



## The Greek flip: old language, online learning

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The flipped classroom has generated much enthusiasm as the future of education. Past research has shown personal support from a tutor as highly effective, but uneconomical. Might flipped formats be a solution to this economic problem? This paper reports on a flipped design for teaching ancient Greek in a theological college. Students learnt the basic content through online videos and activities, and then attended a two-week intensive to interact with faculty and peers. Students were very satisfied with the online resource and agreed that it had helped them prepare to learn Greek, although they were keen to keep the personal interaction with peers and teachers. They used it heavily for an extended period of time. The proportion of students failing or achieving a simple pass decreased, although more data is required to confirm the impact on marks. Overall, the adoption of a flipped format has been validated.

Keywords: flipped classroom, blended learning, language learning

### Introduction and Context

The “flipped classroom” has generated much enthusiasm in the last few years, with claims of benefits such as lower failure rates, greater engagement, teachers better in tune with students’ progress, and more effective targeted support (Thompson, 2011; Roscorla, 2011; The Economist, 2011). Flipping a course involves providing the basic content to be learnt as online media (typically video tutorials) which students can cover individually at home, while exercises and projects are done in class together with the teacher and peers. Sal Khan’s TED presentation on how his video tutorials have been used in classrooms has been a prominent catalyst (Khan, 2011a). Khan has moved from tutoring a cousin on his spare time to founding the Khan Academy, with financial help from the Gates’ Foundation (Thompson, 2011). TED has formed a platform to allow teachers to use their videos within a flipped format (ed.ted.com), in which Sal Khan is an adviser.

Indeed, the flipped classroom has been widely touted as the future of education. “Spend a few minutes playing with the Khan Academy dashboard of a class in Los Altos, and you see a vision of the future”, The Economist (2011) notes. After Sal Khan’s popular TED presentation on using tutorial videos to reinvent education, Bill Gates commented “I think you just got a glimpse of the future of education” (Khan, 2011a). Khan’s vision of education in 2060 involves a change in the classroom’s role, from large group lectures and a fixed “seat time” to an active and creative process with consistent high standards of achievement (Khan, 2011b). It has quickly gained prominence within a context of calls for education to be ‘disrupted’ and expectations of significant innovation and change (Christensen, et al., 2010).

The future may become clearer from the perspective of the past. Close to thirty years ago, about the time of the first ASCILITE conference, Bloom (1984) published a report on the relative effectiveness of various techniques to improve the teaching-learning process over the traditional large group lecture. One-to-one tutoring was the clear winner, taking the average student two standard deviations higher than what he or she would have been under conventional conditions. Yet, he saw universal one-to-one tutoring as unfeasible and dubbed the challenge to reproduce this impact in an affordable and scalable format *the two sigma problem*:

The tutoring process demonstrates that most of the students do have potential to reach this high

level of learning. I believe an important task of research and instruction is to seek ways of accomplishing this under more practical and realistic conditions than the one-to-one tutoring, which is too costly for most societies to bear on a large scale. This is the '2 sigma' problem. Can researchers and teachers devise teaching-learning conditions that will enable the majority of students under group instruction to attain levels of achievement that can at present be reached only under good tutoring conditions?

Notably, the block to significantly improved education is not a *theoretical* one, but an *economic* one. *What* will achieve improved learning is known; *how* this can be done in an affordable way isn't. This clarifies the potential role of technology, since its impact is essentially an economic one through an increase in productivity: increased outputs for lower inputs. In flipped formats, technology makes it feasible to inform teachers of students' progress and needs, while creating the space for personal and targeted support. As Khan puts it, "by removing the one-size-fits-all lecture from the classroom and letting students have a self-paced lecture at home, and then when you go to the classroom, letting them do work, having the teacher walk around, having the peers actually be able to interact with each other, these teachers have used technology to humanize the classroom" (2011a). Might the flipped classroom thus solve the two sigma problem? Further, flipped formats raise several questions:

- How would students feel about such a flipped format?
- How would they value the flexibility of the self-guided online element relative to the interaction of the live sessions?
- To what extent and how would students use a self-guided online resource?
- What would be the impact on marks, if any?

This paper reports on the implementation and results of a 'flipped classroom' design for the learning of an ancient language in a theological college, with a specific focus on the above questions. Moore Theological College, one of Australia's oldest tertiary institutions, is a leading trainer of Anglican ministers and offers diplomas, graduate, and post-graduate degrees. One of its distinctives is a focus on the original biblical languages, namely Hebrew and Koiné Greek. Students study Greek during their first year of the Bachelor degrees. Understandably, the learning of these ancient languages is a source of anxiety for many students. Traditionally, first year students have done a two week summer intensive in the first half of February known as 'Greek Weeks' before the start of their course to gain a foundation of the language. It has also functioned as an orientation period. By the end of this intensive students are able to start translating the gospel of Mark from the original Greek. There is no formal summative assessment for the intensive. Once the academic year starts, students complete a Greek subject in each semester, namely Greek 1A (8 credit points) and Greek 1B (4 credit points).

## Development

During 2010 the college embarked on the development of an online resource designed to introduce incoming students to Greek basics and allay their anxieties. A freelance media producer was hired to assist in script writing as well as recording and editing the video. The team was made up of the lecturer as content expert, a project manager, media specialist, and the author as an educational technologist.

The team faced two pivotal questions. Firstly, should the videos be produced by simply recording the Greek Week lectures or should scripted video tutorials be produced specifically for this exercise? It was decided to produce scripted video tutorials, despite the much higher cost and effort involved. Secondly, how should this online resource relate to the Greek Weeks sessions? The team eventually came to see this resource as a supplement to the Greek Weeks rather than a replacement.

Given this was a fairly new area to the college, a pilot was run in early 2011 with a subset of introductory content and little detailed Greek coverage. This trial confirmed both the OGI's helpfulness and students' desire to attend a live session. The team then proceeded to produce the bulk of the videos and online activities. In June 2011 the team watched Salman Khan's TED presentation on using video to reinvent education (Khan, 2011a), which was further confirmation of the design decisions made. The full resource was launched in late 2011 for the 2012 cohort. It was made available to 2013 students from September 2012, as their enrolment was confirmed, giving them more time to prepare. Students are notified of their access details via email, once their enrolment in the course is confirmed. Although students are strongly encouraged to complete it, no formal assessment is attached to it.

The resource, named the Online Greek Intensive (OGI), is a set of 46 video tutorials, online activities, and digital resources. It was implemented within the Moodle LMS. An introduction section includes a set of videos

such as a personal introduction from the lecturer, an interview with the college principal on the value of learning Greek, and comments from previous students on their experiences learning Greek. Students are asked to introduce themselves in a discussion forum, with their plans, hopes and anxieties. A survey gathers their knowledge and feelings. After a brief introduction to the history of the language and advice on how to use the resource, the content dives into detail: the Greek alphabet, common letter combinations, accents, nouns, verbs, tense-forms, and their parsing. The videos are typically about five minutes long. Most videos are paired with an online activity implemented as a Moodle quiz to let students practice the concepts covered. For example, some quizzes help students practice correct pronunciation (Figure 1) via audio media while others help in parsing verbs (Figure 2). The videos and activities are supplemented by a 58-page manual and a set of ten vocabulary lists as MP3 audio files that students can listen to and practice their pronunciation at their convenience away from their computer.

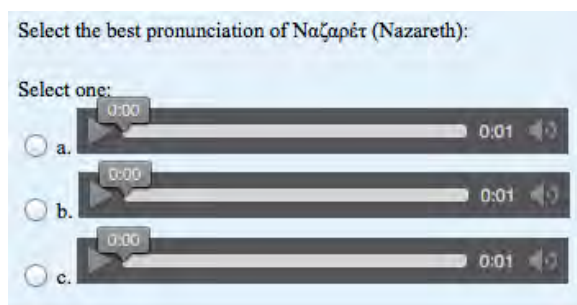


Figure 1: audio-based quiz question

Parse the following forms of βαπτίζω and κηρύσσω:

Form	Tense	Voice	Mood	Person	Number	Word & definition
ἐκήρυσσεν	Imperfect	Active	Indicative	Third	Singular	κηρύσσω I preach
βαπτίσει	Future	Active	Indicative	Third	Singular	βαπτίζω I baptize
κηρύξω	Future	Active	Indicative	First	Singular	κηρύσσω I preach
κηρύσσει	Present	Active	Indicative	Third	Singular	κηρύσσω I preach
βαπτίζω	Present	Active	Indicative	First	Singular	βαπτίζω I baptize
ἐβάπτισεν	Aorist	Active	Indicative	Third	Singular	βαπτίζω I baptize
ἐκήρυσαν	Aorist	Active	Indicative	Third	Plural	κηρύσσω I preach
ἐβάπτισεν	Imperfect	Active	Indicative	Third	Singular	βαπτίζω I baptize
κηρύσσομεν	Present	Active	Indicative	First	Plural	κηρύσσω I preach
βαπτίζεις	Present	Active	Indicative	Second	Singular	βαπτίζω I baptize

Figure 2: verb parsing activity

## Satisfaction and attitudes

Students were asked to complete a survey on their satisfaction and concerns, with 30 students in the 2012 cohort opting to complete it. Students in the 2011 and 2013 cohorts also completed it.

Respondents expressed their overall satisfaction on a five-point scale, with one as 'very dissatisfied' and five as 'very satisfied'. Seven were 'satisfied' and 23 were 'very satisfied', with a mean of 4.77. This very high level of satisfaction was repeated in the 2013 cohort, with a 4.75 mean. The 2011 cohort, who only had access to the limited OGI pilot, was lower but still fairly high.

Table 1: satisfaction levels

Satisfaction	2011	2012	2013
1-Very dissatisfied	0	0	0
2	0	0	0
3	3	0	0
4	4	7	5

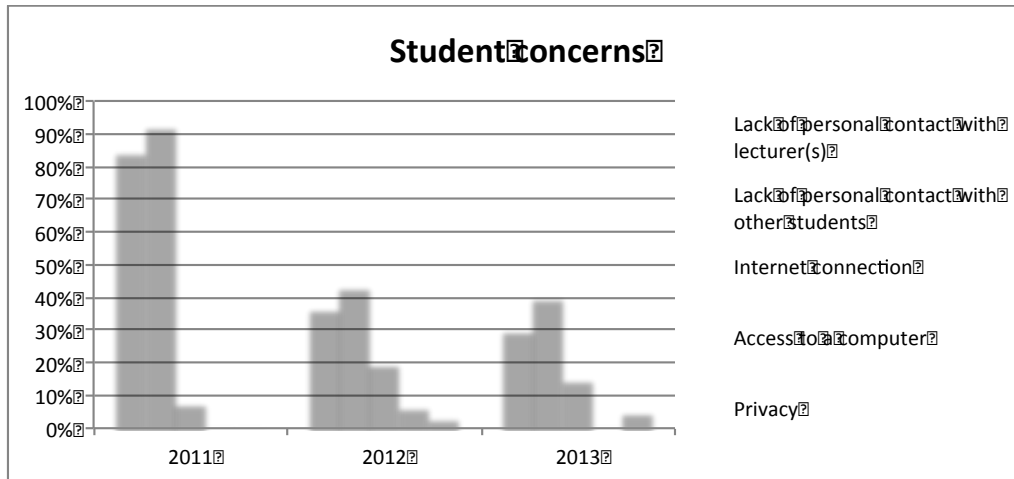
5-Very satisfied	6	23	15
Mean	4.23	4.77	4.75
Responses	13	30	20

Students were asked for their level of agreement on a five-point scale to the following statement: “This online resource helped me feel better about learning and using Greek”. There was strong agreement to the OGI’s helpfulness in the 2012 and 2013 cohorts. As in overall satisfaction, agreement in the 2011 cohort, who did not have access to the full videos and exercises, was less strong.

**Table 1: Agreement with “This online resource helped me feel better about learning and using Greek”**

Agreement	2011	2012	2013
1-Disagree strongly	0	0	0
2	1	1	0
3	5	2	1
4	5	9	7
5-Agree strongly	2	18	12
Mean	3.62	4.47	4.55
Responses	13	30	20

Students were asked what concerns, if any, they had regarding this online resource. Figure 3 shows lack of personal contact with both a teacher and peers as the main concerns. This is particularly the case in the 2011 cohort, perhaps due to a lack of clarity in that early pilot stage on how the OGI would relate to the intensive. As the complete OGI was introduced in 2012, concerns about losing personal contact decreased while anxiety over sufficient Internet access increased. This may be due to a clearer role of the OGI as a supplement towards an intensive and more videos respectively.



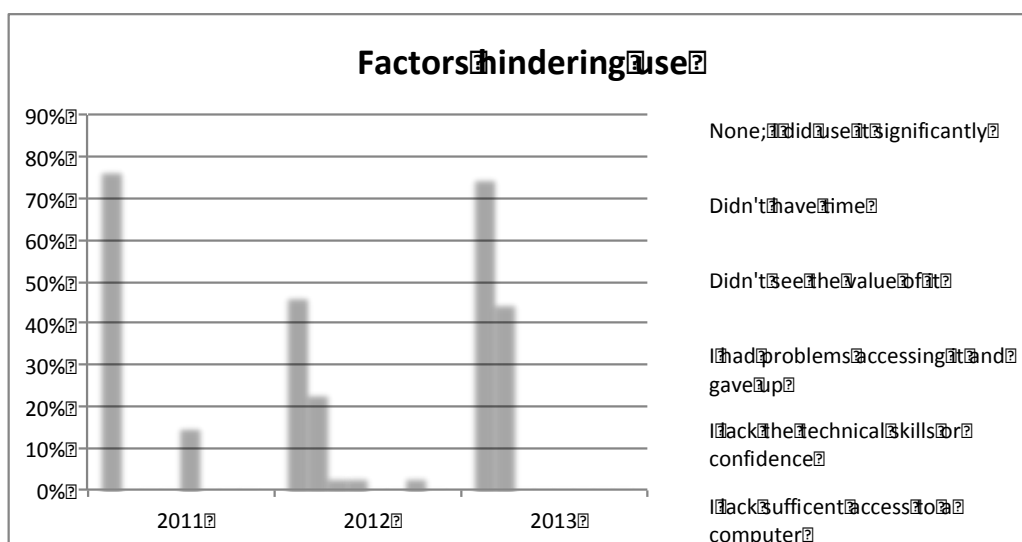
**Figure 3: Percentage of respondents nominating each concern by cohort**

Lastly, students were asked what, if anything, hindered their use of the OGI. Lack of time was the only

significant issue raised, with seven (23%) in the 2012 cohort and nine (45%) in the 2013 cohort nominating it.

**Table 2: Factors hindering use of OGI**

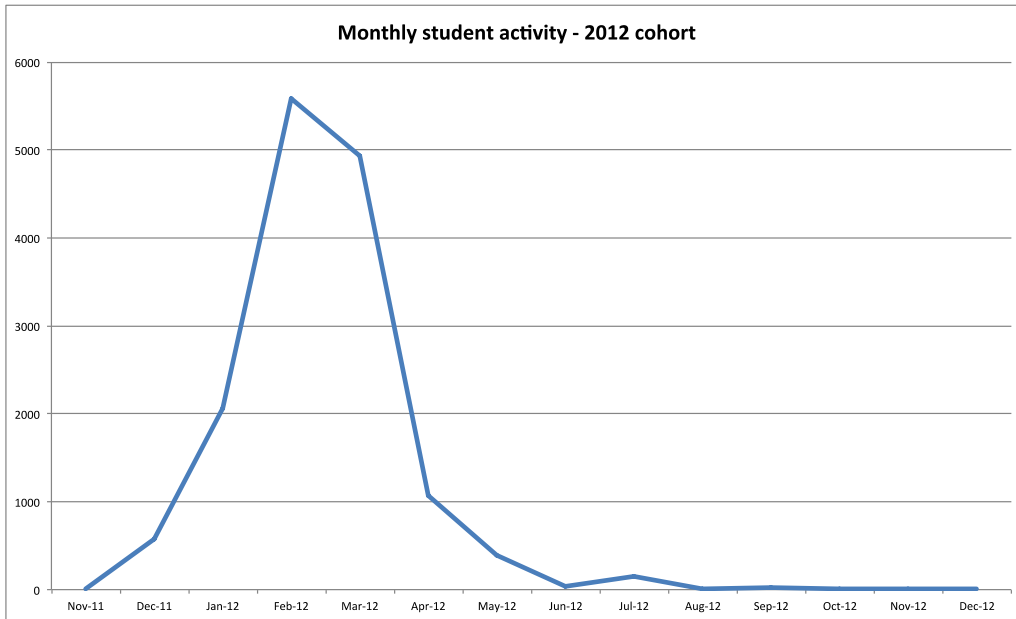
Factor	2011	2012	2013
None; I did use it significantly	10	14	15
Didn't have time	0	7	9
Didn't see the value of it	0	1	0
I had problems accessing it and gave up	0	1	0
I lack the technical skills or confidence	2	0	0
I lack sufficient access to a computer	0	0	0
I lack sufficient access to the internet	0	1	0
I'm concerned about privacy	0	0	0
Other	3	7	2
Responses	13	30	20



**Figure 4: Factors hindering use of the OGI by cohort**

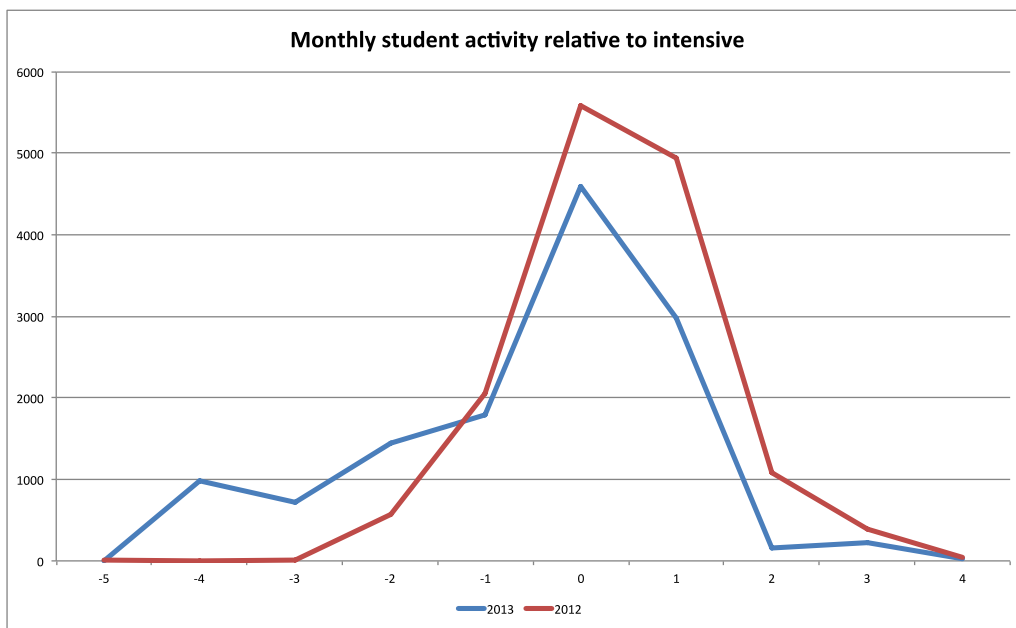
## Student engagement

The vast majority (79 of 85) of 2012 students used the OGI to some extent. As illustrated in Figure 5, activity peaked in February, when the Greek Weeks are held. Indeed, it peaked the days just prior to the intensive. It was still heavily used in March, as their formal Greek study started in earnest, and continued until May, three months after their intensive. Exams are held in June, with a supplementary available for students who fail. The uptick in July may be due to students who have failed revising before a supplementary in that month.



**Figure 5: Monthly Moodle actions, 2012 cohort**

Figure 6 compares activity between the 2012 and 2013 cohorts on a monthly basis, with the month number relative to February when the intensive was held. The 2013 students were emailed access as they accepted their offers into the course, starting from September 2012. The 2012 cohort, on the other hand, only received access in late 2011. It is evident the 2013 cohort started using the OGI as they received access, suggesting they valued the opportunity to start learning Greek up to four months before the start of their course. The pattern of continued use beyond the intensive is also reflected with this cohort.



**Figure 6: Monthly Moodle actions relative to intensive (2012 and 2013 cohorts)**

### Exam marks

The full OGI was introduced to the incoming 2012 cohort. Within this cohort, 79 used the OGI and six did not. ‘OGI use’ is determined by any student actions in the system between 1/12/2011 and 31/5/2012. These numbers exclude 18 students who attended a special evening format of the Greek Weeks to avoid potentially extraneous factors. For the 2013 cohort, 93 used the OGI between 1/6/2012 and 31/5/2013, and seven did not. Unless otherwise stated, marks reflect the mid-year exam since it is assumed the OGI would have the most impact on it.

Results are analysed in three broad ways:

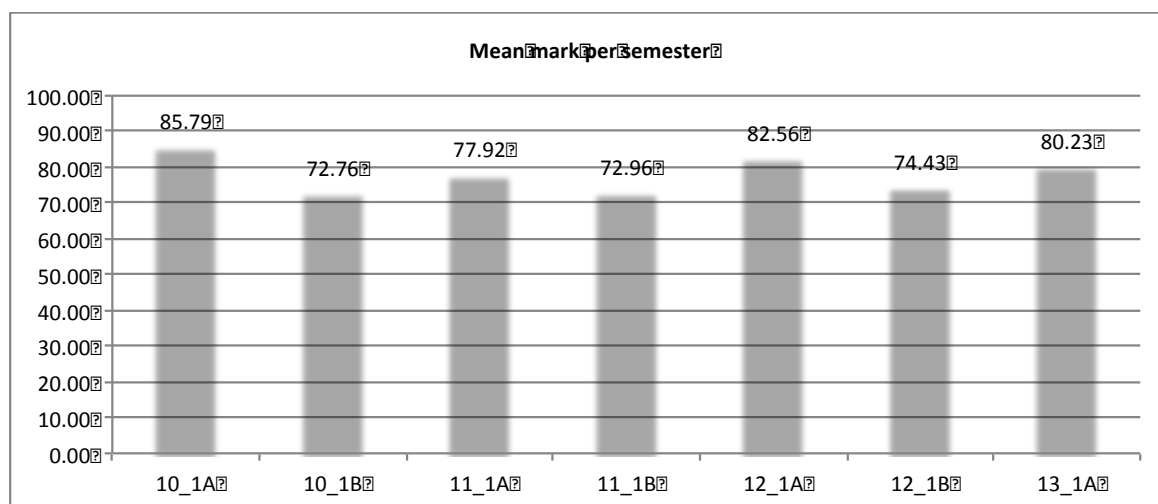
- Compare marks in the 2012 and 2013 cohorts between those who used the OGI and those who did not.
- Compare marks from the 2012 and 2013 cohorts with previous ones.
- Correlate the number of quiz attempts with exam marks.

Students who used the OGI achieved higher mean marks than those who did not, with a difference of up to ten percentage points across three exam samples:

**Table 3: Mean marks for 2012 and 2013 cohorts, mid and end of year exam**

Exam	OGI not used	OGI used	Overall
12_1A	75.65	83.09	82.56
12_1B	64.64	75.33	74.43
13_1A	70.91	81.76	80.23
Overall	70.34	80.16	79.17

Given very few students did not use the OGI, it is worthwhile to compare all OGI users in the 2012 and 2013 cohorts with the 2010 and 2011 cohorts, who did not have access to the complete OGI. Prior to 2010 Greek was taught in a different format, with a single exam at the end of the year, and thus these cohorts have been excluded. Figure 7 shows that 2012 and 2013 students had a higher 1A mean mark than 2011, but not 2010. 2012 students did achieve a 1B mean mark higher than both previous cohorts.

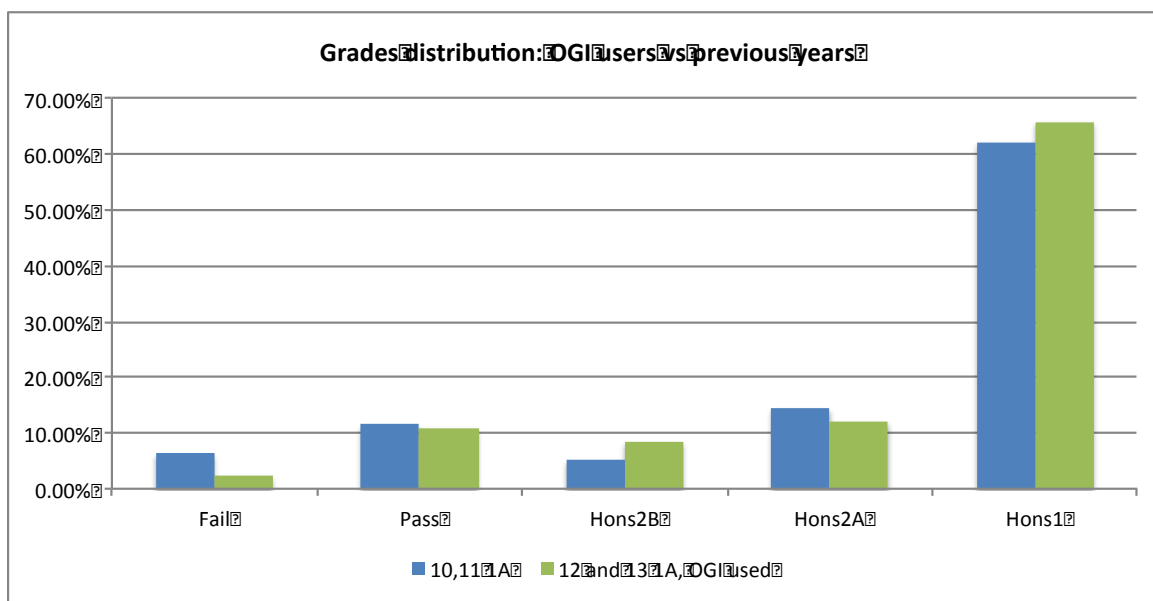


**Figure 7: Mean marks compared to pre-OGI cohorts**

Beyond simple means, the 2012 and 2013 cohorts' grades distribution for the first semester exam are noteworthy. The percentage of students who failed decreased by more than half from the 2010 and 2011 cohorts, while the percentage of those who achieved a simple pass also decreased. The proportion of students who achieved an Honours award with Class 2B or 1 increased.

**Table 4: Percentage of students per grade, 2010 and 2011 cohort 1A exam vs 2012 1A OGI users**

	N	Fail	Pass	Hons 2B	Hons 2A	Hons 1
10, 11 1A	172	6.40%	11.63%	5.23%	14.53%	62.21%
12 and 13 1A, OGI users	164	2.44%	10.98%	8.54%	12.20%	65.85%



**Figure 8: Percentage of students per grade**

Lastly, there is a correlation of  $r=0.206$  between the number of quiz attempts and the 1A exam mark. This is a positive but weak correlation, so no firm conclusions can be made on the direct impact of the online resource on marks.

## Discussion and Conclusion

This paper has described the implementation of a flipped classroom format for a Greek orientation intensive and reported data on how students felt about the resource, what they did with it, and how they performed in their exams.

Students were clearly very satisfied with the OGI, and felt it was a significant help in getting ready to learn Greek. The sustained increase in satisfaction and belief in its helpfulness once the full OGI was introduced is evidence that students appreciated the detailed Greek exercises, rather than just the overall introduction videos. This high satisfaction level together with students' main concern of losing personal interaction with teachers and peers are evidence that they do not see the OGI as a *replacement* to the classroom. Rather, they want *both*.

Students' satisfaction is underlined by their heavy use of the resource. The early start to activity suggests students saw it as helpful as well as addressing common anxieties. The peak just before and during the intensive suggests students understood the close connection between the online resource and the Greek Weeks. The continued activity well beyond the intensive suggests it was a helpful resource in their ongoing study, and potentially in their revision for the exam.

There is some evidence that the cohorts with access to the OGI achieved higher marks than previous cohorts over the whole first year, with lower proportions of students either failing or achieving a simple pass. However, given the relatively small samples, this finding can be confirmed by future cohorts. The lack of strong correlation between OGI activity levels and marks may be caused by a combination of struggling students using it more to aid their learning and conscientious students completing it thoroughly even though they would have done well regardless. More probably, it may not be the OGI itself which is the critical factor, but the added personal interaction and attention during the intensive, made possible by the reduced need to spend time covering basic content.

There are some noteworthy contrasts between the OGI and the typical flipped classroom. Firstly, the videos and online material are used to take the presentation of core content not just outside the *class*, but outside the *course*. This introduces a novel complication, as the line in students' mind between admission, learning, and assessment may blur. Students were given access after their acceptance and were assured the OGI was neither mandatory nor formally assessed. Nevertheless, the team was mindful that some students may have still felt anxious that it might affect their entry into the course. Secondly, the videos were professionally produced to high quality after much effort in scripting, coaching, and recording. This is different to the unscripted and unedited talk to a



webcam that a teacher or Khan Academy might produce. Despite the clear benefits of fast and cheap video production, there were good reasons to invest in a professional production. The OGI does more than present content. It also serves as an initial orientation process, seeking to *convince* students of the value of learning Greek while also *reassuring* them in their anxiety. This *affective dimension* called on a more sophisticated use of video media, requiring professional assistance. Thirdly, language learning may not be seen as the obvious subject matter to flip given the need for continual and personal feedback on pronunciation. On the other hand, learning Greek requires much drilling and memorising gendered nouns and verb conjugations, which is in turn well suited for self-guided online learning. Moreover, perfect pronunciation is less critical in learning an ancient language for exegesis. Lastly, video media is typically used to present content in flipped formats, but the OGI included content such as vocabularies in audio-only format. This was appropriate as the content was aural in nature and facilitated practice while doing other tasks.

The development project yielded several lessons. The risk of failure involved in developing such a complex and novel resource was considerable. The paradoxical solution was to fail quickly, cheaply, and safely through the pilot. While scientists can see far because they stand on the shoulders of giants, innovators can walk through the foggy quicksands of uncertainty because they step on the corpses of failures. The pilot was designed to flush out problems by ‘failing safely’, minimizing risk and disruption to students. As it turned out, it confirmed students’ enthusiasm and engagement with the OGI, their valuing of the personal contact in the intensive, and the soundness of the technical infrastructure. This was welcomed by a college without much experience developing educational technologies. Indeed, it answered for the team the questions about the project that the OGI aims to answer for students about learning Greek: is it worthwhile? Is it possible? Moreover, the value of a multidisciplinary team was evident. It was led by a teacher with clear learning goals but who was flexible regarding means, assisted by a media specialist able to coach the teacher in scripting and performing to camera, and a technologist able to bring together the various resources. Wise media selection, producing a portfolio of video, audio, and text formats, was also important. One potential pitfall in flipping a classroom is to be blind to the value of activities that happen naturally but *incidentally* during class. The team was aware that the Greek Weeks also performed a very important role of orientation, as students’ first educational experience at college. This then had to be *formalised* to an extent to ensure it happened.

In conclusion, the high satisfaction and engagement levels have validated the decision to adopt a flipped format rather than attempt to ‘replace’ the Greek Weeks with recorded lectures. This would likely have resulted in students unhappy with lower quality videos and anxious at the loss of personal interaction with a teacher and peers. With the flipped format, students already have a foundational understanding of the content at the start of the Greek Weeks. At the same time, the teacher already has an understanding of students’ progress and needs via OGI analytics. He can then adapt the agenda of the Greek Weeks to suit these and identify students that need to attend a remedial class. Students were very satisfied with the OGI and believed strongly that it helped them. They used it significantly over an extended period of time, and it probably reduced the proportion of students who failed or achieved a simple pass. The dream of a future way to learn a language from the distant past has already borne fruit.

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