

Flipped classroom and cooperative learning: a practical experience

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Alberto Patón Rodríguez

ID: 53380498M

Tutors: Jesús Gil Gómez, Manuel Martí Puig

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ABSTRACT

One of the main challenges which education is facing nowadays is how to introduce and promote active and cooperative learning, in contrast to a passive and competitive one, which has traditionally ruled –and still does- our educational system. The characteristics of contemporary societies have led to a change in the role of teachers and students, being the former the guides on the side and the latter the ones who have the lead. The teacher is not the only source of knowledge.

This Final Master Project, framed within the Educational Innovation modality, contemplates the introduction of the flipped classroom and cooperative learning for learning English as a Foreign Language in a post-compulsory secondary level. Its goals are to discover whether this new approach to learning leads to meaningful learning and to find out whether students acquire values and attitudes related to cooperation such as solidarity, responsibility and helping other people.

In the analysis, it can be observed that the flipped classroom leads to meaningful learning, higher in comparison to traditional methodologies, which opens the door for its frequent use in our educational system. On the other hand, a high number of students acquire cooperative values and abilities, although some students do not, as they are used to working in an individual way. In this way, it can be concluded that, by following the flipped classroom and working in a cooperative way, students learn not only contents, but also values which facilitate their personal and social growth.

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1. INTRODUCTION

The field of education is always changing and introducing new elements, in an attempt to reflect the culture and society of the new generations. Nowadays, we are living in a digital era, or the era of *i-people* (Marquès, 2013), in which technology plays an important role and we just need a few seconds in order to access any single piece of information. Within this context, the role of education has been forced to change, and it is expected to promote new ways of thinking in a critical way, being creative, making decisions and solving problems (Scheleicher, 2011). This same author also defends that emphasis must be put on collaborative work and communication as well as on the use of digital devices, as students are generally familiarised with them. In other words, students need to learn how to work actively, without memorising and repeating what the teacher or the textbook states. They have to be the centre of the learning process.

The aim of this project is to introduce the flipped classroom methodology as a way of introducing technology and promoting an active, student-centred, cooperative learning (Michael, 2006) in the English as a Foreign Language classroom. In order to do so, a study has been carried out, where we will compare students' results, feelings and beliefs before experiencing this new methodology and after it.

This research project firstly develops a theoretical background, where the main characteristics of the 21st century education and other issues justifying this paper are mentioned and developed. In the second part, the development of a research carried out in the secondary school centre Gilabert de Centelles (Nules) is explained, after having established some hypotheses and research questions. Thirdly, the results obtained are discussed in order to confirm or reject the initial hypotheses, answer the research questions and draw some conclusions. Finally, the limitations of the present study are stated as well as possible suggestions for future similar research.

2. THEORETICAL BACKGROUND

2.1. The digital era and the society of information

The society of the 21st century is characterised by being the society of information and technology (Adell, 1996). We are exposed to a great amount of information coming from different sources such as television, internet or mobile devices. These same devices are the ones which allow us to be connected all the time through social networks, which give their users the possibility to interact among them without being face to face.

The emergence of technology in our daily lives has led to a series of changes. Every now and then we are discovering and facing new applications, devices and gadgets and the necessity to get used to them in an efficient way is almost compulsory. The rhythm of the social change is so rapid that everybody, especially people engaged in the educational field, admits that formation and professional recycling must be carried out during the whole life, as technology nowadays does not only represent a container of information, but also the means or tools for the addressees to have access to it.

The use of technology represents the social environment in which we live, and therefore, we, as teachers have the necessity to train our students how to use it in an appropriate way. In other words, the skill known as *digital competence* must be included in every single stage of the learning process.

In addition, as we will see later on, Information and Communication Technologies (hereafter, ICTs) have meant the opening of a great ream of new techniques and choices for the field of education. Nevertheless, there is a factor which we should always take into consideration when dealing with this issue. Although it may sound strange, there is a sector of population which has not still access to these technological innovations, which leads to social discrimination. The existence of a *digital divide* should be avoided. In Adell's words (1996: 18), *the public governments must guarantee everybody's access to information and the necessary formation in order to be critical and responsible citizens*, and, at least for now, education is a basic pillar in our country.

2.2. The impact of ICTs on education

As it has been mentioned, ICTs are developing an important social change in our world, and the field of education should not be reluctant to introduce them in the teaching practice. Nevertheless, the frequent use of ICTs in schools will not lead to an academic success if it is not accompanied by a process of innovation. Technology should not be considered the salvation of our students, but simply a new tool.

In general terms, the main benefits of introducing ICTs in education are that they provide us with a new environment for teaching and learning (Adell, 1996; Coscollola, 2013), since:

- They guarantee access to a great variety of information, such as multimedia tutorials, databases or online libraries, among others.
- They create new possibilities for teachers and students to keep in touch with no spatial or temporal barriers. Platforms such as Moodle, Wordpress or Blogspot are just some examples.
- ICTs permit new methodologies for collaborative and autonomous work which emphasise interactivity and flexibility for learners and teachers during the whole learning process. The use of web quests, treasure hints, digital portfolios or the cloud (through platforms as Google Drive or Dropbox) are just some of the few options at hand.

In short, ICTs provide teachers and students with an endless number of new possibilities to work and innovate some aspects of education inside the classroom but also outside it, as the school will not be the only place where students can access to information anymore. This is the reason why, according to our regional educational legislation (*DECRETO 112/2007, de 20 de julio, del Consell, por el que se establece el currículo de la Educación Secundaria Obligatoria en la Comunitat Valenciana*. [2007/9717]), the notions of digital competence and the treatment of information in the curriculum are included, and much effort is being made in order to introduce computers in our classrooms in a more efficient way.

2.3. The role of teachers and students: active learning

This last feature of the education in the 21st century is precisely the one which has brought about, or at least it should, a transformation in the way in which daily lessons are organised. As the teacher is no longer the only source of knowledge and wisdom and, generally, all students have access to anything which they may need whenever they want to, it does not make any sense that students simply go to school, listen to their teachers and memorise what they hear or see. In a world where we have quick and easy access to every single type of material, education must promote a practical and active way of learning.

Some authors such as Coll (2014) have established a difference between traditional education systems and contemporary systems according to the role of the teacher and the students. Traditionally, teachers simply worked by transmitting knowledge, evaluating the progress and the results, and being considered as cult people with great formation. Nevertheless, contemporary societies have changed everything. As Prieto (2008) mentions, nowadays teachers should be aware of these social changes and feel the necessity and even obligation to adapt themselves to these new generations of students and to establish them as the centre of the learning process, promoting student-centred learning and cooperative learning (Michael, 2006). These issues will be further developed in following sections. Moreover, teachers must not have the lead and unquestionable position as they had in the past; they must facilitate the interaction between students, materials, and other students instead. Last but not least, teachers in our society must be aware of the effort, sacrifice and compromise that being a teacher requires and must also promote a process of reflection inside the classroom where students and teachers share and comment everything which happens, in order to provide feedback.

2.4. Student-centred methodologies. Cooperative learning.

Michael (2006) defines active learning as the process of having students engaged in an activity which makes them think and reflect upon what they are doing. He uses this concept along with the one of *student-centred learning*, and he defines it

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as the learning model in which the instructor provides students with opportunities to learn independently and from one another. He defends these two processes of learning arguing that they may lead to an increasing motivation, greater retention and understanding as well as positive attitudes towards the subject. As he explains, *individuals are likely to learn more when they learn with others than when they learn alone*. Although it is true that every single person has a different and unique learning style, it seems that the combination of several styles may lead to a greater success, as Bishop and Vergeler (2013) also suggest.

Cooperative learning is one of the main ways for promoting active and student-centred learning. Foot and Howe (1998) describe it as the connection of the three following issues:

1. Students work in teams towards the attainment of some goal.
2. Work is divided between team members in a way that each individual takes responsibility for a different issue.
3. All individual contributions are combined so as to reach the initial goal.

Melero and Fernández (1995) define it as a learning method in which students work together in small groups, helping each other in their homework. Nevertheless, it is important to realise that working in groups is not the same as working cooperatively, since there are several differences between them, as the following table reflects:

Table 1: differences between cooperative work and group work

Cooperative work	Group work
Groups are heterogeneous, considering different levels of knowledge and learning styles.	Groups are usually homogeneous, made at random or by students.
Students have the responsibility for their own learning and for helping the other members of the group.	This responsibility does not have to be present, students choose whether to help the others or not.
The main goal is to learn, to share information as a team.	The main goal is to pass the project or subjects, no matter who actually does

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	the work.
The role of the teacher is to supervise students' work and to take part in it when necessary.	The role of the teacher is simply the assessment of the work.
Work is done mainly inside the classroom, so the teacher can observe it.	It is usually done outside the classroom, as there is no necessity for the teacher to observe how they work.

Source: García 1996

From the definition and its features, we can state four key elements for cooperative learning: *cooperation*, *responsibility*, *communication* and *teamwork*. Other authors (such as Johnson and Johnson, 1997) add a fifth one: *selfassessment*. If a group works together for a long time, they have to think about what they have done right and which elements of the group need to be changed for the better.

It is interesting to analyse that, in a learning system where it may seem that students hold a great responsibility of their own learning, the role of the teacher becomes even more necessary than in traditional methodologies. The teacher is not only the addresser of information any more, but he is also the one who... (García, Traver and Candela, 2001):

- Supervises the work of the groups and is able to pay individual attention to any single student.
- Observes and analyses the interactions between all members of a group.
- Takes part in the groups when they need it.
- Suggests new ways of learning and working.
- Provides students with complementary sources of information if necessary.

Research has proved that cooperative learning leads to several benefits within three different fields: academic, social and individual.

Table 2: benefits of cooperative learning

<p>Academic benefits</p> <ol style="list-style-type: none">1. Better efficiency in learning (during groupwork and after it), as team work allows students to acquire new learning strategies which are not accessible in an individual, traditional learning.2. Development of creativity and critical thinking, as students need to think and discuss when they face a problem or disagreement.3. The time devoted to tasks and study is higher than in individual learning.4. Increase in motivation.5. Development of positive attitudes towards the subject, learning and academic life in general.
<p>Social benefits</p> <ol style="list-style-type: none">1. Cooperative learning promotes social acceptance and inclusion, as free communication favours helping the others and creating affective links, the existence of close-knit relations with people reliable for academic and non-academic matters.2. Ethnic minorities and disabled people have been proved to be integrated into society.3. Egocentrism is lost, as students are able to observe and understand that a single problem can be dealt with from different perspectives.
<p>Individual benefits</p> <ol style="list-style-type: none">1. Development of emotional maturity, as positive interdependence favours communication.2. Better self-esteem and self-acceptation, as students perceive that they are accepted and helped by the others and feel that all of them have something to contribute to the group.

Source: Johnson and Johnson 1989; Garcia et al. 2001; Gavilán and Alario, 2010

There are many cooperative learning techniques which can be introduced in a secondary school classroom. One of them is the *group investigation*, in which contents are divided into *projects* or aspects, and each group searches for information about it, organises it and finally presents it in front of the classroom.

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Once all groups have presented their topics, they, together with the teacher create a test in order to assess the contents acquired. By doing so, students work together and feel that they are necessary in order to learn.

Another technique is the *TGT (Teams-Games-Tournament)*, developed by DeVries during the 70s. In this technique, the teacher presents the materials divided into sections and students have to learn it. Later on, students with a similar proficiency level compete in a quiz tournament, so the competition factor is minimal. The contents acquired are assessed by counting the points won by each group.

Using techniques in which pictures and music are used in order to explore and share feelings or ideas regarding a controversial topic are two further ways of introducing cooperative learning in the classroom.

Finally, the technique which is most relevant for this project is Aronson's puzzle or jigsaw. Following this technique, contents are divided into different parts in a way that each member of the group has to carry out one and then shares that knowledge with the rest of the group. In this way, students depend on their cooperation in order to learn. Its introduction inside a classroom would be organised in the following way:

1. Students are organised in base groups (always in a heterogeneous way) and each one of the members is assigned a different part of the contents.
2. All students with the same part join together in expert groups in order to discuss it and complete an activity if necessary.
3. Finally, students go back to their original groups and teach their lesson to the rest of the members.

Assigning roles to students is one of the most efficient ways in order to ensure that every single member of the group works and the whole group functions as productive as possible.

There are several roles which can be introduced in the classroom. Some of them are the following ones (Johnson, Johnson and Holubec, 1999; Pujolàs, 2003):

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- Leader: makes sure that everyone is focused on the task.
- Secretary: takes notes of the doubts or agreements reached.
- Time keeper: encourages the group to work and control the time available.
- Synthesiser: states the basic principles, ideas or conclusions.
- Corrector: corrects any mistake during the explanations or when completing activities.
- Spokesperson: represents the group when talking to the teacher.
- Reviewer: makes sure that everyone has the same answer to an activity.

Johnson et al. (1999) compare how a cooperative group works with a football team. If we asked students what happens when a member of the team does not fulfil his position, they would answer that the team would lose the match. This is exactly what will happen if a member of the group does not work and cooperate: the group will not reach its objective.

Roles should be rotated so as to ensure that all the members within a group are able to learn and to carry out any assigned task, which will develop several competences and skills rather than a single one, and relations of dependence will be avoided, as all students will be able to perform all tasks.

Students, therefore, must demand to each other to be responsible and work. Responsibility is a key factor for success (Pujolàs, 2003), as the final outcome depends on it.

2.4.1. Cooperative learning in language teaching

There is evidence that learning a language in a cooperative way has a strong, positive impact in students, as many of the critical factors for acquiring a language are involved. Kagan (1995) mentions three: input, output and context, although feedback is also affected.

- Effects on linguistic input, output and feedback: as Zhang (2010: 82) states, *students divided into six groups can get six times as many*

opportunities to talk as in full-class organisation. As students work in small groups, they are given many more opportunities to access comprehensible input, and output, since they have to modify their talk in order to understand and be understood. Therefore, students produce language, listen to language and have choices to be corrected by classmates, and this cycle does not stop (Jia, 2003).

- Effects on context: many students are afraid of using the foreign language in the classroom because there are many people and they do not want to make mistakes in front of an audience. Working in small groups will create a less restrictive or feared environment in which students' anxiety will be reduced and their motivation will be higher (Crandall, 1999). Therefore, the use of the language will become more usual and natural and the chances for their proficiency level to improve will be higher as well.

- Effects on language: students do not also gain access to the language which appears in a textbook, which has always been thought of as artificial, unnatural language. They also gain access to social, real-life language, as they have the opportunity to use the foreign language within the group and to use it with a different function (for sharing ideas, opinions, comments or doubts). In addition, research (Ellis, 1999) showed that, when cooperative learning is introduced and established for a long time, learners produce more language, longer and more complex structures and their vocabulary regarding a topic is richer.

2.5. The flipped classroom

The notion of flipped classroom has been on the increase for a long time, and it is considered the result of combining the main changes in education which have been previously explained.

The flipped classroom is a pedagogical model in which the traditional teaching paradigm is flipped (Bergmann, 2012; Bergmann, Overmyer and Willie, 2013). In

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other words, what used to be classwork (mainly listening to the lecture) is now done at home via videos (teacher-created or not) and what used to be homework is now done in class.

In practice, teachers make lessons available to students to be accessed whenever and wherever it is convenient for them, although online readings or other materials are starting to be used in some flipped classroom experiences. Teachers can explain contents by recording and narrating screencasts, or by using video lessons available on the net, as long as they are adapted to their level. Students can watch the videos or screencasts as many times as they need to, enabling them to be more productive learners in the classroom. Since direct instruction is delivered outside the classroom, teachers can then use in-class time to actively engage students in the learning process and provide them with individual attention, becoming then the focus of attention.

Jonathan Bergmann and Aaron Sams, who are considered the pioneers in the field of using videos in education, defend that the flipped classroom allows teachers to spend more time interacting with students instead of lecturing. Back to 2007, they were concerned about those students who missed classes because of extracurricular activities who may not be able to follow the university course as the rest of their classmates did, so they began to use live video recordings and screencasting software to record lectures, demonstrations, and slide presentations with annotations which were then posted on YouTube. Both teachers have since then explained in many publications that students began interacting more in class and, because time could be used more flexibly, students who were behind received more individual attention while advanced students continued to progress.

It was Bergmann and Sams (2012) who stated four basic reasons why every teacher should at least try to flip their classrooms:

- Flipping helps struggling students. Many students are absolutely thrilled to be able to pause, rewind and replay the lecture at a pace which works for them. At the same time, teachers can spend more time with those students who have severe difficulties.

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- Flipping allows teachers to know their students better, as they think that a good teacher is the one capable of building relationships with students.
- Flipping allows for real differentiation, as students learn at different rates.
- Flipping changes classroom management. Bergmann reported that even those students who created disturbances tried to work and got engaged in learning.

Hamdan and McKnight (2013) further develop the notion of flipped classroom by explaining the four basic pillars that flipped learning must accomplish:

1. Flexible environment. Both teacher and student are flexible in a way that they can work on their own, at their own pace. Although in class they have to fulfil some exercises or tasks, they may devote more time to have extra practice.
2. Learning culture. Students are now responsible for their own learning process and are involved in the construction of knowledge, explanations and assessment in a meaningful way. In other words, they have an active role. Active learning pedagogies are the heart of the flipped classroom.
3. Intentional content. Teachers who use the flipped classroom model do it because they have the purpose of helping their students. Therefore, the whole process of flipping the classroom, especially the selection or design of materials, needs to be carried out carefully.
4. Professional educators. Last, but not least, the role of teachers is now more important and demanding, as they have to spend the whole in-class time observing students, providing them with immediate feedback and assessing their work.

The following table summarises the main features of the flipped classroom:

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Table 3: basic notions regarding the flipped classroom

- | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">- A <u>possibility to increase and personalise</u> contact between teachers and students.- The teacher is not the “sage on the stage” but the “<u>guide on the side</u>”. Instead of focusing on presenting information, teachers focus on the significant gaps that students may have, and they therefore become the centre of the learning process.- Students who are absent <u>are not left behind</u>.- <u>All students are engaged</u> in the learning process and can receive a <u>personalised education</u>. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Source: Bergmann 2013, Lasry 2014

Nevertheless, it is also important to point out that many negative aspects have been linked to the flipped classroom model. As Bergmann (2012) explains, some voices claim that flipping the classroom does not create a 21st century classroom because pedagogy should always drive technology, not vice-versa. In addition, the whole flipping process does not make teachers’ job easier, as lectures still need to be meticulously prepared (as videos should not last more than ten minutes and concepts or procedures need to be explained in a clear, concise manner – Tucker, 2012) and the traditional challenges are still present (are all students going to watch the videos? Will I actually be able to help all students?). Furthermore, Sams and Bennett (2012) also report more criticisms to the flipped classroom. Some people defend that it does not represent any innovation in the field of education, as the traditional homework element is still there, but instead of exercises, it is a video or other digital material. Other sceptical voices as Johnson (2012) state that it is not possible to flip the classroom unless all students have Internet access at home. In fact, they are partially right, but the digital media may be delivered by using USB devices, recording CDs or DVDs or by sending the file to our smartphones. Finally, Johnson (2012) poses an interesting question: *will flipped classroom replace teachers?* In fact, now the teacher is more important than ever. Teachers can now work with students in a more personal way, helping them to facilitate their learning. Teachers have to react to unknown problems, find

alternative strategies and help students to develop new strategies to understand challenging issues.

2.5.1. The flipped classroom in English Language Teaching

According to Hamden et al. (2013), little formal data exists to show the effect of flipped learning on English language learners, although it is believed that they would benefit from it in several ways. Marshall and DeCapua (2013) note that, if language lessons are flipped, in class the teacher and students can focus on working with the language and practising it. They also note that the organisation of the in-class time increases opportunities for interaction and speaking, a linguistic aspect which is not given special attention. The effects (positive or negative) of flipping the language classroom will be known as more classes are flipped and data is collected.

This lack of information leads to a necessity to carry out research into the effects of flipping the classroom for acquiring a foreign language, so as to know whether all benefits and outcomes are likely to happen or not.

2.6. Research paradigms

In the world of research, there are two different approaches which can be used in order to gather, classify and analyse information. They are quantitative analyses and qualitative analyses (Rhodes, 2013).

On the one hand, quantitative approaches try to gather information in a mathematical or statistical way. Information is usually obtained through tests or surveys and are common when comparing two different groups of people: one who has gone through a specific training or period, often called *experimental group*, and one who has not, the *control group*.

On the other hand, qualitative approaches try to gather information in a comprehensive way, mainly through interviews and questionnaires which can be created freely. They can be used in experimental groups in order to capture

feelings or opinions regarding the specific training which they may have been gone through.

3. DESIGN OF THE STUDY

3.1. Limitation of the problem and goals of the research

In light of the above, it can be inferred that, although the presence of flipped classrooms seems to be on the increase, there are not many studies analysing their efficiency and effects when dealing with the learners of English as a Foreign Language. This is the reason why it is necessary to draw new fields of research within this topic and to explore the effects and perceptions of flipping the classroom and introducing cooperative learning in a secondary school group, determining its effectiveness in comparison with traditional methodologies.

The goal of this study is twofold:

1. To evaluate the results of introducing the flipped classroom methodology and to compare them with a traditional methodology.
2. To analyse the results of introducing the flipped classroom methodology regarding the development of personal competences by students.

3.2. Description

The study consists of the analysis of the effects regarding the introduction of the flipped classroom methodology in comparison to traditional ones during a unit of work in groups from *bachillerato*.

This study has been carried out in the secondary school centre Gilabert de Centelles, based in the town of Nules, Castellón. The academic context in which we can locate the centre is characterised by being a public, mixed and with a large number of students (around 1,400 including day-time, night-time and vocational training courses, as it is the only educational centre in the area). There is a considerable percentage of immigrant students, due to the social changes and

migratory movements which have taken place during the last 20 years. Therefore, in this context, we will work in an intercultural context, as students from many different nationalities can be found.

On the one hand, the quantitative design employed in this research is a quasi-experimental one with pre-tests and post-tests as well as a control group and an experimental one in which the independent variable in the introduction of the new methodology and the dependent one belongs to the results obtained by the groups.

The following analyses were carried out:

1. Comparison of the pre-test and post-test in the control group (traditional methodology).
2. Comparison of the pre-test and post-test in the experimental group (flipped classroom).
3. Comparison of the pre-test and post-test in both groups.

On the other hand, the qualitative design consisted of a series of open-ended questions which were answered by the experimental group, in order to receive information about how they felt during this new experience (working with videos, working in groups, etc). Further details can be found in upcoming sections.

3.3 Tools

In order to carry out the quantitative analysis of the study, a written test was used in order to assess students' knowledge about the vocabulary and grammatical issues of the unit. A detailed description of the contents, goals and competences can be found in appendix 1, whereas the test can be found in appendix 2.

On the other hand, for compiling students' opinions regarding the flipped classroom methodology and cooperative learning, a questionnaire with open-ended questions was used (appendix 3). The questionnaire consisted of seven questions in which students are asked about the advantages and disadvantages that the flipped classroom may imply, which specific methodology –traditional or

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flipped- they prefer, how cooperative learning worked in the classroom and how they feel working in groups. Moreover, they also had the chance to express whichever opinion, idea or feeling they wanted to.

3.4 Participants and contents

Both groups are students from 1st of *Bachillerato* (33 in the control group and 38 in the experimental one). Students in the control group belong to the branch of humanities whereas students in the experimental group belong to both humanities and scientific branches (it is a mixed group).

In the case of the experimental group, the group in which the flipped classroom was used, some clarifications should be done, as it is a heterogeneous group:

- It consists of 18 boys and 20 girls, between 16 and 19 years old, and their grades in English are completely different among them. We can find students with high marks (between 8 and 10), but also others with low marks (between 2 and 4). All in all, there is a considerable number of students whose marks are between 5 and 8.
- In general, according to the results of the second term, only nine of them passed all subjects, other nine failed more than five subjects, and a big part of the group failed between two and four subjects.

3.5 Procedure

During six sessions, those students in the experimental group had at their hand (via Moodle or USB devices, as some students did not have Internet access at home) the videos which they needed to work contents at home and, in class, they were divided into different groups (4-5 people). The only exception was for the second lesson, as they had to read a text at home in order to discuss it in class.

Groups were created in a heterogeneous way so as to have students with different capacities within the same group: higher levels, lower levels and average levels.

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The goal of the groups was to work altogether, to organise themselves, to share their knowledge and to solve any problem which they may have had. Each member of the group was assigned a different role: leader, corrector, time keeper, spokesperson or reviewer. The idea of assigning roles was introduced in the classroom in a limited way: as it was the first time that students worked in a cooperative way and the time for the whole experience was quite reduced or limited, the role assigned to everyone did not change. All roles were assigned randomly but the spokesperson one, which was given to the member of the group who was shier or whose participation in the classroom was not prominent or usual, giving him or her the possibility to feel more important inside the classroom.

One of the techniques for working in a cooperative way, Aronson's puzzle, was also introduced in order to deal with the grammatical contents (active and passive voice, and the use of causative verbs), which were divided into five different sections according to the type of questions which are commonly asked in written tests (differentiating active verbs from passive ones, rephrasing and completing sentences with a passive verb or a causative verb). Each student was assigned an activity and then, the procedure was followed in the way in which it has been explained in previous sections.

3.6 Hypotheses and research questions

This study has been carried out with the aim of checking whether the flipped classroom is more effective in learning English as a foreign language than traditional methodologies and whether students' reflections show some of the values or features commonly linked to this specific methodology. Once explained the goals, procedures, participants and tools used, the main hypothesis and research questions are stated next.

Goal 1

To evaluate the results of introducing the flipped classroom methodology and to compare them with a traditional methodology.

Hypothesis

The introduction of the flipped classroom methodology will lead to a statistically significant improvement ($p < 0.05$) in their knowledge of the contents dealt with in class and will be superior to the marks in the group following a traditional methodology.

Goal 2

To analyse the results of introducing the flipped classroom methodology regarding the development of some personal competences by students.

Research question

Is the flipped classroom methodology appropriate for developing personal competences?

4. RESULTS

4.1 Quantitative results

In this section, the results obtained in both pre-tests and post-tests are analysed and commented following the process of analysis described by Pérez (2005). In general, five different analyses have been carried out:

1. Descriptive statistical analysis, in order to obtain basic data such as the highest and lowest marks, the average one and typical deviations.
2. Testing for normality (Kolmogorov-Smirnov's test), in order to prove that the results are within standard parameters.
3. Testing for homogeneity (T-Student test for independent samples), for checking if both groups started this study with the very same level of knowledge.

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4. Comparison between pre-tests and post-tests within the same group (T-Student test for related samples), in order to get data which proves that the knowledge acquired by both groups separately are statistically significant.
5. Comparison of the post-tests from both groups (T-Student test for independent samples), with the aim of discovering which one of them learnt more (always in statistical terms) and, finally, accepting or rejecting the initial hypothesis of the study.

In order to carry out these analyses, the *SPSS* software (version 21 for Windows) has been used.

1. Descriptive statistical analysis.

	N	Mínimo	Máximo	Media	Desv. típ.
PreCG	31	3,20	8,20	4,9419	1,19437
PostCG	31	3,00	9,55	6,2645	1,35636
PreEG	29	3,20	10,00	5,0052	1,61811
PostEG	29	2,30	10,00	6,3362	2,00966
N válido (según lista)	29				

*PreCG: pre-test in the control group / PostCG: post-test in the control group/ PreEG: pre-test in the experimental group / PostEG: post-test in the experimental group.

As it can be seen, the average mark is slightly superior in the experimental group in both pre-test and post-test (4.94 vs. 5.00 and 6.26 vs. 6.33). Nevertheless, this data shows that all students from both groups had a minimum knowledge of the linguistic contents, as language is a continuum which is dealt with in schools since pre-primary education.

2. Testing for normality.

Prueba de Kolmogorov-Smirnov para una muestra

		PreCG	PostCG	PreEG	PostEG
N		31	31	29	29
Parámetros normales ^{a,b}	Media	4,9419	6,2645	5,0052	6,3362
	Desviación típica	1,19437	1,35636	1,61811	2,00966
Diferencias más extremas	Absoluta	,127	,088	,161	,157
	Positiva	,127	,084	,161	,157
	Negativa	-,073	-,088	-,132	-,099
Z de Kolmogorov-Smirnov		,705	,491	,867	,845
Sig. asintót. (bilateral)		,703	,969	,440	,473

- a. La distribución de contraste es la Normal.
- b. Se han calculado a partir de los datos.

The Kolmogorov-Smirnov's test confirms that the results obtained by both groups are within standard parameters, this is, that there are no extreme or out of the ordinary differences or contrasts. Samples are distributed in a normal way, so that parametric tests can be used for making contrasts.

3. Testing for homogeneity.

Estadísticos de grupo

	Varagrup	N	Media	Desviación típ.	Error típ. de la media
PreCG	1,00	31	4,9419	1,19437	,21451
PreEG	2,00	29	5,0052	1,61811	,30048

Prueba de muestras independientes

	Prueba de Levene para la igualdad de varianzas	Prueba T para la igualdad de medias								
		F	Sig.	t	gl	Sig. (bilateral)	Diferencia de medias	Error típ. de la diferencia	95% Intervalo de confianza para la diferencia	
									Inferior	Superior
PreCG Se han asumido varianzas iguales	1,626	0,207	- ,173	58	,863	-,06324	,36552	- ,79491	,66843	
PreEG No se han asumido varianzas iguales			- ,171	51,363	,865	-,06324	,36919	- ,80429	,67782	

This test allows us to know, with a 95% of viability, whether the difference in the results obtained is due to an already-existing difference in the students' background knowledge, this is, that a group knew more than the other one.

The decision is based on the result of the test: if it is equal or lower than 0.05, this new hypothesis has to be admitted. Otherwise, if it is greater than 0.05, it has to be rejected. In light of the result (0.207), we can conclude that the data sample is homogeneous, i.e., all students started this study with the same knowledge of the contents.

4. Comparison within the same group.

Estadísticos de muestras relacionadas

		Media	N	Desviación típ.	Error típ. de la media
Par 1	PreCG	4,9419	31	1,19437	,21451
	PostEG	6,2645	31	1,35636	,24361
Par 2	PreCG	5,0052	29	1,61811	,30048
	PostEG	6,3362	29	2,00966	,37318

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Prueba de muestras relacionadas

	Diferencias relacionadas					t	gl	Sig. (bilateral)
	Media	Desviación típ.	Error típ. de la media	95% Intervalo de confianza para la diferencia				
				Inferior	Superior			
Par 1 PreCG - PostCG	- 1,32258	1,35098	,24264	-1,81812	-,82704	- 5,451	30	,000
Par 2 PreEG - PostEG	- 1,33103	1,28100	,23788	-1,81830	-,84377	- 5,595	28	,000

The results of the comparison for each group are in both cases lower than 0.05. This means that, in both groups, indistinctly of the methodology employed, students have had a statistically meaningful learning.

In the case of the control group, this result was the expected one, as traditional methodologies have always led to positive results (always in general terms). However, this might not have been so in the case of the experimental group, as the methodology employed was an innovative one and, therefore, specific results (positive or negative) could not have been predicted.

5. Comparison between both groups.

Estadísticos de grupo

	Varagrup	N	Media	Desviación típ.	Error típ. de la media
PostCG	1,00	31	6,2645	1,35636	,24361
PostEG	2,00	29	6,3362	2,00966	,37318

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Prueba de muestras independientes

	Prueba de Levene para la igualdad de varianzas	Prueba T para la igualdad de medias								
		F	Sig.	t	gl	Sig. (bilateral)	Diferencia de medias	Error típ. de la diferencia	95% Intervalo de confianza para la diferencia	
									Inferior	Superior
PostCG	Se han asumido varianzas iguales	5,547	,022	-,163	58	,871	-,07169	,44004	-,95253	,80915
PostEG	No se han asumido varianzas iguales			-,161	48,695	,873	-,07169	,44566	-,96742	,82404

By using a comparative test of averages from independent samples, it has been determined whether there are differences between the control group and the experimental one, this is, between the group where the flipped classroom and cooperative learning has been introduced and the one which has not.

Although in both groups there has been meaningful learning, the difference between the results of both groups is significant in favour of the experimental group, as it is lower than 0.05 (0.022). This means that the students who have been following the flipped classroom methodology have obtained better results than those who have been following a traditional one.

It may seem curious that students who have chosen the scientific branch have better results than those who have chosen the humanities one. Usually, the former group is usually linked to scientific and technological studies whereas the latter group is so to social and linguistic studies. Therefore, it may be surprising that the results of the first group are slightly superior than those of the second group.

4.2 Qualitative results

In this section, the results obtained through the questionnaire previously described are mentioned and developed. The goal of the questionnaire was to obtain students' opinions, feelings and perceptions regarding the new methodology and cooperative learning.

Regarding the flipped classroom, on the one hand, students generally show a negative attitude towards the new way of teaching and learning, and they prefer working following a traditional methodology.

Prefiero el método del profesor, es más efectivo porque en casa te entra el perro y no miras nada a no ser que tengas mucho interés. Además, es mejor el cara a cara con el profesor en plan pregunta-respuesta. (Student 22)

Students provided the following reasons:

1. Many of their classmates do not bother to watch the videos and, therefore, as they may not know what to do in class, they have a lack of interest and do not do anything to participate.
2. By following traditional methodologies, it is easier to manage the class and to keep it in a calm way, as the flipped classroom and groupwork make people speak louder.
3. Linked to the previous reason, as there are too many students, it is easier to control them and to make sure that they do their work and learn. With the flipped classroom, the teacher cannot know whether students watch the videos or not.
4. They consider watching the videos a nonsense and a loss of time.

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Nevertheless, some of the students do wager on flipping the classroom, mainly because it is an innovative way of working and studying which allows them to work in groups, something which they are not used to. In addition, some of them even give a suggestion: why not watching the videos at home and revising them in class?

From these results, we can extract several causes or reasons which may explain or justify them: since their childhood, students have been working in an educational system based on the figure of the teacher and with directed lessons, and having been taught so in a pedagogical way reluctant to introduce changes or innovations. This is why they consider changing their habits a difficulty, a loss of time and effort, or they may even perceive that they are not learning anything.

Me ha parecido que este mes con el de prácticas lo único que hemos hecho ha sido perder el tiempo y no hemos aprendido absolutamente nada. (Student 23)

In addition, as they have been taught how to work in groups but not in a cooperative way, some of them do not care about groups and see how other classmates do their tasks and simply copy the answers, as it is what usually happens when groupworking. For the same reason, students consider that an environment full of voices or noises is not a suitable one for learning anything.

La clase era un caos, algunos casi ni trabajaban y no hemos aprendido nada, la gente iba a la suya. (Student 20)

On the other hand, other students consider the flipped classroom as a valuable methodology, as it implies a change in their routine, as they spend the whole academic year working individually. They also enjoy having the possibility to work with their classmates and solve the doubts which they may have almost immediately, giving emphasis to feedback provided not only by the teacher, but also by themselves. Therefore, they are aware that the teacher is not the only source of knowledge, they also are.

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Yo no he podido ayudar mucho a mi grupo porque yo de inglés... pero ellos a mi me han ayudado bastante. Tengo muy buenos compañeros. (Student 11)

Finally, some students suggest a new approach which combines flipped classroom and traditional methodology: watching the videos at home and then, in class, reviewing the contents before doing the activities. However, as language is a practical continuum, it makes more sense to correct doubts when they are working, not when reviewing theoretical explanations.

El sistema de aprendizaje por vídeos está muy bien, ya que te hace trabajar también en casa. Quizá también habría que impartir la clase, aunque sea explicarlo en general, así te aseguras de que todos se enteran. (Student 4)

As for cooperative learning, there are several positive and negative aspects present in the questionnaire.

On the one hand, students mention again the innovative components of the new methodology, more concretely, groupwork and the introduction of new materials and resources beyond the traditional textbook. This leads to the perception that they can make the most of the in-class time and work more and better than they did before, as they work together and can help each other. In fact, other students say that they find *interesting and gratifying* having the possibility to help their classmates and being helped when needed. Positive relationships with classmates allow them to establish new ones and to strength those already existing, so they can consolidate knowledge, solve doubts and problems.

Me lo he pasado genial, nos hemos juntado y hemos hecho cosas en equipo. Las clases de inglés eran más productivas y divertidas. (Student 3)

Therefore, some of the advantages linked to cooperative learning and flipping the classroom have been presented in this study: close-knit relations, students' responsibility and help and better efficiency.

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Trabajar en grupo fortalece las relaciones con los compañeros de la clase, así que me parece una buena idea. (Student 27)

However, there are many negative opinions regarding these issues. A great number of students put emphasis on the lack of interest and responsibility of many classmates, as some of them did not attend the lessons, watch the videos or work, so the distribution of work was unequal and the atmosphere within the group was not suitable.

A mi me gusta ayudar a la gente, ya que me hace sentirme bien, pero en este caso yo no ayudaba, porque lo único que hacían era copiarse. (Student 26)

At this point, there is one issue which needs to be introduced: some of the students mentioned that they did not want to study *bachillerato*, and that they were there because their parents had forced them to do it. Therefore, their initial attitude towards study is negative, and their levels of motivation or implication with the group are really low, and students with no motivation are not likely to participate in the activities.

This aspect, together with the fact of working in heterogeneous groups, have led to some students to think why it is not possible to work in homogeneous groups (this is, with students sharing the same level of knowledge or efficiency) or individually. More curious is the fact that these statements were not provided by students with a high level of efficiency, but by students whose relationship with their classmates was not positive. The responsibility of the students and their attitudes towards the whole group is brought out again.

Me ha parecido una experiencia positiva, pero el comportamiento de mis compañeros es de niños. (Student 7)

Attitudes like this occur because students are used to working only for reaching a learning goal which is not even the same as the rest of their classmates, showing the competitive nature of our society and educational system. Nevertheless, by

introducing cooperative learning, the objective is for students to learn how to feel engaged in their learning process and also their classmates' one.

El aprendizaje mediante vídeos está bien, pero creo que sería mejor en una clase con gente más madura, sería más interesante y productivo. (Student 1)

In order to conclude with this section, the following quote summarises the main results of the qualitative analysis:

Por un lado, dar la clase del revés es bueno porque el profesor se puede centrar más en la gente que le cuesta más trabajar, como una especie de atención personalizada. No es mala idea complementar las clases con vídeos y otros recursos, pero hace falta que los alumnos se interesen más y demuestren su voluntad de colaborar. (Student 17)

5. DISCUSSION AND CONCLUSIONS

The present study regarding the flipped classroom methodology linked to cooperative learning has allowed us to know the effects on its application in the English as a foreign language classroom in secondary school.

On the one hand, regarding the initial hypothesis of the study (*The introduction of the flipped classroom methodology will lead to a statistically significant improvement ($p < 0.05$) in their knowledge of the contents dealt with in class and will be superior to the marks in the group following a traditional methodology*), now we can consider it as accepted.

On the other hand, as for the research question for this study (*Is the flipped classroom methodology appropriate for developing personal competences?*), we can accept it, but partially. It seems that students have acquired the basics of cooperative learning, but not all of them. Students still need more practice within this field in order to realise that, with a bit of compromise and predisposition, they can learn in a new, different way.

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The results obtained show that the students who have followed the flipped classroom present a statistically significant improvement in comparison to the group which has followed a traditional methodology.

The study also shows that, in general terms, the flipped classroom leads to the acquisition of social and personal values and positive attitudes such as solidarity and helping the others (as mentioned by Johnson and Johnson, 1989; García et al., 2001; Gavilán and Alario, 2010). Students appreciate having a higher participation in the classroom and having the possibility to work with their classmates, which represents a new work dynamics and leads to an increasing motivation in learning English, a subject usually rejected by students. It can be inferred, therefore, that the flipped classroom implies not only the acquisition of concepts and procedures but also attitudes, an aspect of personal growth which usually is excluded from daily routines in high school.

In addition, it has also been discovered that the flipped classroom allows students to interact with each other as well as with the teacher, creating an instantaneous feedback inside the classroom, being a multimodal feedback: between students, from teacher to students and from the videos. Summing up, the flipped classroom increases the chances to have just-in-time feedback, as stated by Zhang (2010). In this way, students actively participate and are responsible for their own process of learning, and they realise that the teacher is not the only help at their hand.

Moreover, as interaction and feedback take place within heterogeneous groups, students with learning problems may feel supported by their classmates. Therefore, the flipped classroom can also be considered as a tool for attending diversity in the classroom (Bergmann, 2013; Lasry, 2014). Students may have a chance to receive a personalised education, as the teacher may spend more time with those who really need it whilst those with an advanced knowledge may also help them, participating in their classmates process of learning.

Regarding those negative elements which can impede a satisfactory introduction of the flipped classroom, three have been found:

- 1) Negative perceptions about the methodology
- 2) Lack of motivation

3) Number of students

Regarding the first issue, students do not see the point in watching videos at home, they consider it useless and a loss of time. The most logical reason for this is that students are used to doing written, paper-based homework, and breaking their schemes or routines leads to this feeling of uselessness.

As for the second issue, if students are forced to study (as in the case of those students mentioned in the results section) or they do not feel engaged in the learning process, they will have no predisposition or interest in working and collaborating with the group.

Finally, the number of students is a key element for introducing the flipped classroom successfully, for two obvious reasons: first, students have this feeling of chaos and racket which is not suitable for learning at all; second, it is better to manage a classroom with a considerable lower number of students. However, this issue seems difficult to be changed, as the ratio will increase even more with the latest changes in our educational laws.

It seems surprising that any student did not mention a key factor: the access to the Internet, as not having it represents a limitation for the introduction of the flipped classroom. Seven students did not have access to the net, but the solution for this problem was easy: they were given a CD or USB device with all the videos. This issue brings us back to one of the initial issues mentioned in this paper: the *digital divide* (discussed by Adell, 1996; Johnson, 2012) , as the students' economic context leads to a difference of opportunities for accessing to knowledge. Nowadays, it seems that innovating in education implies the frequent use of technologies inside and outside the classroom. However, not all students are under the same conditions, as those who do not have this technology at their disposal have therefore fewer opportunities to access information than those who have it.

In conclusion, we have to make an effort to show that there is another way of working which can be useful as well and can lead to positive results, as it has been shown in this study. We have to make people see that the traditional way of teaching and learning is no longer the only option to be used inside the classroom,

that there is a new one, the cooperative learning, in which also social and personal factors come into play, values which are rarely dealt with at schools.

6. LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

It is necessary to mention that the results obtained in this study cannot be extrapolated since there have been some limitations: the number of people involved was low and the amount of time was limited, as we only had the possibility to compare two groups during a short period of time.

Suggestions and ideas for further research, therefore, would include:

- A longer introduction of the flipped classroom and cooperative learning in a group, in order to see what would happen with more time available, so students can feel even more comfortable with the new approach to learning.
- In addition, more time would allow us to have the chance to rotate the roles within groups, in order to explore and to obtain data regarding feelings about role-changing.
- To introduce the flipped classroom and cooperative learning in curricular diversification programmes, as the ratio of students is reduced (15 students) and where daily work and effort play a crucial role.

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8. APPENDICES

8.1 Appendix 1: Objectives, competences and contents

Objectives / Outcomes

- O1: To use vocabulary related to cinema and film genres.
- O2: To know and reflect upon the importance of literature in cinema
- O3: To read and comprehend a film review.
- O4: To use the passive voice properly.
- O5: To use causative verbs properly (have / get + something + done).
- O6: To write a film review.
- O7: To recommend a film using spoken language.

These objectives are framed within the specific objectives for the Bachillerato period and the module Foreign Language I, according to the still-current educational laws (*DECRETO 102/2008, de 11 de julio, del Consell, por el que se establece el currículo del bachillerato en la Comunitat Valenciana.* [2008/8761])

Competences

The decree regarding Bachillerato mentions that this educational cycle has the consolidation of the competences acquired during Secondary Education as a basis. (*REAL DECRETO 1631/2006, de 29 de diciembre, por el que se establecen las enseñanzas mínimas correspondientes a la Educación Secundaria Obligatoria*). Therefore, the following ones are worked with in this unit:

- C1: Communicative competence: to use a foreign language as a tool for written and oral communication, with an academic purpose (classroom management) and with a specific social purpose (pragmatic competence).
- C2: Knowledge and interaction with the physical world: to use a foreign language in academic and daily-life situations, in real contexts.
- C3: Digital competence and treatment of information: to look for information and process it in order to design a linguistic product, to use digital tools to improve language learning.

- C4: Social competence: to be able to work in groups, to respect and be polite towards everybody.
- C5: Cultural and artistic competence: to be aware of the existence of arts, in this case, cinema as a way for amusement and the transmission of culture and ideas.
- C6: Learning to learn competence: to be aware of the own learning process, to detect strengths and weaknesses which need to be further worked.
- C7: Autonomy and personal initiative: disposition to use the foreign language and participation and completion of the tasks.

Contents

- Concepts: cinema, film genres, active voice, active sentence, passive voice, passive sentence, causative sentence, film review
- Procedures: identifying active and passive sentences and their meaning, changing active sentences into passive sentences, creating causative sentences, identifying the different film genres, writing a film review, recommending a film in a spoken way
- Attitudes: autonomous work, group work and personal initiative. Autonomous work will take place mostly at home, as students will have to watch some videos or to read a text, while group work will occur in class, as students will work in groups.

8.2 Appendix 2: test

PART 1: VOCABULARY

Exercise 1: here you have 10 definitions of words about cinema and 10 concepts. Can you link them?

Subtitles – hit – horror film – failure – director – cast – dubbing – soundtrack – special effects – main character or protagonist

1. A group of people acting in a play or film.
2. A person who guides the actors and directs.
3. The most important character in a film.
4. To replace sounds on a film, especially to replace voices in one language with those in another.
5. A film genre which uses a frightening subject, especially a supernatural one.
6. A commercial record or tape of the music from a motion picture.
7. The technical effects of a film or videotape that create visual or auditory illusions.
8. A translation of the spoken dialogue of a film, shown at the bottom of the screen.
9. A film which becomes very successful.
10. A film which does not become successful.

PART 2: GRAMMAR

Exercise 2: choose the sentence which is nearest in meaning to the original.

1. I was shown seven flats at the weekend.
 - a. I looked at seven flats.
 - b. I showed someone seven flats.
2. Our neighbours are frequently visited by friends from abroad.
 - a. Our neighbours frequently visit friends abroad.
 - b. Friends from abroad often visit our neighbours.
3. In Parliament, questions will be asked about the prime minister's policies.
 - a. The prime minister will ask questions about his policies in Parliament today.
 - b. Members of Parliament are going to ask about the prime minister policies.
4. Everyone in the stadium could be seen by surveillance cameras.
 - a. Surveillance cameras filmed the people in the stadium.
 - b. Everyone could see the surveillance cameras in the stadium.
5. Would you like to have a drink while dinner is being prepared?
 - a. Would you like to drink while you are preparing dinner?
 - b. Do you want something to drink before dinner is ready?

Exercise 3: Are the following sentences in active voice or in passive voice?

1. French is spoken in Niger.
2. Steven likes to play baseball.
3. They often read e-mails.
4. 10,000 people will attend the Chemistry conference.
5. The president was elected by the people.

Exercise 4: rewrite these sentences using the passive voice.

1. Tom broke the window.
2. The school organises excursions every June.
3. Jennifer has won most medals.
4. A famous fashion designer will make the costume for the wedding.
5. The bride's friend is driving the yellow car.

Exercise 5: complete the sentences with the correct passive form of the verbs in brackets.

1. Today, three films..... (show) at the film festival.
2. I think that computer skills..... (should teach) to young children.
3. At eight o'clock tomorrow, a lecture of volcanoes.....(give) by a geologist.
4. The latest company report..... (not see) yet.

Exercise 6: complete the sentences with the correct causative form of the words in brackets.

1. That skirt is too long. Why don't you..... it? (have/shorten)
2. The carpet is dirty. Let's..... it (get/clean)
3. We are going to the dog by the vet. (have/examine)
4. Tommy received a letter from the teacher. He has to..... it by a parent. (have/sign).
5. Barbara is at the dentist. She her teeth (get/check).

8.3 Appendix 3: questionnaire

1. *¿Qué prefieres, este sistema de aprendizaje mediante videos o que el profesor te de las clases? ¿Por qué? Por favor, menciona si has visto los vídeos o no.*
2. *¿Cuál es tu opinión de trabajar en grupo?*
3. *¿Crees que tu grupo ha funcionado correctamente?, ¿Alguien no ha realizado su trabajo?*
4. *¿Ha habido justicia en el reparto del trabajo dentro del grupo? Es decir, ¿habéis trabajado todos por igual o sólo unos habéis hecho la faena y el resto simplemente se la copiaba?*
5. *¿En las decisiones que se tomaban en el grupo, había desacuerdos o todos pensabais lo mismo?*
6. *¿Te has sentido bien ayudando a los demás miembros del grupo? Cuando tus compañeros te han ayudado, ¿te has sentido bien?*
7. *Si quieres expresar alguna opinión, sentimiento o idea, puedes hacerlo aquí.*