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## Flipped classroom integration in Greek state primary schools: An action research project

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*This article provides the descriptive analysis of an action research project upon the application of the Flipped Classroom Approach in twelve teaching cases of 6<sup>th</sup> graders in the Greek public primary school context. Based on recent studies, no research can be found on flipping in the area of Teaching English as a Foreign Language at a primary school level in Greece. Flipped Classroom Approach is a relatively new pedagogical approach which has gained momentum recently to overcome the rigidity and ineffectiveness of traditional teacher-centered practices which over-rely on lectures, homework assignment, testing and rote learning. In Flipped Classroom, the traditional lecture and homework sessions are inverted with students being provided with online material in order to gain the necessary knowledge before class, while class time is devoted to clarifications and application of this knowledge. Therefore, the research presented in this article, aimed at examining whether English Language Teachers were ready to embrace flipping as part of their professional development, to evaluate the provided flipping material and to develop new one. Finally, the flipping implementation was discussed concerning its effectiveness into promoting students' Active Learning processes.*

**Keywords:** Flipped Classroom Approach, Educational Technology, Active Learning, Teachers' Professional Development

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### 1. Introduction

The instructional practice of most teachers in Greek public primary schools nowadays is portrayed as traditional teaching characterized by the passive transmission of theory by the teacher, little or no peer interaction and textbook instruction. Under such circumstances, the Flipped Classroom Approach (FCA) is a realization of teachers' tendency to modify their practices with the aid of Information Technology (IT). They have the chance to transform the traditional lectures at school into video-recorded lectures retrieved from a wide range of online educational resources to teach students key concepts of a particular topic as part of

their homework (Abeysekera and Dawson, 2015) providing class time for a more active and sociable learning and teaching (Tucker, 2012).

Such a learning environment is described in this article with the readers being smoothly introduced to FCA features. A brief historical background of the approach is initially provided followed by the presentation of its main advantages and limitations. Then, FCA Adoption is discussed in association with Teachers' Professional Development (TPD) aligning with the two-folded research purpose which is, in turn, explained in Section 4. The research method as well as the procedure followed are analysed in Sections 5 and 6 while the core of the research is given in Section 7 where the findings are thoroughly presented and analysed in relation to the research questions. Based on these, the two final sections focus on the limitations of the current research and relevant recommendations made for future FCA applications.

## 2. FCA historical background and past studies

FCA dates back to the early 1960s when Gregor Novak began teaching evening physics classes to his students. However, the first record of FCA instruction took place in the Harvard University Physics classroom by Professor Erik Mazur. His students read their physics textbooks prior to class to gain the basic information to participate in the discussions resulting in reducing the amount of time for lecture in class and more time for peer instruction activities (Crouch, Watkins, Fagen and Mazur, 2007, p. 14). The most prominent figures in FCA are Jonathan Bergmann and Aaron Sams who, in 2007, created videos of their class lectures to deliver the instructional material to their science class students who were continuously absent from school. Finally, perhaps the greatest contribution to flipping the K-12 classroom has been the advent of the Khan Academy.

In the early 1980s, Baker had a vision of using electronic means to "cover" rote material outside of class. An early edition of an online content management system resembling the current Learning Management System (LMS) allowed Baker to upload his notes and retrieve them during class meetings referring to this method as "The Classroom Flip" (Baker, 2011). Lage, Platt and Treglia designed and implemented a similar procedure called "*The Inverted Classroom*" on five sections of an economics course. Love and Hodge compared a classroom using the traditional lecture format with a flipped classroom during an applied linear algebra course (Love, Hodge, Grandgenett and Swift, 2014).

## 3. FCA advantages and limitations

Technology has a deep impact on 21st century learners who can no longer solely rely on classroom-based instruction. "Many theoreticians believe that the traditional model of lecture-based learning is becoming increasingly unappealing to the contemporary student and that a paradigmatic shift in pedagogy is needed to keep students engaged (Hanover Research Council, 2013, p.8)." Additionally, FCA allows teachers to leverage video lectures at home to increase interaction with students in class without, though, advocating their own replacement with online instruction. Flipping the classroom can be an ideal merger of online and face-to-face instruction known as a "*blended*" classroom where more time is freed up to support student learning (Fulton, 2012; Springen, 2013).

Apart from the teacher-to-student interaction, students interact with each other improving their problem solving skills, team work, creativity and innovation (Bergmann, 2012; Laman, Brannon and Mena, 2012) without sacrificing content (Gardner, 2006). Similarly, Bergmann

and Sams (2012) believe that interactive learning environments can fuel students' curiosity and with proper support from the teacher, this can increase students' motivation, that is, students' learning. Consequently, FCA facilitates the development of students as active learners rather than passive receptacles of information and transforms instructors from "being dispensers of facts to being architects of learning activities (Pierce and Fox, 2012, p.22).

Under such circumstances, many of the classroom management problems evaporate to a great extent, too (Alvarez, 2011). The need of an "audience" for unruly students is eliminated because of the small group and independent work style of the classroom (Bergmann, 2012). Absenteeism and homework completion (Alvarez, 2011; Forsey, Low and Gance, 2013) are additional issues associated with FCA. The class no longer falls behind in progress when either the teacher or students cannot keep up with the rest of the class. Moreover, in a FCA environment we can discern numerous opportunities for differentiated instruction (Ash, 2012; Hanover Research Council, 2013; Springen, 2013) as well as addressing multiple learning styles (Flipped Classroom Offers New Learning Path, 2011).

However, many primary schoolers, particularly those from low-income districts who have limited resources availability, are deprived of access to technology outside of school making it difficult to attend the assigned videos (Hamdan et al., 2013; Nielsen, 2012). Therefore, FCA is alleged to create or exacerbate a digital divide. Moreover, Herreid and Schiller's survey (2013) confirmed students' resistance to come to class well-prepared mainly due to the fact that they have not learned how to familiarize themselves with the new content prior to being exposed to it in class. Finally, creating the videos becomes more labor intensive on the part of teachers than planning for a traditional classroom environment (Hanover Research Council, 2013). Teachers often have mixed feelings of excitement and trepidation concerning their familiarity with IT. However, there is an abundance of technological tools (see Appendix) enabling teachers to produce well-organised FCA lessons, for instance, Video Hosting Tools, Video Interaction Tools, Video Creation Tools and LMSs.

#### **4. FCA adoption and teachers' professional development**

On-going TPD is welcomed nowadays due to the changing role of teachers from distributors of knowledge to designers of learning experiences and since technology is a significant driver behind that change. TPD goes hand in hand with reform and innovation in teaching which comes as a result of study, reflection, practice and hard work. Therefore, engaging teachers in the design and incorporation of educational technology-FCA in our case- into their daily practices is a step towards TPD.

FCA instruction has a lot to offer when successfully implemented. It can contribute to teachers' better understanding of technology use in teaching and learning activities integrating both face-to-face learning in the class through group discussion and distance learning outside the class by watching asynchronous video lessons and online collaboration (Halili and Zainuddin, 2015). The FCA adoption can also encourage individual and personalized support to students, both the struggling and the advanced ones, due to the additional class time ensured for interaction.

Additionally, FCA can be conducive to the establishment of an Active Learning (AL) classroom environment. Due to their student-centered, technology-rich nature, AL techniques help mitigate the chaotic classroom environments present in the traditional model of teaching which entail distracted students negatively affecting other students'

learning. FCA instruction can keep students continuously engaged in the classroom so, classroom behavior problems are reduced if not eliminated (Emmer and Stough, 2001). FCA teaching experience followed by reflection further ensures TPD as it involves teachers' critical analysis of their practices with the aim of reaching a new perspective with modified attitudes. Teachers have the chance to experiment, reflect and adapt new theories, practices and content in their professional context.

Apart from becoming agents of change, EFL teachers are urged to develop their own contextualized materials. "The opportunity to develop expertise for themselves as materials developers can quite definitely help them to develop and grow (Tomlinson, 2003)." Finally, as already stated, teachers involved in FCA projects can reap the benefits of constant collaboration with colleagues as well as building a communication bridge with their students' parents towards a common set of goals.

## 5. Research purposes and questions

With reference to the twelve classroom contexts, the researcher, with the EFL teachers' contribution, attempted to:

- 1) investigate whether or not the latter were willing to incorporate the FCA features in their teaching choices, in other words, the effect of the FCA implementation on their TPD. The issues emphasized include Technology Awareness and Integration, Teacher-Student degree of classroom interaction, Classroom Management and Evaluation of the FCA support material as well as the Development of original FCA material.
- 2) investigate whether FCA contributed on rendering 6<sup>th</sup> graders into active learners in a primary school context.

Particularly, the research questions that guided the research purposes were the following:

- 1) As part of TPD, were the EFL teachers in the 6<sup>th</sup> Grade of the primary school setting willing to incorporate the FCA features in their teaching on a regular basis and to what extent?
- 2) Were they satisfied with the effectiveness of the suggested FCA material in this experiment?
- 3) Did these lessons act as an incentive for the EFL teachers to create their own FCA material and design original FCA lessons?
- 4) What were the teachers' perceptions on the impact of the FCA lessons on their 6<sup>th</sup> graders' AL?

## 6. Research method and instruments

### 6.1. Mixed method research

The value of the mixed method of research has long been discussed in the literature (Ellis, 2005; Ponce, 2014; Scott and Sutton, 2009). It uses both qualitative and quantitative methods<sup>i</sup> either concurrently or sequentially (Venkatesh, Brown and Bala, 2013) leading to triangulation of data (Erzberger and Kelle, 2003 in Ostlund et al., 2011) that enhances the validity (Mengshoel, 2012) of the results. The application of such a convergent research approach was also imperative for the purposes of this paper.

### 6.2. Research instruments

For the purpose of this study, the researcher firstly designed a Google Forms questionnaire<sup>ii</sup> addressing the participating teachers after completing their FCA lessons. The questionnaire consisted of 70 items written in English and it was divided into three sections under the headings “Background, Teaching Style and Resources available”, “FCA and Teachers’ Professional Development” and “FCA and Active Learning in EFL classroom”. It included fixed-response questions ranging from “yes/no” questions, which make respondents “come off the fence” (Cohen, Manion and Morrison, 2000, p.250), multiple choice and rating scale questions, most of which followed the Likert format of “Strongly disagree, Disagree, Neutral, Agree, Strongly agree” choices as well as open-ended, narrative-response questions. To cater for issues not covered in the questionnaire and in order that the participants could elaborate more extensively on their flipping experience, unstructured discussions took place in social networking sites such as Facebook where their views, concerns and perceptions were exchanged. They were carried out in a friendly, natural flow resembling unstructured interviews.

## 7. Research procedure

### 7.1. The preparation stage: Designing the FCA support material and selecting the participating teachers

In order for the researcher to ensure participants in this FCA experiment, an open call was made to English teachers working with 6<sup>th</sup> graders in state primary schools both in Ilia and around Greece to offer at least one FCA teaching hour. After the researcher had designed the necessary FCA support material<sup>iii</sup>, she uploaded it in Facebook groups, English teachers’ forums like the *Hellenic Open University Yahoo Groups* and English Teachers local

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<sup>i</sup> Particularly, the major characteristics of the traditional quantitative research of deduction, confirmation, theory/hypothesis testing, explanation, prediction, standardized data collection and statistical analysis are combined in an articulated and harmonic manner with those of the qualitative research, that is, induction, discovery, exploration, theory/ hypothesis generation and the researcher as the primary “instrument” of data collection.

<sup>ii</sup> FCA questionnaire for Primary School EFL Teachers:  
[https://docs.google.com/forms/d/1toRIVJA3Qf1qi\\_ckIDQrraOBBBBf6ldJnBQ58tLSd6g4/edit?usp=forms\\_home](https://docs.google.com/forms/d/1toRIVJA3Qf1qi_ckIDQrraOBBBBf6ldJnBQ58tLSd6g4/edit?usp=forms_home)

<sup>iii</sup> Designed Flipped Lessons Material:  
<https://drive.google.com/drive/folders/0B839sq-tOLIAbUJZTTd3ODJVUzQ?usp=sharing>

associations. Finally, she emailed the material to most Experimental Primary schools of the country.

It is important to mention that the support FCA material was freely distributed online in order that more teachers could familiarize with the purpose and procedures of the current research and, thus, be attracted to it. An introductory Powerpoint presentation described what FCA entails and gave information and suggestions for the effective teaching of the four designed FCA lessons. Other useful documents were also attached including an *Information Brochure* addressing students' parents, four *Lesson Plans* for the teachers' convenience, a *Video Tasksheet* for each lesson with instructions and notes for the students to follow when working at home on their own and finally, an *In-class Tasksheet* to be distributed during the lessons. It was in the teachers' convenience to teach from one to four of the suggested FCA lessons or even totally depart from them and develop their own input meeting the constraints of their teaching situations.

More specifically, the suggested material concerned *Unit 3* introducing the *comparative* and the *superlative degrees of adjectives* and presenting the "*Midnight Summer's Dream*" Shakespearean story. The other two FCA lessons dealt with describing memories from the past and past habits, thus, teaching YL the *Simple Past tense* and the "*used to*" grammatical structure covered in *Units 4* and *5*. As for the video lectures, the researcher was in favour of the *GoEnglish.tv* site, *Photodentro* and the *LearnerEnglishKids* website. The researcher also confided in the high quality material offered free of charge in a couple of EFL educators' personal blogs and websites, that is, *Billie Haase's* and *Claudio Azevedo's* blogs.

## **7.2. Participants' profile**

The result of the open electronic call was an overwhelming minority of twelve teachers working in primary schools around Greece, for example, in Drama, Kozani, Serres, Halkida and Crete. Based on their answers in the demographics part of the questionnaire they completed, eleven of them were female while only one was a male teacher. Nine of them had a teaching experience of more than 11 years retaining their current position from 1 to 15 years. Most teachers worked with classes of 10 to 15 students keeping a balance between teacher-led and student-friendly activities in their lessons. Only a minority resorted to a largely teacher-centred method. Moreover, half of the participants considered themselves as average technology users with four of them being advanced and only a couple of them being either expert or beginner IT user. As for IT integration in their lessons, seven of them occasionally did it and the other five always or almost always resorted to it. However, almost all of them introduced FCA in their instruction for the first time.

## **7.3. The implementation stage: Description of the FCA lessons**

The FCA lessons were conducted in the academic year 2016-2017 from late January to late April. All potential stakeholders, including the school principals, the students and their parents, were notified about the FCA investigation through the *Information Brochure*. The students were exposed to online pedagogical videos that included visual and audio instruction at home with the teachers also explaining beforehand the various tasks needed to be completed at home. The video lectures were carefully selected by the researcher to be creative, engaging and interactive. Most of them were followed by multiple choice questions, gap filling, drilling and reading comprehension questions. The same material was also offered in DVDs so that the students, who were deprived of Internet connection at

home, could have access to it. The *Video Tasksheet* for each lesson was distributed by the teachers to their students to help them follow along.

During the lessons, the teachers made a considerable attempt to create student-friendly conditions based on what FCA dictates. To cater for possible ambiguities, they followed the guidelines in the *Lesson Plans* and the suggested *In-Class Taskheets*. The students worked collaboratively to boost their confidence and use the language in a communicative context. Group members tried to exchange their ideas and negotiate their understandings and later, present them to the rest of the class. Before ending class, an outlook on the next lesson was made especially on the topic, the support material and the contents of the next class meeting.

#### **7.4. The follow-up stage: Reflecting on the FCA experience**

Upon the implementation of the FCA lessons, the twelve teachers completed the questionnaire and at the same time, they participated in the unstructured discussions in *Facebook* exchanging views, concerns and perceptions.

### **8. Research findings**

#### **8.1. Research Question 1**

A general feeling of hesitation and even unwillingness was received for the devotion of some class time to experiment with the alternative FCA method. Based on the researcher's assumptions, the factors which held EFL teachers back can be identified with the deprivation of technological resources, students' heavy reliance on passively receiving knowledge, the rigid structure of working days and the lack of in-service training on FCA aspects. The time-consuming and demanding tasks of creating educational videos and designing AL class activities acted as a deterrent, too. Similarly, some traditional EFL teachers feel that there is no need to change their own practices because of the lack of personal benefit. In a culture of compliance, they do not value risk-taking, particularly in the field of new technology feeling more comfortable when they delegate the responsibility of experimenting with new-fangled ideas to novice colleagues. Collaboration with parents is still a barrier to overcome in order that the latter feel more comfortable and flexible with educational innovations such as FCA. Nowadays parents are too busy to spend time to support the innovative learning which they find confusing because they are accustomed to one way of being educated.

Regardless of the above, the participating teachers handled FCA technology successfully by using different technological tools, mainly desktop computers and laptops. The fact that they were further familiarized with educational technology and experimented with innovative methods and materials made them more assertive and confident in their computer skills, which is confirmed by the following extract from the unstructured discussions:

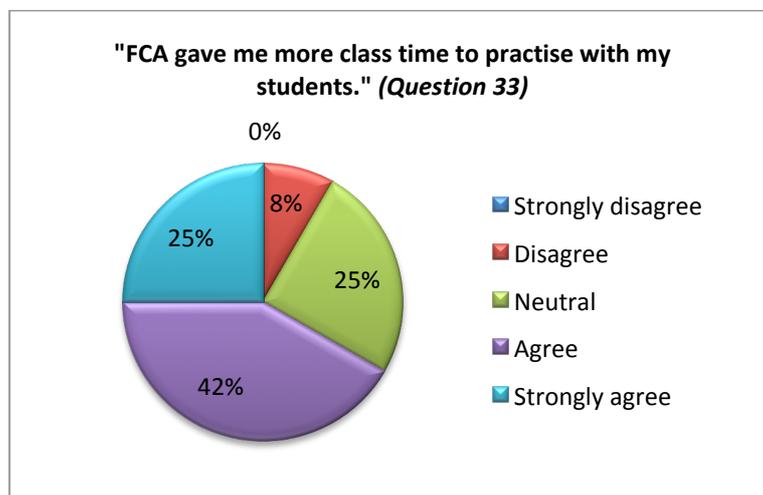
*"I have created an Edmodo class for my 6<sup>th</sup> grade students and I'm using it to post the video links."*

Moreover, they discovered a wealth of educational content online appropriate for the design of FCA lessons motivated by the effectiveness of the support material provided by the researcher. Equally important is the fact that the teachers as well as the researcher enjoyed their collaboration upon the barriers they encountered such as the frustration

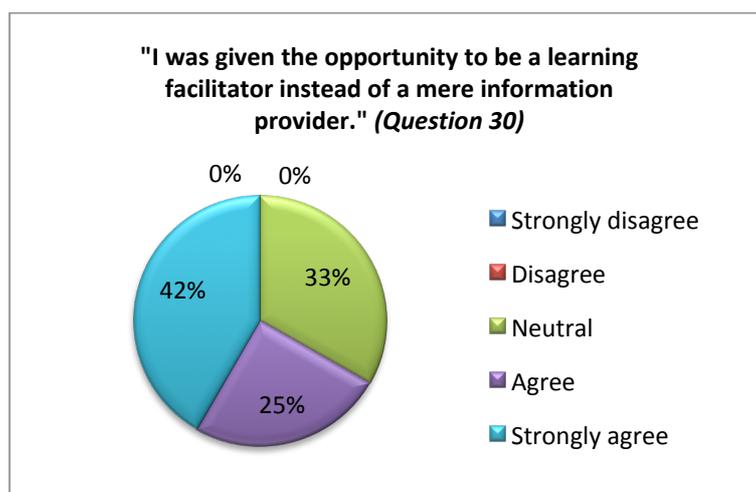
caused by the limited time during the school day, some students' lack of home Internet connection or their demotivation to watch the videos. Despite working from distance, the participants were encouraged to collaborate in multiple ways aligning with what TPD dictates, something which is also obvious in the statement:

*"It has been a pleasure and an honour working with you all! Thank u for a wonderful experience!!!"*

The FCA adoption in the EFL class ensured additional class time for the teachers to communicate and practice with their students (Graph 1) departing from their traditional role of information providers and becoming learning facilitators instead (Graph 2). They gained a deeper insight of their students' needs and preferences and dealt with their inquiries both individually and in groups. Thus, the teachers were able to manage their classes more effectively due to the fact that incidents of unruly behavior were reduced.



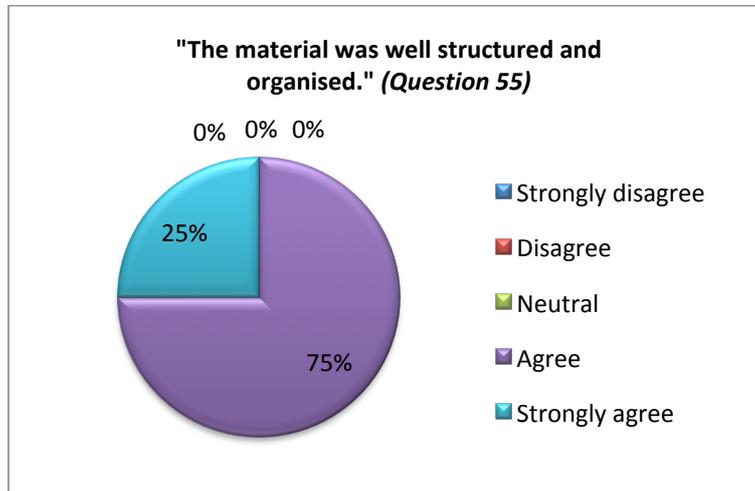
Graph 1



Graph 2

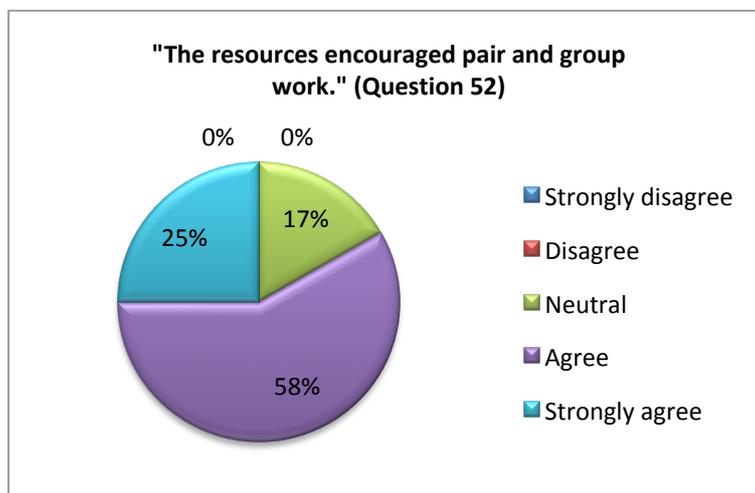
## 8.2 Research Question 2

The participants expressed their satisfaction and appreciation to the researcher for the well-structured and organized work done (Graph 3).



Graph 3

They found the embedded videos appealing and the home and in-class activities approachable and enjoyable by students addressing various learning styles and encouraging pair and group interaction (Graph 4).



Graph 4

The above teachers' perceptions were expressed in the following words:

*"The material was very well designed and carefully selected. It worked well with my six graders. My group is quite low level, but they felt that they could understand the material and work quite well with it."*

The majority of the teachers delivered the lessons about the Shakespearean play “*Midnight Summer’s Dream*” and the *Simple Past* tense. They spent more than a 45-minute teaching hour for each lesson, therefore, the overriding reason for not implementing all four FCA designed lessons was the limited time according to the syllabus and the deadline of the study.

### 8.3. Research Question 3

It is worth mentioning that out of the twelve teachers, a couple of them designed their own FCA lessons<sup>iv</sup> upon their students’ demand while almost half of them committed themselves to making such an attempt in the short run.

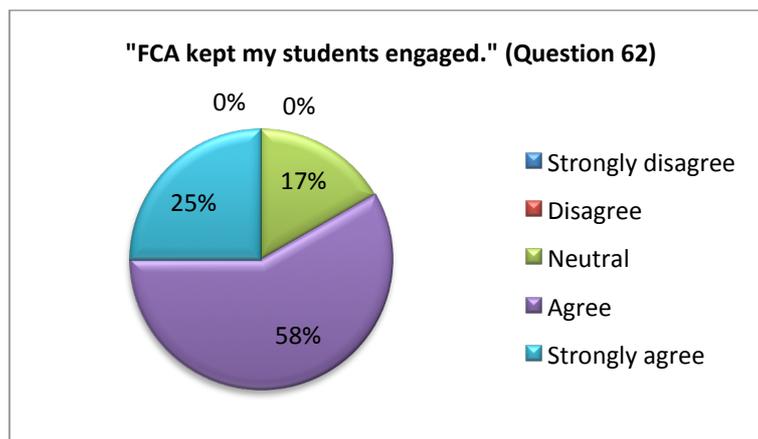
*“I am now looking forward to designing relevant material myself for the following school year.”*

*“Thank you for the experience-I will definitely keep using it and I’m thinking of starting from the 5th grade!”*

Starting with the former, they used existing material, such as videos and quizzes, which were funny and simple. Once they prepared the necessary tasksheets, they shared them with their students and the rest of the teachers involved in this investigation. The particular group of teachers even expressed the desire to work collaboratively to design a flipped version of the whole 6<sup>th</sup> grade textbook.

### 8.4. Research Question 4

The teachers reported that their students were engaged during the FCA lessons (Graph 5) having numerous opportunities to communicate with one another.



Graph 5

<sup>iv</sup> “The History of an Aeroplane”- Unit 4-Past Tenses Lesson: [padlet.com/panosevi111/k5phplgj8jxl](https://padlet.com/panosevi111/k5phplgj8jxl)

The learners managed to gain knowledge of the subject matter at their own pace at home and proceeded to its application in class through engaging hands-on activities. The same points were also highlighted in the teachers' comments appeared in their blogs and in the Facebook instant messaging service:

*"My students were enthusiastic about the flipped classroom lesson! They liked all this idea of watching videos at home and doing exercises on their own! I will definitely try it again!"*

*"They all participated, they all got involved, they all raised their hands to contribute, they all appreciated the work of their team members..."*

Although they may have not saved time from homework since they watched the videos several times, they completed a significant number of tasks at home in some cases reaching a point of homework completion mastery.

*"It must be noted that the rate of student homework completion increased during the course of the lessons."*

## 9. Research limitations

Because of different reasons why EFL teachers around Greece were reluctant to experiment with FCA, the research sample size was limited, so it may not have been a true reflection of school reality underpowering the results. Furthermore, the three-month-time, from late January to late April, for the conduction of this action research project was constrained by the due date of the dissertation to examine its impact on TPD and students' AL. As for the research method instruments and particularly, the online questionnaire, the twelve teachers were expected to answer all the questions. However, they skipped a number of them particularly those requiring more descriptive responses. Therefore, it could be alleged that the research findings were partly incomplete distorting the validity of the analysis. As for the unstructured discussions through social networking services, not all teachers held Facebook accounts or were familiar with TitanPads or Padlets, so they may have missed some important points raised. Finally, the fact that the involved teachers came from different regions of Greece made it challenging for the researcher to take advantage of in-person interviews or classroom observations.

## 10. Recommendations for future research

The first suggestion made would be the research sample expansion to a wider number of 6<sup>th</sup> grade classes to ensure more extensive results in the future. To this end, EFL teachers working in primary schools have to be encouraged to depart from their deeply-rooted and sometimes outdated teaching practices and through on-going, long-term teacher education to be rendered into skilled and confident agents of innovation. Aware of what the FCA innovation actually entails, they will be able to proceed to the careful organization and preparation of their own FCA material and the design of original and appealing FCA lessons.

It is also essential that a more extended time expansion of the research be ensured, for example, on an annual basis to fully unfold the potential of the method. EFL teachers could be more flexible with flipping without being intimidated by fixed timetables and deadlines. In addition, concerning the research data collection and analysis, it would be wiser that future researchers make use of multiple research instruments such as individual in-depth

interviews, structured and non-structured interviews, focus groups (Yilmaz, 2013, p. 315) or systematic classroom observations. Finally, teachers who hesitate to experiment with flipping because they cannot have full control over before-class homework preparation or because reliable and consistent Internet access at home cannot be ensured could try the alternative way of the *In-Class Flip*<sup>v</sup>.

## 11. Conclusion

This research aimed at examining whether EFL teachers in the 6<sup>th</sup> grade of Greek primary schools were ready to introduce the FCA innovative teaching model in their practices as part of their TPD and as a means to establish AL in their classes. The prevailing sense left to the researcher was that EFL state teachers treat educational innovations with trepidation. The fear of the unknown and the daily workload absorb most of teachers' preparation and teaching time. However, FCA had a great impact on the participants' TPD due to the fact that they became more flexible and competent IT users and they were familiarized with a wealth of educational online content appropriate for flipping. Equally important were the higher teacher-student and student-student interaction and practice that took place in class due to the time saved by video presentations at home. In this way, the learners' autonomy was encouraged, that is, their AL rendering their teachers into learning facilitators instead of information providers.

When evaluating the support FCA material designed by the researcher, the twelve participants reported that it was well-structured, organized and enjoyable aligning both with learners' preferences and how FCA works. In fact, so motivated were a couple of teachers after their initial flipping experience that they embarked on designing their own FCA lessons according to the researcher's expectations. Despite the limitations, FCA can be a workable solution against the everyday hurdles that EFL teachers face preventing them from being professionally and personally developed.

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<sup>v</sup> As in the traditional flip, the teacher records video lectures but instead of having students watch the content at home, those video lectures become *stations* in class that small groups rotate through. The rest of the time is spent on other independent and group work activities. Although setting up stations is time-consuming at the beginning, once the teacher has been flipping several times, stations and videos can be recycled.

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## **Appendix**

### **Technology Considerations before Flipping**

#### ➤ **Video Hosting Tools**

- YouTube: <https://www.youtube.com/>
- TeacherTube: <http://www.teachertube.com/>
- YouTube EDU: <https://www.youtube.com/channel/UC3yA8nDwraeOfnYfBWun83g>
- BBC Learning English: <http://www.bbc.co.uk/learningenglish>
- FilmEnglish: <http://film-english.com/>
- BrainPOP: <https://www.brainpop.com/free-stuff/>
- Crash Course: <http://www.pbslearningmedia.org/collection/crash-course/>
- EduTube: <http://edutube.org>
- Educational Videos: <http://www.educationalvideos.com>
- GoEnglish.tv: <https://goenglish.tv/>
- History Channel Online: <http://www.history.com/videos>
- KhanAcademy: <https://www.khanacademy.org/welcome>
- National Geography Video: <http://video.nationalgeographic.com/>
- NeoK12: <http://www.neok12.com/>
- LearnEnglishKids: <http://learnenglishkids.britishcouncil.org/en/>
- Photodentro: <http://photodentro.edu.gr/lor/>

#### ➤ **Video Interaction Tools**

- TedEd: <http://ed.ted.com/>
- WatchKnowLearn: <http://watchknowlearn.org/>
- EduCanon: <https://www.playposit.com/>
- Office Mix: <https://mix.office.com/en-us/Home>
- EdPuzzle: <https://edpuzzle.com/>

#### ➤ **Video Creation Tools**

- ScreenFlow: <http://www.telestream.net/screenflow>
- Jing: <https://www.techsmith.com/jing.html>
- CamStudio: <http://camstudio.org>
- Screencast-o-matic: <http://screencast-o-matic.com/home>
- PowToons: <https://www.powtoon.com/>

#### ➤ **Learning Management Systems**

- EdModo: <https://www.edmodo.com/?language=el>
- Moodle: <https://moodle.org>
- Schoology: <https://www.schoology.com/>

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