Success

- How Flipped Learning is used, will vary by subject. For example, Maths make use of online resources and subscription services; Business Studies and Economics have already had success with using self-recorded videos outside of the classroom to introduce topics.

- The success will depend upon a range of factors:
 - availability of appropriate resources
 - using a range of different resources both inside and outside the classroom
 - tooling up the students with the necessary skills for Flipped Learning
 - teachers setting clear expectations for work completed outside of the classroom
 - rewards and sanctions
 - the commitment of the students
 - the enthusiasm of the teacher
 - consistency within the department

References

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Persico & Pozzi, 2015

Smallhorn (2017

Tsai, 2013a