



TOPIC:

**FLIPPED CLASSROOM AND /ST/ CONSONANT CLUSTER
PRONUNCIATION IN THE ECUADORIAN EFL CLASSROOM.**

**Research project prior to obtaining the title of Magister in Teaching and Learning
English as a Foreign/Second Language**

Lines of Investigation:

Innovative Pedagogies to English Language – Teaching Teaching-Learning Resources

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Dedication

This project is lovingly dedicated to the most important people in my life, my parents Luis Toasa and Magdalena Cruz who have been my source of inspiration. Thank you, Daddy, because you were always supporting me and praying for me all the time. Thank you, Mommy, since you are always by my side even in the worst moments of my life. Without your love and support, this project would not have been made possible.

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Resumen

El estudio tiene como objetivo evaluar la relación de la clase invertida (Flipped Classroom) y como los estudiantes de inglés como lengua extranjera mejoran su pronunciación. Los sujetos de la investigación fueron los alumnos de quinto de educación básica de la Unidad Educativa “Pio X”. La población de estudio estuvo compuesta por 37 estudiantes. La prueba de rango con signo de Spearman contribuyó a encontrar la relación entre las variables. Los estudiantes fueron evaluados con respecto a su conocimiento del grupo de consonantes iniciales del segundo idioma. Se estimó la articulación del segundo idioma con el Programa Praat. Los resultados indicaron que los alumnos de español como lengua nativa demostraron una alta atención con respecto a los grupos de consonantes del idioma extranjero. Además, se descubrió que la atención al grupo de consonantes fue alta y se identificó con mayor exactitud en la elocución de la segunda lengua ($r = 0,564$, $p = 0,007$). Los resultados proponen que el aula invertida debe impartirse en un aula de lengua extranjera, ya que expandir el conocimiento de los estudiantes puede ser útil para la precisión de la pronunciación del grupo de consonantes del idioma inglés.

Palabras clave: Articulación, Grupo de consonantes, Lengua extranjera en inglés, Aula invertida, Pronunciación.

Abstract

The study is aimed to assess the relationship between Flipped Classroom and the /st/ Consonant Cluster. The subjects of the examination were the fifth students of basic education from Unidad Educativa “Pio X”. The study population comprised 37 students. The signed-rank test of Spearman contributed to finding the relationship between the variables. The language students were tested concerning their awareness of L2. Its articulation was estimated with the Praat program. The outcomes indicated that L1 members demonstrated better improvement concerning L2 consonant clusters, not contrasting from L1 English speakers. Besides, high consonant cluster performance was identified with relation to the first variable in L2 elocution ($r = 0,564$, $p = 0,007$). The outcomes propose that flipped classrooms ought to be instructed in foreign language classrooms since expanding students' development and performance may be helpful for the precision of their L2 consonant cluster pronunciation.

Keywords: Articulation, Consonant Cluster, Flipped Classroom, Pronunciation

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Introduction

When people refer to consonant cluster pronunciation, automatically their brains get confused since the lack of exposure to the term. Consonant clusters have interference between languages, this means the language which students are learning and their mother tongue. In Ecuador, these kinds of problems are evident since English is not their native language. As a result, it is not easy for Ecuadorian students to pronounce the consonant clusters because there are words that contain consonant clusters with hidden vowels. For example, a consonant cluster is two, three, or four consonant sounds in a row such as /str/ in 'string' or /SK/ in 'desk', and some language patterns were transferred by their mother tongue.

Moreover, if learners mispronounce words their meaning will change, and the message will not be clear. This usually happens when non-native learners try to speak fluent English. In this case, the project would be on students of Unidad Educativa "San Pio X" that have the same problem, they can understand and speak to each other, but their pronunciation is not good enough. In terms of autonomy, students are not focused on autonomous learning because they are accustomed to getting all the resources, information, and help from the teacher, so learners do not look for their self-development to be better. Autonomous work by using different technological resources should be important for them because it will help them to improve their English skills.

The study method is going to be applied with students, and it is defined as a pedagogical method in which the teacher will provide the explanation and homework activities. Some flipped classroom advantages are the length of time that students want to take at any time at their home. They will be better prepared in class to answer and ask questions to the teacher and use dynamic technological resources at home. Therefore, students will pace their progress through videos given by the teacher, they will watch the videos as many times as they can. Later, they will have face-to-face classes where will have the opportunity to share with the teacher and classmates the information they found or understood about the online resources they had.

Theoretical Background

The main reason to choose the flipped classroom for this project is that it is one of the most innovative methods since it shows the benefits, and the improvement students have after the application of it in class. This method will be applied to improve the way students pronounce words that have /st/ consonant clusters by watching videos, doing online activities, sharing information and results with their teacher and classmates, receiving feedback, and clarifying doubts. This project will be focused on a designed framework aligned with Bloom's modified Taxonomy which contains pre-class (understand and remember), during class (apply and analyze), and post-class (create, evaluate and reflect).

Aside from this framework, the use of the platform wizer.me will be essential because of its benefits to help learners to build their knowledge, the expected results are the correct and fluent pronunciation of the /st/ consonant cluster. Finally, to measure the results, use of the pronunciation program "Prat" will be used. Several studies show that the application of the Flipped Classroom in the formal education of students of various ages, contributes to improving the learning of different areas of knowledge. Because it is based on the use of technological resources so that the understanding of the content is easier, and because being an innovative practice generates interest in students.

The fact of being able to review information through videos, PowerPoint presentations, or through other tools as often as required, when need's it and where possible, encourages self-learning and increases the degree of responsibility in students. In the English area, for example, the Flipped Classroom will be implemented in students of the ninth year of basic general education to decrease the index of assignments not turned in to time. Favorable results will appear, during the intervention, the tasks will carry out in class with the teacher's accompaniment and through collaborative workgroups. The result was not only the fulfillment of all the tasks by the students but, also, the correct performance of them to increase the academic performance of the group that participated in the project (Romero, 2018).

In the subject of Human Rights, it has been possible to show that the use of the Flipped Classroom through videos promotes students' interest in conducting more research depth of the facts and events that have arisen over time. Generates a passion for history while

developing critical thinking; the method allows that theoretical-based subjects can be better assimilated through interaction and the active participation of students (Ortíz, 2020).

The creation of platforms as technological support of the Flipped Classroom method in students of the first semester of the career of Psych pedagogy where the knowledge is more effective and with greater understanding; the students achieved better results during their academic preparation, they had at their disposal enough material to review when required, the teacher, becomes learning guide, applies methods that promote the active participation of their students instead of continuing with the masterclasses that do not lead to the production of the knowledge (Balseca, 2018).

Research on the Flipped Classroom shows that students enjoy using virtual environments because they see in technology the possibility of accessing information, generating knowledge, and finding answers to their needs. Students play a more active role, more participatory, while the teacher prepares the material and clearly instructs the contents which allow the student to open up to new ways of learning. The contribution of Information and Communication Technology allows the development of skills and competencies that are useful to the student to develop nowadays (Galindo & Badilla, 2016). Secondary school teachers applied teamwork as part of the Flipped Classroom method since it obtained favorable results in terms of influencing the cognitive development of students.

The work developed in the classroom based on this method allowed that teachers can have more time to interact with students and attend to their individual needs (Quiroz, 2017). Teaching through the traditional classroom permanently generates disadvantages. Additionally, according to the national curriculum established by the Ministry of Education, the English subject has a workload of 5 hours of 45-minute class a week. On several occasions, this time is not enough to clear the concerns of the students, which has been reflected in their academic performance. In this way, the problem detected is raised as follows:

Study question: Is there a significant relationship between the flipped classroom and the /st/ consonant cluster pronunciation in students in the 5th year of basic education of the Unidad Educativa "San Pio X"?

The hypothesis that arises is: There is a significant relationship between the flipped classroom and the /st/ consonant cluster pronunciation in students in the 5th year of basic education of the Unidad Educativa "San Pio X".

The general objective to be achieved is:

To analyze the relationship of the Flipped Classroom in the development of /st/ Consonant Cluster Pronunciation in students from 5th year of basic education of the Unidad Educativa "San Pio X"

The specific objectives set to achieve the proposed goal are:

- To determine the theoretical foundation about consonant cluster pronunciation and the flipped classroom methodology.
- To identify the /st/ Consonant Cluster Pronunciation by applying for the Prat Program in students from 5th year of basic education of the Unidad Educativa "San Pio X"
- To analyze the improvement of the formants in the pronunciation of the /st/ Consonant Cluster in students from the 5th year of basic education from the Unidad Educativa "San Pio X".
- To apply the Flipped Classroom Model for the development of the /st/ Consonant Cluster Pronunciation in students from 5th year of basic education of the Unidad Educativa "San Pio X"

Methodology

The current research intends to implement and apply the flipped classroom to develop the /st/ consonant cluster pronunciation in students from the 5th year of basic education. The mixed approach allowed the collection and analysis of quantitative and qualitative data to achieve a better understanding of the current problem.

The study design is experimental with a descriptive — explanatory, and correlational

depth level applied to an experimental in two periods: one before and after the intervention, to improve the pronunciation of /st/.

The modality type is bibliographic — documentary because, information will analyze from books, digital magazines, scientific articles to update knowledge regarding Flipped classrooms and the consonant cluster; Besides, field research because it allows the collection of information at the scene; it refers to the actions that the researcher carries out from the observation and the application of surveys for the data analysis and measurement.

The descriptive depth level of research because there is no evidence about the flipped classroom and the consonant cluster background in the institution. The research project is at Unidad Educativa San Pio X with students from the 5th year of basic education, during the school year 2019-2020. Also, the author uses the correlational depth level of research because it measures the degree of relationship between the independent variable flipped classroom and the dependent variable /st/ consonant cluster pronunciation.

The population of the current study are 37 students, a pre-and post-test was applied. To verify the hypothesis, the author uses the correlation statistical analysis by Pearson, while for the validation of the proposal the ranked test by Wilcoxon will be used to verify significant differences concerning a time before and after the application of the pedagogical intervention.

Justification

This work will be justified by the need to use the flipped classroom for the development of the /st/ consonant cluster pronunciation. Students must integrate the concept concretely and create critical thinking to facilitate their learning process because it helps people to make decisions and fosters creativity that can be applied in almost all areas.

The current research is feasible to be carried out because it has the support and openness of the authorities and fellow teachers. The researcher collects the necessary information required in the institution by using tests for data collection and implementation of a pedagogical intervention.

The direct beneficiaries are students from the 5th year of basic education because they will learn playfully and entertainingly. The same will happen with teachers since flipped classroom offers pleasant activities that reduce apathy and rejection towards any subject.

This research is original because it has not been applied previously, based on my experience flipped classrooms as a pedagogical tool will be applied on the thought of developing critical thinking, therefore, the impact expected will be to motivate students, engage in processes of reflective analysis, and construct solutions to everyday language learning problems.

CHAPTER I: STATE OF THE ART AND PRACTICE

1.1 Flipped Learning

In the traditional method, educational content is presented in the classroom and practice activities are assigned to be done at home. Flipped Learning takes a turn by enhancing the classroom experience by delivering direct instruction outside of class time, usually through videos (Balseca, 2018). This frees up time is used to carry out more active learning activities such as discussions, exercises, laboratories, projects, among others, and also, promote collaboration among the students themselves. In this method, the teacher assumes a new role as a guide throughout the students' learning process and is no longer the only source or disseminator of knowledge.

The teacher facilitates learning through more personalized attention, as well as challenging activities and experiences that require the development of critical thinking of students to solve problems individually and collaboratively (Galindo & Badilla, 2016). To do this, a teacher can resort to the help of one or more technologies, to create or recommend material for children to see at home. Many educators begin to reverse their classes by using easily accessible materials for students to view at a time and place that is most convenient for them and as many times as they need to get to class better prepared.

By taking advantage of this advanced preparation, teachers can spend more time implementing active learning strategies such as conducting research or working on projects. They can also use class time to check each student's understanding of the topics and, if necessary, help them develop procedural fluency through individualized support. Although, strictly speaking, the class can be reversed without using Information and Communication Technology, it is usual to rely on them (Duanmu, 2009). That is why it is important to emphasize that this teaching model does not consist of a technological change, but only take advantage of new technologies to offer more content options to students and redefine class time as a student-centered environment.

The essence of Flipped Learning is not in how to use the videos of the classes but in how to improve the time in the classroom with the students. In addition to explanations or

direct teaching, teachers can use the learning space for assessments or practice exercises, for example. The origin of Flipped Learning has roots in different pedagogical theories and models. One of the most important is active learning: the emphasis is placed on maximizing one-on-one interactions, and more actively engaging students (Llanos & Bravo-Agapito, 2017). The basic premise of this model is that direct Instruction is effective when done individually, but due to the resources of the institutions, this would require a much larger teaching team which most of them could not afford.

This is not to say that instruction today is necessarily bad: it can be an effective way of acquiring new knowledge; the downside is the pace. For some students, progress can be very slow as they review content they already know; for others, very fast because they may lack the prior knowledge necessary to understand the concepts. Many educators begin to invert their classes by using these types of easily accessible materials so that students can see them at the time and place that is most convenient for them and as many times as they need to arrive better prepared for class (Lemke, 2005). By taking advantage of this advanced preparation, teachers can spend more time implementing active learning strategies with students such as conducting research or working on projects in teams.

Teachers can also use class time to check each student's understanding of the topics and, if necessary, help them develop procedural fluency through individualized support. The integration of technology in learning has always created a lot of excitement and expectations due to the changes that innovation can bring (Martín & Tourón, 2017). It is important to emphasize that this instructional model does not consist of a technological change, it only takes advantage of new technologies to offer more content options to students and, most importantly, redefines class time as a student-centered environment.

Another important aspect to highlight is that the pedagogy behind the model is not something new and at first glance, it could be argued that by asking students to read a text for the next class (common practice performed by teachers), Flipped Learning is already being implemented. However, the potential of this model goes far beyond that simple practice, and the level of maximization of it will depend on the implementation made by each teacher (OCDE, 2015). It could be mistakenly thought that the concepts of Flipped Classroom and Flipped Learning are synonymous and that they can be used

interchangeably, however, it is important to clarify that they are different concepts and the impact on learning can vary greatly.

As with any educational model or method, Flipped Learning can be wrongly implemented, so it is important to note that it may not work for all teachers and students, nor at any level and subject. Not all educators will be successful, and some students may prefer traditional classroom approaches. The Flipped Learning Network is a non-benefit association created by Bergmann and Sams as an online local area for instructors to work together on procedures and practices identified with Flipped Learning (Yarbro, 2014). On this collective asset center, teachers can share encounters, address issues, and get tips for rehearsing Flipped Learning.

In affiliation with Pearson and scientists at George Mason University, the FLN has started auditing and posting important examinations led on this learning model. They do this with an end goal to bring this model of instructing closer and show the outcomes. The investigations they post report the two benefits and difficulties related to Flipped Learning. Their objective is to record results of Flipped Learning in the homeroom just as accomplishments and commitment. As a component of supporting best practices for a Flipped Classroom, the FLN fostered the FLIP model as a guide for educators.

The FLIP model addresses which necessities for teachers to work towards Flipped Learning. The model is comprised of the four mainstays of Flipped Learning, a structure for making a viable Flipped Classroom. The principal pillar is a Flexible Environment. This implies that instructors give an assortment of learning modes, for instance, recordings and digital broadcasts, or gathering work and worksheets. The objective is to make an adaptable learning society where students can choose when and where they learn. Culture is the second pillar which implies the shift from an instructor-focused learning environment to one that is study-centered. This implies that students move from being the result of educating to the focal point of learning.

The third pillar is Intentional Content. This pillar underlines the significance in the plan of both the data in the advanced apparatuses. Furthermore, the association of the homeroom exercises. It is additionally an update for instructors to do a constant assessment of conveyance strategies to coordinate with the substance, realizing what to

'flip' and what to convey straightforwardly. The last pillar, Professional Educator underlines the significance of having the help that the instructor presents in class to manage learners in their exercises. This means that the Flipped Learning model does not supplant the significance of being skilled in learning (Hamdan, et al., 2013).

These pillars are intended to control and explain what it implies to function as an instructor utilizing the Flipped Learning model. In light of these prerequisites Flipped Classroom is frequently alluded to as either a full-flip or incomplete flip contingent upon the level of flipped exercises. Beyond the Flipped Learning Network, different sources are working with advancing Flipped Learning, on the side of the model as well as by making material that instructors can access and use.

1.2 Flipped Classroom

Flipped Classroom is a pedagogical model. This teaching method has gained importance in recent years due to the need to change the traditional learning system to adapt it to current needs and, above all, to the children of the 21st century. To (Zhang, Du, Yuan, & Zhang, 2016), the flipped classroom method is an inverted class that helps not only students but also teachers to facilitate the teaching-learning process. It allows students to learn at home and solve their doubts in class, and help teachers to manage their time better and solve the problems of their learners. Moreover, the authors mentioned that this method is useful because of the effectiveness of the flipped classroom method and how it helps to correct English pronunciation.

It also makes an emphasis on the big difference between traditional teaching and the flipped classroom model. Also, it mentioned that the project not only helped students' pronunciation, also raised their scores. With the Flipped Classroom, students learn by doing and not by memorizing. The Flipped Classroom methodology is revolutionary by nature because it proposes to turn around what has been done until now, putting the classical educational system in doubt (Strayer, 2012). It is a groundbreaking system because it proposes that students study and prepare the lessons outside of class. Accessing the contents of the subjects at home so that, later, it is in the classroom where they do their homework, interact and carry out more participatory activities (analyze ideas, debates, group work, and so on).

The great propagators of the Flipped Classroom methodology are the North American professors Jon Bergmann and Aaron Sams. This educational methodology is increasingly widespread worldwide in different subjects and educational stages. Students are the protagonists of their learning and are involved from the beginning as it gives them responsibilities, going from being passive to active subjects (Torrecilla, 2018). They become actors instead of spectators because they work, participate, raise questions, collaborate as a team, organize and plan to carry out projects or solve problems. This method gives more time to answer questions and consolidate knowledge in class.

Having worked on the contents and concepts at home, the time in the classroom can be dedicated to answering questions, solving comprehension or learning difficulties, and working on the issues individually and collaboratively. Students can spend as much time as they want to review the contents, to arrive at the perfect understanding (Zhang, Du, Yuan, & Zhang, 2016). The help of new technologies is essential: if students are viewing a lesson through an interactive video or graphic, they can pause and repeat it as many times as they wish. In addition, depending on the doubts the student has, the teacher can make the relevant adaptations.

Something very useful to function without problems in society. It is achieved when the teacher invests more time to create, analyze and apply knowledge to real life. In addition, the Flipped Classroom methodology tends to have students remember or memorize as little as possible, compression is the basis (Zainuddin & Halili, 2016). This improves the development of competencies for individual and collaborative work from the early stages, the autonomy of the student will be fostered, and digital competence will be promoted through the use of new technologies. Skills to organize, plan, exchange opinions or deal with information will also be developed thanks to collaborative work.

Students identify the learning method as something new and fun, being aware that they are the ones who assume responsibilities, make decisions, participate and work hand in hand with their peers to achieve common goals (Núñez & Gutiérrez, 2016). Regardless of the educational stage, we focus on, when introducing flipped learning in the classroom, planning is essential. Planning must consider the particularities of each stage, as well as the resources that we have. Thus, in stages such as Early Childhood Education (0-6 years),

the application of the Flipped Classroom methodology is complex, but not impossible. There are subjects in which the Flipped Classroom can be developed, such as mathematical concepts, knowledge of the environment, or the process of literacy.

In these cases, the support of families is vital, since at this stage it is the parents who must use new technologies at the service of their children's learning. When the Infant stage comes, primary (6-12 years). In this period, it is key to motivate students to keep them hooked on the teaching and learning process (Ojando, Simón, Prats, & Avila, 2016). This is where school failure caused by emotional, attitudinal, or motivational problems can most appear. The application of the Flipped Classroom methodology will help students to motivate them, learn to work as a team, live together in the classroom, and create an effective bond between the school, the student, and the family.

The implementation of Flipped Classroom in Secondary (12-18 years) connects with a complicated stage for many young people due to emotional and personality changes. New technologies become an instrument that attracts them, and they like it. These, together with the collaborative work between students or students and family, provide them with a great incentive to learn. In higher education, the implementation of the Flipped Classroom methodology is easier due to the maturity of the students (Shu-Yuan, Yun-Hsuan, & Mei-Jia, 2016). It is key for distance or online education modalities. Flipped Learning provides advantages such as viewing the videos as many times as necessary, and has no limitations in space or time.

Thanks to the Flipped Classroom methodology, schoolchildren learn by doing and not by memorizing, just the opposite of the more traditional educational system. In addition, they develop knowledge and skills that will be very useful in their day today. The Horizon Report (Johnson, Adams, Estrada, & Freeman, 2015) speaks of six emerging educational trends. One of them is the Flipped Classroom, proposed, which aims to adapt to the individual profile of students. This pedagogical model is acquiring a high prominence today. Aims to personalize education and design teaching according to the needs of the individual student.

The role of the school is to create an environment that is adapted so that all students master the skills proposed and, in this sense, the teacher occupies a relevant role

(Bergmann & Sams, 2012). Around the world, many educators defend this pedagogical model, both for the stages of compulsory schooling and in higher education. The dynamics of the Flipped Classroom require four basic pillars in teaching, as follows:

- 1) flexible environment, with a diversity of learning modes that allow students to choose when and how to learn;
- 2) culture of learning focuses on the student-centered, the teacher is no longer the center of the process and is the student the protagonist of the classroom;
- 3) maximize learning in the classroom, evaluating what contents should be taught directly in class and what can be previously explored individually by students;
- 4) professional educators, a faculty characterized by being reflective, critical, and tolerant (Hamdan, McKnight, McKnight, & Arfstrom, 2013).

These four pillars are articulated as follows: the content explanation is transferred outside the classroom using digital materials, and time is left in class to develop collaborative activities and tasks among students. Thus, work models change, and the roles of the most common and traditional methodologies are reversed. Masterclasses become online learning materials that have online content (for example, videos that the student has available outside the classroom), and class time is devoted to practical activities related to said online material from the interaction and collaboration with their peers and the teacher (Tucker, 2012).

Despite this, this pedagogical model is not without its drawbacks. There are possible factors related to limitations in the application of the Flipped Classroom that must be controlled for it to be an effective model. One of them refers to the digital divide because it could give certain segregation of students about their socioeconomic status, since not everyone has access to technology at home given the cost of these resources, and may be left out of the dynamics that this model defends (Nielsen, 2012). Another aspect to consider is the design and use of multimedia materials. (Schmidt & Ralph, 2016) detect that students express dislike and boredom with the content of the videos if the elaboration is not taken care of or not it is attractive.

According to these authors, it is important to develop and use the materials and multimedia correctly. The videos need to be short, precise, and entertaining; they must

divide the matter in a coherent way and in this way facilitate the internalization of its content. If the Flipped Classroom uses different teaching styles and methodologies, so could it be more effective than the more traditional model? (Strayer, 2012) indicates that the effectiveness of this model varies depending on the subject in which it is used. Their study shows that students are less satisfied compared to the traditional expository teaching model. Especially when they are uninterested and frustrated by the dynamics of the classroom and the way its orientation is structured with the Flipped Classroom.

In a traditional classroom, the teacher has the authority over the selection of the contents and in his/her presentation while the students are mere content receptors, preferably staying at the lowest levels of Bloom's Taxonomy of Learning (Galindo & Badilla, 2016). In this way, the didactic design is raised from the face-to-face through classes lectures and exams which are complemented with some text readings and Problem resolution. However, in the search for teaching and learning processes, it will be the focus, not only on the development of knowledge but also the superior thinking skills of students. The work structure proposed by the flipped classroom encourages lower-order skills to be performed in external spaces to the classroom, while inside it is possible to focus attention on the analysis, evaluation, and creation.

On the other hand, in the virtual classroom, in the first place, the students work on the concepts by themselves outside of school hours, typically using educational videos that have been previously prepared by their teachers or third parties (Schmidt & Ralph, 2016). Listening to podcasts or collaboration between colleagues in online communities, implementing the use of Information and Communication Technology in education. This job outside of school hours usually includes a questionnaire to make known if they have understood what was viewed. In class, on the other hand, time is used for discussion, resolution of doubts, and more creative tasks that require the presence and advice of the teacher.

This can be carried out in groups, or individually, which allows marking different rhythms for each student according to their abilities and improve the work environment in the classroom thanks to the active role of each student. Thus, techniques such as differentiated instruction and project-based learning are introduced. The flipped classroom modifies the traditional classroom based on the fact that students identify disciplinary contents through

the technological supports used outside the classroom so that the teacher can allocate that time to other activities of participation and collaboration during class (Schmidt & Ralph, 2016). In addition to helping students, the flipped classroom offers parents the opportunity to view class materials used by students.

In this way, having the opportunity to know the instructive methods of the teachers, it is generated in them the confidence to help their children with the same style of teaching and help with support tasks. This modification gives rise to the transformation of the functions of the actors of the teaching and learning process (Balseca, 2018). Specifically, teachers become researchers, content generators, and mediators of learning, while the learners take responsibility for their learning by developing autonomous learning. The tools that can be used in the flipped classroom are multiple and varied. Next, a synthesis of some of the most useful tools is made which are used in this teaching-learning model that has been classified based on its usefulness within the flipped classroom.

Tools for content management: it is necessary to have an open or limited access platform for the dissemination of the contents that are intended for them to be displayed. The most used tools for the dissemination of contents are:

- Open educational resources
- Blog
- LMS (Learning Management Systems) such as Moodle and Edmodo
- Social Network

Tools for content editing: teachers can use different editing tools to create more or less formal presentations. Some applications offer in their free version a link to a URL address in which to edit the presentation online and others like Microsoft PowerPoint, offer the tool editing a video of the presentation once it is finished.

- Prezi
- Powtoon
- Microsoft PowerPoint
- Genial.ly

- Emaze
- DSlideshare

Tools that function as a content bank: the content banks in which multimedia resources and content are already edited.

- Podcasting
- Educational video
- Screencast
- Wiki

Tools to create virtual murals: with this type of tool, teachers can incorporate into their murals: text, video, images, audio, links, and others materials such as PDF, Word, PowerPoint documents, among others.

- Padlet
- Glogster
- Murally

Evaluation tools: some tools allow teachers to insert quizzes on edited videos. These tools are very useful to know if the students consult the videos since the answers will be sent to the teacher. They also allow teachers to know the points of the video that are more complicated to understand based on the analytical results. Among the most popular are:

- Playposit (formerly Education)
- EDpuzzle
- Kahoot
- Socrative
- QWizlet
- Gnowledge

1.3 Pronunciation

The expression of linguistic skills refers to how the use of the language will be activated (Dinnsen, 1992). Traditionally, didactics have classified them, taking into account the mode of transmission (oral and written) and the role they play in communication (productive and responsive). Thus, it has established four main aspects: speaking, writing, listening and reading. More recently, consistent with the analysis of discourse and linguistics of the text, it tends to be considered as a different skill than oral interaction since conversation is simultaneously and inseparably activated expression and hearing. Each of these skills in turn includes a set of micro-skills; Thus, for example, listening comprehension requires the ability to recognize and properly segment the words that make up the phonic chain and that, nevertheless, in the written text the reader finds already isolated.

Similarly, the communicative and discursive approaches, which recognize the primacy of meaning in the communication process, have highlighted other complementary skills of those that integrated traditional skills. In the case of understanding, for example, one of those complementary skills is the ability to establish relationships between different passages of an oral or written text (Giegerich, 1992). Besides, between the text and the knowledge of the world that one owns, to properly interpret the text. The different discourse genres and text types require skills or particular communication skills. Thus, in understanding academic speech it must be able to distinguish digressions, jokes, examples, and so on.

Authors such as Widdowson distinguish between skills applied to the system of the language and skills applied to the use of the language. In oral expression mastery of the language, the system is equivalent to phonetics (pronunciation of particular sounds, of the different intonation patterns, etc.) and mastery of the use of the language, to the effective and adequate transmission of the message (1998). To achieve this transmission of the message, the speaker is not enough with the command of pronunciation and intonation. They need to resort to the oral language use of morphosyntactic, lexical, and textual structures versus writing.

The communication process has six fundamental elements: sender, receiver, code, message, channel, and extra-linguistic phenomena (Roach, 2002). The joint, which is the last stage of the message in the sender, is studied by the so-called articulatory phonetics.

Much progress has been made in the acoustic area. This belongs to the domain of physics since the phenomenon of sound is a purely physical fact, in the stage that goes from the mouth of the emitter to the ear of the receiver. Auditory phonetics studies the behavior of the sound wave in the ear, as it will be known that even the internal ear continues to be the sound wave; from the organ of Corti, which connects with the auditory nerve, there will no longer be sound waves, only impulses nervous.

Phonetics in the English language, it is noted the importance that has come to have the English language at the time of speaking so that people can reach be understood and understand what other people want to communicate to us (Duanmu, 2009). Here, phonetics will be defined as a science that studies the physiological form and sound of any language, which also includes the evolutionary changes that it has come to suffer throughout its existence. In the field of phonetics and pronunciation, various factors will be mixed and have a very close relationship with these topics, such as, as announced in the definition, for example, the position of the tongue, making different sounds, learning to recognize each sound, and so on.

In this century of globalization where large companies rule the world, people must adapt to the changes that occur day by day. The language that now dominates the world is English. For being the language with proliferation on the planet, many people have needed to learn this important language. If people realize it, they have a different way of pronunciation, an accent that gives a variation to the language they want to speak. The English language is the language of the present and the future, which makes it essential to learn it (Roach, 2002). If people take the point into account about the variation of the pronunciation of the language, they will be able to give an idea that we must give importance to the way of pronouncing and knowing how to understand what other people tell us. Always trying to have good communication.

It is not difficult to imagine what the meaning of the word Phonetics is, but a clear and small definition must be shown for a good understanding. The word Phonetics, according to the Royal Academy of the Language, is defined as the “study about the sounds of one or several languages, whether in their physiology and acoustics”. The English language has progressively taken on importance at the international and in all areas (food, sports, music, politics, culture, etc.). It has been required to learn it to communicate with people

of other nations for different purposes that they seek. In schools, most teachers will be given the task of teaching the written language.

Now teachers can realize that this is not enough. Writing is important, but also the way we talk and speak the words. The sound of the words is very important. In English, according to Isabel Barrera Benítez (2009), there is not much relationship between morphemes and grapheme, that is, words will not be written as they are pronounced. As indicated by Luis Simón Sivori (2013), different types of sounds will be divided into vowel and consonant sounds. The sounds of language will be divided into vowels and consonants, where the fundamental difference among them is that: To articulate the vowels, no obstacle to the exit of the air (except for a certain position of the tongue and lips).

To articulate the consonants, some kind of obstacle will be interposed at the exit of the air, somewhere in the oral cavity. Vowel sounds: In the articulation of the vowel sounds three aspects will be evaluated: The height that the tongue takes, then the vowels will be High (or closed), Medium, and Low (or open). Location: If the tongue is forward, in the middle or, backward, then the vowels will be Anterior, Central, or Later. Depending on how the lips act, they will be: rounded vowels or not rounded (Dinnsen, 1992). As well as these, several variations must be taken into account in pronunciation. Since not being taken into account would result in a bad pronunciation and capture of the message.

Due to this, some sounds are very similar but not equal. One of the techniques that can be used when pronouncing is to get to oneself a series of exercises that modify the way of pronunciation. For, how difficult is it to pronounce English correctly? English, unlike Spanish, has a great diversity of sounds, many of which are not existing in Spanish (Strayer, 2012). As a consequence of this variation between languages, a new English speaker (for example Spanish speakers) tries to reproduce the sound that you hear based on one that resembles that of your mother tongue.

To get an understanding of English it is necessary to be careful with "dangerous sounds", those that come to resemble our language, the pronunciation of groups of sounds (vowels), put pronunciation into practice through short phrases, many allowed, refer to the dictionary to check the pronunciation and practice a little every day. These are some

recommendations that can improve the way people pronounce. Phonetics for good communication has taken great importance in the acquisition and learning of a foreign language (Duanmu, 2009). Since it allows the student to carry out an adequate pronunciation without falling into errors that impair understanding of the receiver.

In EFL (English as a Foreign Language) it is necessary that secondary students already have prior knowledge of phonemes and certain phonological aspects of English that allow good performance in the language (Gil & Vilches, 2006). So teachers work in this area and maintain an environment conducive to learning as a crucial point in all teaching. In the public, private or semi-private establishments the language teaching will be based on grammatical and cultural aspects, forgetting a fundamental part that is phonetics. Since English is not a language that is written as it sounds — as is Spanish — and for students, the world becomes difficult without having a guide when it comes to English phonemes such as the pronunciation of those words.

The classes, which are only based on grammatical-cultural aspects, cease to the oral production side and at the moment in which students have to produce, the pronunciation is poor. Losing the seriousness that the bouquet implies and falling into a mockery. What is more, many of the English classes will be taught in different languages, when taught in this way, the same teacher loses over time the correct pronunciation of English (Ortíz, 2020). An EFL teacher must consider phonetics as a very important part of their classes. Carrying out contrastive analyzes of the mother tongue with the Second Language. Besides, holding corrective phonetics workshops that will improve the pronunciation of the students.

To do that, it is important to focus the classes on points of support of the mother tongue to achieve an easier and deeper approach to the phonemes in the foreign language (Lemke, 2005). By maintaining a good classroom environment, students will be able to develop the language and practice pronunciation, since the teacher constantly speaking in English, and it allows learners to improve their receptive skills. As the teacher himself does not lose contact with the tongue and does not fall into embarrassing pronunciation errors, the pupil notice and can reproduce them in the future. Improving the level of students depends mainly on teachers, since good motivation, demonstration of professionalism, and command of the language make students have good language input.

1.4 Consonant Cluster

A consonant cluster (CC) likewise referred to just as a group, is a gathering of at least two consonant sounds that precede (beginning), after (coda), or between (medial) vowels (Dinnsen, 1992). Beginning consonant clusters may happen in two or three starting consonants, wherein three will be alluded to as Coda Consonant Cluster, while coda consonant groups can happen in two-to four-consonant gatherings.

In "The Routledge Dictionary of English Language Studies," writer Michael Pearce clarifies that the composed English language contains up to 46 reasonable two-thing initial consonant groups, going from the basic "st" to the more uncommon "sq," yet just nine passable three-thing consonant clusters (2018). Pearce shows the regular three-thing initial consonant in the accompanying words: "spl/split, /spr/spring, /spj/spume, /str/strip, /stj/stew, /skl/sclerotic, /skr/screen, /skw/squad, /skj/skua," wherein each word must begin with an "s" and be trailed by a voiceless stop, for example, "p" or "t".

Consonant groups happen normally in written and spoken English. Codas, the consonant bunches that end words, may contain up to four things, notwithstanding, they are regularly shortened in associated discourse if the consonant group is excessively long (Vázquez & López, 2016). This cycle, called consonant bunch simplification (or decrease) at times happens when in any event one consonant in an arrangement of adjoining consonants will be omitted or dropped. In ordinary discourse, for example, the expression "best boy" has to be articulated as "bes' boy," and "first time" will be articulated as "firs' time."

In spoken English, consonant groups will regularly shorten, normally to speed up or persuasiveness of discourse. People for the most part drop a rehashed consonant on the off chance that it happens toward the finish of a single word and again toward the start of the following. The cycle of the consonant cluster has no set standards, notwithstanding, it is kept by certain phonetic variables that restrain the activity of lessening such words (Harlen, 2009). Walt Wolfram, a sociolinguistic at North Carolina State University, clarifies that "as for the phonological climate that follows the group, the probability of

decrease will be expanded when the bunch will be trailed by a word starting with a consonant".

As portrayed by Lisa Green in "African American English: A Linguistic Introduction," consonant cluster decrease is frequently an instrument utilized in verse to drive comparable sounding words with various consonant endings to rhyme (2015). She noticed the strategy is incredibly normal in the wonderful raps of African Americans in the United States. Take for instance the words test and work area: While they don't frame an ideal rhyme in their unique structure, by utilizing consonant bunch decrease, the rhyme "Sittin' at my des', takin' my tes'" can be constrained through truncation.

To give a total image of the underlying (beginning) and last (coda) lusters in English, the accompanying sources have been thought about: (Giegerich, 1992) who examines consonant lusters as far as generative phonology, (Roach, 2002) whose investigation of conceivable phoneme blends depend on more conventional basic methodology, (Duanmu, 2009) who supplements Giegerich's and Roach's depictions of the phonotactic potential outcomes of English with the parts of Optimality Theory and gives the solid factual information, and one web source which offers the down to earth rundown of some consonant groups in English.

The word, for example, the syllable in English can start with a vowel, with one, two, or three consonants. No word in English starts with multiple consonants (Roach, 2002), accordingly, the greatest number of portions in the word-introductory consonant group is three. Toward the start of English words (syllables), there are 55 two-consonant groups. By and large, the primary component is /s/ and the subsequent consonant is approximant /l, r, w, j/ (Duanmu 2009).

CHAPTER II: METHODOLOGICAL DESIGN

2.1 Diagnostic

This research work collects parametric data which are presented in preliminary investigations to provide bibliographic material for the proper development of the investigation, performs the diagnosis, and analyze the reality of education linked to the application of the educational model flipped classroom for the improvement of the pronunciation of / st / consonant cluster, through the application of the Praat program which will help to obtain the necessary information to guide the taking decision-making, regarding the problem raised and the relationship between variables. The need to develop and apply a didactic model aimed at students for the best pronunciation of / st / consonant cluster in the fifth year of basic general education will be determined. Applying the following types of research in the development of this work.

Experimental research will be conducted in this project, where one set of variables will be held constant, while the other set of variables will be measured as the subject of the experiment. Hence, the research venture utilized experimental research with 37 students from the fifth year of basic education at Unidad Educativa “San Pio X”. The author isolated all the members into two gatherings: the experimental group with 19 students and the control group with 18. The two gatherings chipped away at producing /st/ consonant clusters. These pronunciation practices will be isolated into two formats: Wizer.me App (design 1) and traditional classes (design 2); each arrangement contained several exercises and innovative assets.

The experimental group utilized the Wizer me App and worksheets to deal with the pronunciation of the consonant clusters, while the control group utilized their English book (Cool Kids) and worksheets as well. This current investigation utilized a blend of field and bibliographic research. Field, because the investigator was in contact with the subject of the research. This sort of examination allowed us to investigate the issue of the fifth year of basic education at Unidad Educativa “San Pio X” and gather information. Likewise, this examination utilized bibliographic exploration because all the data depended on wellsprings of logical articles, ventures, web-instructive diaries, and other scholastic works.

The current research utilized a blended methodology, quantitative and qualitative. Quantitative since it introduced and utilized quantitative methods to get as exact outcomes as it tends to be conceivable. Also, this examination had a qualitative methodology since it searched for the comprehension of the realities presented by the utilization of a versatile application focused on the improvement of students' /st/ consonant cluster. Sparkles (2020), takes the view that exploratory research produces subjective information. It implies that this kind of research includes discussions between a researcher and individuals will be examined. Consequently, this research utilized exploratory examination because the information acquired by the tests will be isolated into two classes, qualitative and quantitative.

Additionally, this project inspected the unwavering quality between the application of the model and its reasonableness for additional researches. Descriptive research follows a process that includes the description, recording, analysis, and interpretation of the results. When applied to a group of people, encompasses the reality of a phenomenon and its fundamental characteristics. Then presenting a scientific interpretation, for descriptive research, it is essential to discover the most relevant characteristics in homogeneous sets. By using criteria that evidence and shows their structure or behavior. In this way, calculate the most relevant factors of the reality studied, as detailed in the analysis and interpretation of results.

2.2 Population

The members of this research were 37 students from the fifth year of basic education at Unidad Educativa "San Pio X". The current examination venture went on for 4 weeks where all the members got five meetings through Zoom (15 minutes for each meeting) with the teacher in each session.

Table 1

Population

Description	Students	
	Male	Female

Experimental Group	13	6
Control Group	12	6
Total	25	12

Source: Selfmade

Note. This table shows the total population with which the research will be carried out in the two groups.

The population is made up of students from the experimental and control groups, with 19 and 18 students respectively, of which 25 are boys and 12 are girls, this differentiation is made up because boys and girls have a different tone on voice and intonation and for the current research it is important to keep in mind. As it is a finite population of 37 and does not exceed the number of 100, the sample size is not calculated, and the total population or universe is used.

2.3 Instruments

A pre-test was applied to determine students' knowledge. This instrument will be adjusted based on consonant clusters. This assessment device will be applied to the two gatherings through zoom and by using the wizer.me app. The author planned the pre-test dependent on students' levels and needs. In the pre-test, the teacher selects 10 words from units 1, 2, and 5 where the presence of /st/ consonant cluster was evident (step, steel, store, sting, stage, stamp, stay, stun, stake, and stair). Students have not seen the previous words with practice, so once the words were ready, students will be recorded with no grades to determine if their pronunciation is correct or not. The worksheet's answers will be analyzed with the Praat program to detect the pronunciation.

A post-test to gauge students' degree of progress rather than the outcomes acquired in the pre-test. In the post-test, the teacher decided to evaluate the students using the Praat tool and provided the final results. The post-test was the same as the pre-test which considered the 10 words (step, steel, store, sting, stage, stamp, stay, stun, stake, and stair) to validate the pronunciation of the consonants. As in the pre-test, the words will be selected from

units 1,2, and 5 in which the presence of the / st / was evidence and which is the subject of study.

For the preparation of the pre-test, an analysis of the Cool kids' book will be carried out, specifically units 1,2, and 5, from which ten words will be obtained (step, steel, store, sting, stage, stamp, stay, stun, stake, and stair), which are of one syllable, also the Praat program will be used to analyze the phonemes of those words to determine whether there is the correct pronunciation of the consonants to study. The following analyses come from the results obtained in the test in which the 37 participants involved in this project answered. The principal objective of this test was to determine if the students answer correctly to certain questions based on consonant clusters.

The test contained one item where students need to record their answer to check if there is a correct pronunciation or not. Besides, it is important to mention that this survey will be validated by using the Cronbach's Alpha and applied to students via the Praat program and worksheet on wizer.me App, as table 2 shows.

Table 2

Cronbach's Alpha Case Processing Summary

		N	%
Casos	Válido	19	100,0
	Excluido ^a	0	,0
	Total	19	100,0

a. Delete by list is based on all variables in the procedure.

Reliability Statistics

Alfa de Cronbach	N de Elementos
,910	10

Source: Selfmade

Note. Test validation using Cronbach's Alpha. The closer to 1 it is to, the higher the degree of reliability

Reliability

- It can be defined as the stability or consistency of the results obtained
- That is, it refers to the degree to which the repeated application of the instrument, same subject or object, produces the same results

With this data, the researcher then, at that point, should choose how much the students need to know. Given instructive foundation and proficiency, various choices will be made. For instance, students learn best through centered modeling and imitation while they frequently need great portrayals (oral production) and clear clarifications to produce the words, for this reason, there are five steps to consider as follows.

1. The first, in instructing, is analysis. For those students who can benefit, instructors carry out a previous analysis of the exposure that students have to the study words. The treatment and the listening discrimination will be by providing oral, visual, and material delineations to raise student awareness.
2. Next, listening discrimination will be worked on utilizing centered listening exercises with input on the exactness of student insights. This is an essential advance in communicative skills since accurate listening appreciation is essential for at last accomplishing comprehensible oral production.
3. Guidance then, at that point, continues to control practice with feedback. This could include practice highlighting the stress of the words or different words with main consideration to the study words.
4. Guided practice includes the following stage, which may incorporate organized and informative activities that empower the student to manage. Gap filling exercises and prompted dialogs of different sorts function admirably at this phase of training.
5. At last, the communicative practice, where students take part in less organized

exercises that expect them to go principally to the content of their studies. This progression additionally comprises a test and empowers the educator to assess students' advances and decide the amount of practice they will be required.

The educator should move through every one of the five stages. In the case of listening is risky, additional time will be required for Step 2. In case of the production is complex and troublesome, adequate time should be committed to Steps 3 furthermore, 4 preceding continuing to 5. Educators in some research move rapidly to Step 5 and spend the most class time communicating. All this depends on the needs of the students, in this case, the teacher oversees following or spending time in one of the five phases for the benefit of the students and their performance.

The author gathered the information of the examination for a time of 4 weeks in the current scholastic year. The researcher separated all the members into two gatherings: the control and the experimental group. The members of the research had five meetings of 15 minutes with the researcher. In the first meeting, the author applied the pre-test to students to decide their insight into the English /st/ consonant cluster. Additionally, learners record their voices and pronounce a set of words as the pre-test shows (step, steel, store, sting, stage, stamp, stay, stun, stake, and stair) in the wizer.me app.

In the second meeting, control practice activities will be designed to re-enforce the specific language point such as crossword puzzles, word searches, gap-fill worksheets, and bingo in which the list of the consonant will be applied for each gathering to chip away the /st/ consonant cluster (designs 1 and 2). The first step was to present the list of words that the students will work with and pronounce. Second, once the words will be introduced, they were allowed to listen and recognize where / st / is well pronounced and where it is not. Third, with the collaboration of the teacher, they practiced the mentioned words, which served to describe images. In this way, they had a better vision of the words in question, where they could observe how important a correct pronunciation is to avoid broken communication.

For this, the researcher utilized an instructional exercise video about the wizer.me application. It is important to specify that each format contained five words identified in units 1, 2, and 5 from Cool kids' book. The experimental group worked on format 1 which

is the application of wizer.me app and the elaborated worksheets for the control practice, while the control group worked on format 2 which uses traditional classes. In the third meeting, students dealt with 4 worksheets (annexes) which were elaborated for control practice of the consonant cluster such as bingo, crossword puzzles, gap filling, where they identified and pronounce the /st/ words. The experimental group recorded their voices in the wizer.me app, while the control group performed the activities in their books.

In the fourth meeting, learners dealt with 4 more worksheets (annexes) about animals, puzzles, and games in which the /st/ consonant cluster will be used. On the last day, the author applied the post-test to the two gatherings to be analyzed and check if there is or is not an improvement in their pronunciation.

Table 3*Diagnostic Pre-test*

IS THERE A SOUND? Yes 1 No 0 GROUP: Experimental

Words Subject	stone	student	step	stage	stick	stem	stay	star	stomach	story
Student 1	1	0	0	0	0	0	0	0	0	0
Student 2	0	0	0	0	0	0	0	0	0	0
Student 3	1	1	1	1	1	1	1	1	1	1
Student 4	1	1	1	1	1	1	1	1	1	1
Student 5	0	0	0	0	0	0	0	0	0	0
Student 6	1	1	1	1	1	1	1	1	1	1
Student 7	0	0	1	1	1	0	1	0	0	0
Student 8	0	0	0	0	0	0	0	0	0	0
Student 9	1	0	0	0	0	1	1	0	0	0
Student 10	0	0	0	0	0	0	0	0	0	0
Student 11	0	0	0	1	1	1	1	1	1	1
Student 12	0	0	0	0	1	1	1	1	1	0
Student 13	0	0	0	0	0	1	1	0	0	0
Student 14	0	0	0	0	0	0	0	0	0	0
Student 15	1	0	1	0	1	0	0	1	1	0
Student 16	0	0	1	1	1	1	0	0	0	0
Student 17	0	0	0	0	1	1	1	1	0	0
Student 18	0	0	0	0	0	0	0	0	0	0
Student 19	0	0	0	0	0	1	1	1	0	0

Source: Selfmade

Note. The experimental diagnosis table is focused on determining if the pronunciation of the words is adequate or not, for this, values between 1 and 0 were given, with 1 being that there is a correct pronunciation and 0 not.

Table 4

Diagnostics Pre-test

IS THERE A SOUND? Yes 1 No 0 GROUP: Control

[illegible]

[illegible]

Source: Selfmade

Note. The control diagnosis table is focused on determining if the pronunciation of the words is adequate or not, for this, values between 1 and 0 were given, with 1 being that there is a correct pronunciation and 0 not.

Analysis

The table shows the spectra of the consonant [st] pronounced by boys and girls. Ten vocalic words will be extracted and analyzed, in them, it can be determined that the spectrograph shows that if there is a sound but the student when pronouncing the words tends to emphasize the phoneme / e / in each of them instead of correctly pronouncing the study phoneme / st / which shows that there is the interference of sounds between the mother tongue and the second language. A formant is the intensity peak in the spectrum of a sound. It is about the concentration of energy that occurs at a certain frequency.

In a speech, they are determined by the resonance filtering process that occurs in the vocal tract by the configuration of the articulators. The lowest frequency formant is called F1; the second, F2; the third, F3, and so on. In vowels, the first two formants are determined mainly by the position of the tongue. The presence of this sound causes a greater difference between the minimum and maximum values of F1 and F2. As a result, there is not a clear pronunciation of the consonants in the words recorded. As a result, there is no clear pronunciation of the consonants in the words recorded.

Table 5

Experimental and Control Group's Results

Items	Is there a sound?	
	Experimental	Control
1	6	12
2	3	12
3	6	12
4	6	12
5	9	13
6	10	13
7	10	11
8	8	11
9	6	12
10	4	12

Source: Selfmade

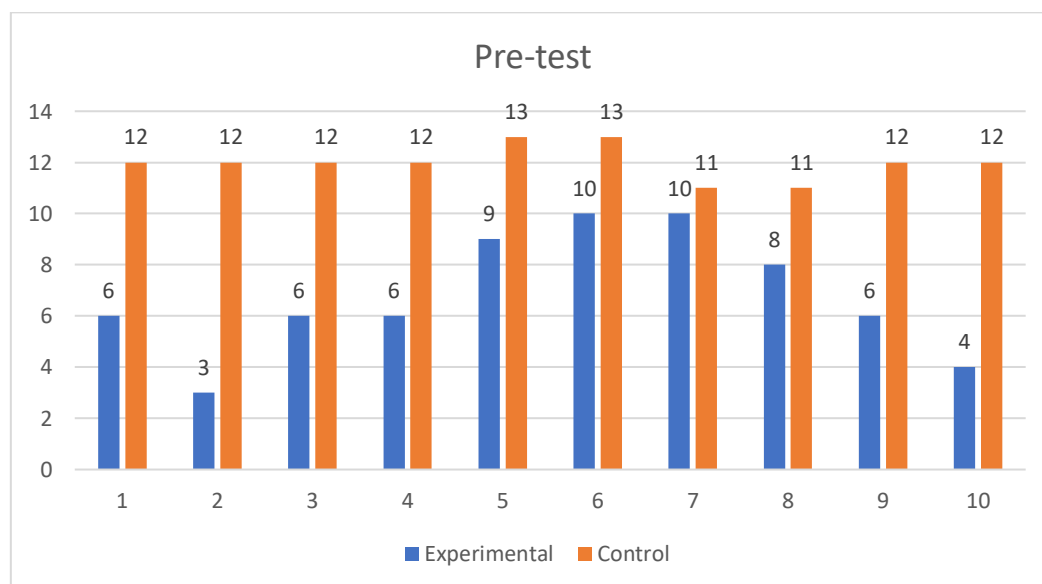
Note. The table shows the summarized values of the two research groups in the pre-test.

Analysis and Interpretation

The author used en vocalic words and analyzed them, the spectrograph shows that there is a sound but the student when pronouncing the words tends to emphasize the phoneme / e / in each of them instead of the correct pronunciation of the phoneme / st / which shows that there is the interference of sounds between the mother tongue and the second language, as a result, the consonants were not so representative this caused the difference between the minimum and maximum values of F1 and F2, so there is not a clear pronunciation.

Figure 1

Experimental and Control Group`s Results



Source: Selfmade

Note. The table shows the summarized values of the two research groups in the pre-test.

Analysis and Interpretation

The image shows how the values between the two research groups change among themselves, giving as a general result the improvement of the experimental group in the production of the consonant clusters by using the Praat program.

2.4 Proposal

The flipped classroom is essential for mixed discovery that utilizes procedures from personal instruction and virtual training (Zhang, Du, Yuan, & Zhang, 2016). This advances and the utilization of the class time improves the method of learning. In this methodology, part of the way toward learning will be taken outside the study hall. Learners will get the opportunity to become familiar with an exercise or take advantage of the subject to be examined in the coming class. At that point, inside the classroom students collaborate, even with the instructor to address questions in a conversation. At last, students complete a significant action with the previous information they have checked and with the direction of their instructor.

The flipped classroom is a student-focused methodology that intends to expand and develop learners' self-learning, where innovative freedoms upgrade the way toward learning. It is a student-focused learning strategy consisting of two sections with interactive learning activities during exercises and individual learning concerning technology outside the classroom (Vázquez & López, 2016). The flipped direction will center around students' self-sufficient learning by passing on the new content with their peers at home as a classroom. At that point, what is done at home will be talked about in class to practice with the instructor through a progression of inquiries all things considered orally or written that shows learners' perception of the subject.

Moreover, electronic resources should be executed in the exercise to build up students' improvement of learning (Tourón, Santiago, & Díez, 2014). For this situation, students will play an important role, which is to come to class having the necessary data to participate in conversations and do exercises with the class, including the instructor. Permitting the educator to utilize productively the time in class with them, making learning more participative. The instructor, for this situation, is a manual for help and backing students on the questions or issues, they may have during class time. The educator should help students to make learning significant, keep them spurred, offer a

protected environment for conversation, give them autonomy, create critical reasoning, be prepared to settle their questions, and give input.

Teachers will prepare, make or find any teaching material for instructing. During the class, tackle inquiries regarding the themes checked. Furnish students with exercises to tackle, predominantly in a synergistic manner. Discuss with them the subjects to be ready for assessment (Balseca, 2018). Students become the primary subjects of their learning by being dynamic students. At home, they accept the accountability to build their learning by doing the assignments they are approached to do and searching for more data if necessary. They exploit this, by learning at their speed. For instance, when they do not get something clarified in the material, they can rehash this part, again and again, to have everything clear.

Inside the classroom, students can ask for inquiries to be addressed by the instructor. Work together on the exercises identified in the materials provided by the teacher. Interact effectively with their schoolmates and instructor. Work individually, pair work, or in teams. Complete the exercises that they are approached to do, and give thoughts or answers on their own. Once the role that everyone will play inside and outside the classroom has been determined, it is time to share the activities that were carried out in the investigation. To develop correct pronunciation in the students, the teacher developed activities with which the students will use as a guide and thus be able to perfect the shortcomings they are faced with (Quiroz, 2017).

The teacher develops activities using a technological tool called wizer.me where the researcher made interactive sheets with which the students practiced and at the same time they could listen and record the answers requested by the teacher. Thanks to its gratuitousness, it is a widely distributed and easy-to-use free platform. It works through a web environment; therefore, it is possible to work the program on personal computers and even on smartphones. Based on these activities, the competencies that students will develop for the 21st century according to the author will favor students the development of creative thinking, abstract reasoning, computational thinking, problem-solving, autonomous learning, collaborative work, communication, Information, and Communicative Technology management, long-term learning as an effective tool to actively insert them into a highly programmed world that awaits them.

The wizer.me is a transversal tool that favors the effective teaching not only of English but of the rest of the areas of knowledge that continue the work at home and not only in the school classroom. At the end of the nine sheets, an evaluation page will be obtained that consists of the count of correct answers made by the student in each activity. In the same way, once the interactive program will be concluded, a screen for counting the correct answers appears, which constitutes the evaluation. The evaluation parameters are under the evaluation criteria, determined in the national education curriculum for the area of English as follows: Develop the personal, social, and intellectual skills necessary to reach their potential and participate productively in an increasingly globalized world that operates in other languages (Ministerio de Educación, 2016).

From sheet No. 3, the Praat program will be incorporated as a resource for assessing students' responses due to the poor scores obtained in the diagnostic test. Initially, the program will be socialized with the students; For this purpose, the software will be presented to them, the operation of the interface and content will be specified. Subsequently, they were motivated to use wizer.me to verify its effectiveness and make adjustments to the design, content, and methodological strategy before the execution of the final proposal; that is, to verify if the planned objectives will be achieved through the program. The previous adaptation made it possible for the students to practice and encourage them to check and learn. Once the relevant interface adjustments had been made, the proposal will be implemented.

The program wizer.me consists of nine sheets for solving /st/ consonant cluster pronunciation problems. Each sheet has ten words from the book units, with different degrees of difficulty. The interface of each sheet differs from one another to capture the child's attention and facilitate their use. For this, an activity will be requested to solve the puzzle, multimedia elements such as videos and music have also been inserted to make the work dynamic and attractive; At the end of each activity, students record their voices and send to the teacher, and then it is analyzed with the Praat program to indicate whether the answers have been passed. If the answers will not be passed, the student must recheck the activities to practice again and then needs to record and send one more time to assess it.

Figure 2
/st/ Animals' Vocabulary



/ST/ ANIMALS' VOCABULARY

MATCHING

Please, listen and match the sound with the correct animal.

PSDT: if you need help check this link <https://a-z-animals.com/animals/pictures/S/>

CHAPTER III: ANALYSIS OF THE RESULTS

3.1 Analysis of Results

In this chapter, the analysis and interpretation of the results obtained in the research will be developed, under the objectives and goals set through the scientific foundation and applying the different data collection instruments, information with relevance to the flipped classroom and its relationship with the/st/ consonant cluster pronunciation with students of the fifth year of basic education at Unidad Educativa "San Pio X"

3.2 Interpretation of the data

Once the research data will be obtained, they will be processed or tabulated to be subsequently analyzed and interpreted, for the tabulation of the results, the entire surveyed population had to be taken into account.

Table 6

Post-test

IS THERE A SOUND?	Yes	1	No	0	GROUP: Experimental
-------------------	-----	---	----	---	---------------------

[illegible]

[illegible]

Words Subject	stone	student	step	stage	stick	stem	stay	star	stomach	story
Student 14	0	1	1	1	1	1	1	1	1	1
Student 15	1	1	1	1	1	1	1	1	1	1
Student 16	1	1	1	1	0	1	1	1	1	1
Student 17	1	1	1	1	1	1	1	1	0	1
Student 18	0	1	1	1	1	1	0	1	0	0

Source: Selfmade

Note. The table shows the final results of the post-test of the control group. Once the tabulation of the collected data was made, the results were analyzed and presented, as mentioned above the test was measured with parameters of yes and no, where 1 represents that there is the correct pronunciation of the word and 0 otherwise represents the absence of the pronunciation, resulting in the table with those values.

Analysis

Ten vocalic words were extracted, once the methodology was applied, it can be seen in the spectrograph that the words will be pronounced correctly, emphasizing the / st / phoneme and reducing the /e/ completely. Through the application of the flipped classroom, the students improved significantly. Regarding the distribution of these values in the graph, the whole words are well pronounced. The different vocal sounds identified in this child accentuate the difference between the pre-test and post-test. It shows the minimum and maximum values of both F1 and F2 of the two tests, where is a clear improvement in the pronunciation of the words. For this purpose, the Praat program was applied where the sound was analyzed and the spectrogram showed the values of the formants, which highlight a correct pronunciation of the study words, values between 1 and 0 were given where 1 represents the correct pronunciation of the word and 0 the absence of it. Once the analyzes had been carried out, the statistical data was interpreted and the final results were presented.

Table 8

Results of the Experimental and Control Groups

Post-test	Items	Experimental	Control
	1	14	12
	2	14	14
	3	15	16
	4	16	15
	5	16	13
	6	18	15
	7	16	15
	8	15	15
	9	15	13
	10	13	15

Source: Selfmade

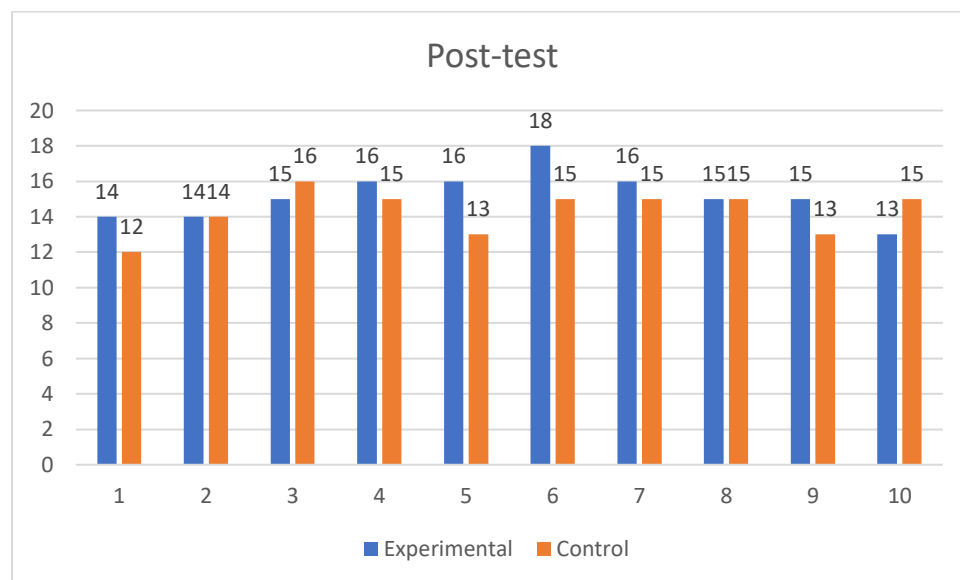
Note. the table shows the summary values of the two research groups

The author analyzed ten words, the spectrograph shows the correct pronunciation, emphasizing the / st / phoneme where through the application of the flipped classroom the students improved significantly. In addition, it could be observed that the interference of the mother tongue does

not extend, which is favorable for the production of the words and results in an adequate pronunciation.

Figure 3

Post-test Results of the Experimental Group



Source: Selfmade

Note. Results of the Post-test of the Experimental and Control Group.

Analysis and Interpretation

The results of the post-test show better results were in the experimental group, highlighting a great difference between the pre and post-test in that group. Since the phoneme / st / was better pronounced leaving aside the / e / marked in the pre-test. On the other hand, it can be noted that in the control group the application of the flipped classroom does not affect. Students improved their pronunciation while maintaining the traditional class. As a final result, the applied methodology helps to improve pronunciation in students with a higher degree of difficulty.

3.3 Hypothesis Verification

For the verification of the hypothesis in the present research work, the data was done through the package statistical IBM-SPSS Statistics, to determine the relationship between the investigative variables.

Logic Model

Hi: There is a significant relationship between the flipped classroom and the /st/ consonant cluster pronunciation in students in the 5th year of basic education of the Unidad Educativa "San Pio X".

Ho: There is not a significant relationship between the flipped classroom and the /st/ consonant cluster pronunciation in students in the 5th year of basic education of the Unidad Educativa "San Pio X".

Statistic Model

$$rR = 1 - \frac{6\sum d_i^2}{n(n^2 - 1)}$$

Where

$$p = 1 - (6 \cdot 330) / (10(100 - 1))$$

$$p = 1 - 1980 / 990$$

$$p = 1 - 2$$

$$p = -1$$

$$\text{Critic value} = 0,564$$

The Spearman Coefficient, ρ , can take a value between +1 and -1 where,

- A value of +1 ρ means a perfect rank association
- A value of 0 ρ means that there is no association of ranges
- A value of -1 ρ means a perfect negative association between the ranges.

In the present investigation, the Spearman correlation coefficient for these data is -1 and as mentioned above if the value ρ is close to +1 or -1 then they have a perfect association of rank.

Table 9

Statistics for a sample

	N	Media	Desv. Desviación	Desv. Error promedio
Flipped Classroom	19	2,74	,991	,227
Consonant Cluster	19	2,16	,898	,206

Test for a sample

Valor de prueba = 0						
	t	gl	Sig. (bilateral)	Diferencia de medias	95% de intervalo de confianza de la diferencia	
					Inferior	Superior
Flipped Classroom	12,036	19	,000	2,737	2,26	3,21
Consonant Cluster	10,470	19	,000	2,158	1,72	2,59

Source: Selfmade

Note. The tables show the statistical values of the two study variables with their respective margin of confidence.

Table 10

Kolmogorov-Smirnov test for a sample

		Flipped Classroom	Consonant Cluster
N		19	19
Normal Parametres ^{a,b}	Average	2,74	2,16
	Desv. Desviación	,991	,898
Máximas diferencias extremas	Absolute	,192	,201
	Positive	,192	,201
	Negative	-,184	-,194
Estadístico de prueba		,192	,201
Sig. asintótica(bilateral)		,062 ^c	,041 ^c

a. The test distribution is normal.

b. It is calculated from data.

c. Lilliefors significance correction.

Source: Selfmade

Note. The table shows the verification of the hypothesis with the Kolmogorov-Smirnov test for a sample.

This table shows that the value of sig, asymptotic (bilateral) is less than 0.05, so the null hypothesis is rejected and the alternative hypothesis is accepted with a 95% confidence level, which establishes that there is a significant relationship between the flipped classroom and the /st/ consonant cluster pronunciation in students in the 5th year of basic education of the Unidad Educativa "San Pio X".

Table 11

Parametric Correlation

		Flipped Classroom	Consonant Cluster
Flipped Classroom	Pearson's Correlation	1	,611**
	Sig. (bilateral)		,005
	N	19	19
Consonant Cluster	Pearson's Correlation	,611**	1
	Sig. (bilateral)	,005	
	N	19	19

** The correlation is significant at the 0.01 level (bilateral).

Source: Selfmade

Note. The table shows the results of the parametric correlation of the variables.

Table 12

Nonparametric Correlations

			Flipped Classroom	Consonant Cluster
Rho de Spearman	Flipped Classroom	Coeficiente de correlación	1,000	,600**
		Sig. (bilateral)	.	,007
		N	19	19
	Consonant Cluster	Coeficiente de correlación	,600**	1,000
		Sig. (bilateral)	,007	.
		N	19	19

** The correlation is significant at the 0.01 level (bilateral).

Source: Selfmade

Note. The table shows the values of the nonparametric tests of the study variables.

The tables show the correlations from the point of view of Pearson and Spearman where at the end of the investigation it is shown that the value of $p = 0.007$, which accept the validity of the alternative hypothesis which establishes the relationship between the Flipped Classroom and the /st/Consonant Cluster pronunciation and therefore reject the validity of the null hypothesis.

CONCLUSIONS

The flipped classroom is a blended or blended learning modality. This type of learning aims to use two strategies, the face-to-face and the virtual one, taking the best of them. It is a pedagogical model that helped to raise the need to transfer part of the teaching and learning process outside the classroom. By using class time for the development of more complex cognitive processes that favor meaningful learning, in this case, the development of the /st/ consonant cluster pronunciation.

Once the results have been presented, the author refers below to the conclusions that she has been able to draw from the development of this study:

1. Although the author focused on the correct pronunciation of the consonants / st / with a group of 37 students belonging to the fifth year of education, the author determined that the order of appearance of the consonants depends on two factors: the articulatory factor and the linguistic or environment language. On the one hand, the articulatory criterion establishes that the consonants that are articulated with greater ease will appear before those that are produced with greater difficulty. The frequency of appearance of a certain sound in the ambient language can determine the order of their acquisition.
2. The values of the formants of the post-test of the consonants analyzed in the fifth-year students of basic education far exceed those of the pre-test. This difference was found after comparing the formant values obtained in the subjects with the media values established. The main reason for this dissimilarity lies in the particular anatomical configuration of the vocal tract of the students and the characteristics of its different structures.
3. The articulation of most of the consonants sounds produced by the students were in the anterior part of the oral cavity and have, at least initially, a medium and low height. Again, establishing a coincidence with the results obtained in other languages. This conclusion follows the consonants in the formant letters, as well as the results of the post-test, where the observation of a higher frequency of consonants was visible.

RECOMMENDATIONS

Before concluding this research, the author intends to leave on the table some recommendations and questions as follows, how this work has been able to contribute to the literature about the acoustic study of the consonants of students who learn a language. To what extent its data is representative, what other variables would need to be studied to have a more complete vision of children's acoustics, or what are their possible applications are.

1. Regarding the contribution of the same research on the acoustic investigation of the consonants sounds emitted by students, this work has helped to better understand the questions such as the reason for the presence of certain consonants, the causes of the late appearances of some of them or the reasons why the formant values do not undergo significant changes in childhood. On the other hand, the fact that all hypotheses have been corroborated in the English language. It endows this research with a character of universality that translates into a step forward in the understanding of consonant development in students regardless of the language they speak.

2. Within the small number of works that study the phonetic component throughout the process of acquisition of the English language, the acoustic analysis of the formants of the consonants of students recorded and studied during the present period should be highlighted, therefore this contribution is notorious since it constitutes the foundations of any subsequent research in the field of English language teaching at the same time that it opens and facilitates the way for future researchers in this area.

3. Finally, this study is very useful since, according to (Dinnsen, 1992), the information regarding the variation in the phonetic inventories of the phonological systems of development is a necessary step to establish any acquisition theory.

BIBLIOGRAPHY

- Abenza, L. (2010). Evaluar para aprender: hacia una dimensión comunicativa, formativa y motivadora de la evaluación. . *Enseñanza de las ciencias: revista de investigación y experiencias didácticas*,, 285-292.
- Balseca, A. (2018). *Metodología Aula Invertida (Flipped Classroom) en la producción del conocimiento. (Tesis de Posgrado)*, Universidad Técnica de Ambato. Ambato.
- Bergmann, J., & Sams, A. (2012). Dale la vuelta a tu clase. España. SM.
- Calvillo, A. (2014). El modelo Flipped Learning aplicado a la materia de música en el cuarto curso de Educación Secundaria Obligatoria: una investigación-acción para la mejora de la práctica docente y del rendimiento académico del alumnado.
- Dinnsen, A. (1992). Variation in developing and fully developed phonologies. *Tork Press*, 191-210.
- Duanmu, S. (2009). Syllable structure: The limits of variation. *Oxford University Press*.
- Fernandes, I., Pires, D., & Delgado-Iglesias, J. (2018). ¿Qué mejoras se han alcanzado respecto a la Educación Científica desde el enfoque Ciencia-Tecnología-Sociedad-Ambiente en el nuevo Currículo Oficial de la LOMCE de 5º y 6º curso de Primaria en España? *Revista Eureka sobre Enseñanza y Divulgación de las Ciencias* 15(1), , 1101.
- Galindo, J., & Badilla, M. (2016). *Innovación docente a través de la metodología flipped classroom: percepción de docentes y estudiantes de educación secundaria*.
- Gaviria, J. (2014). El papel de la investigación académica sobre la mejora de las políticas y de las prácticas educativas. . *Participación educativa*, 3(5), 43-50., 43-50.
- Giegerich, H. (1992). *English Phonology: An Introduction*.
- Gil, D., & Vilches, A. (2006). ¿Cómo puede contribuir el proyecto PISA a la mejora de la enseñanza de ciencias (y de otras áreas de conocimiento)? *Revista de Educación*,, 295-311.
- González, D., Jeong, J., Cañada, F., & Gallego, A. (2017). La enseñanza de contenidos científicos a través de un modelo Flipped: Propuesta de instrucción para estudiantes del Grado de Educación Primaria. *Enseñanza de las Ciencias*, 35(2), 71-87.
- Hamdan, N., McKnight, P., McKnight, K., & Arfstrom, K. M. (2013). A white paper based on the literature review titled a review of flipped learning. *Flipped Learning Network*, 1-15.

- Harlen, W. (2009). Teaching and learning science for a better future. The Presidential Address 2009 delivered to the Association for Science Education Annual Conference. . *School Science Review*, 333, 33-41.
- Johnson, L., Adams, S., Estrada, V., & Freeman, A. (2015). NMC Horizon Report: 2015 K-12 edition, Austin, Texas: *The New Media Consortium*.
- Lemke, J. (2005). Research for the future of science education: new ways of learning, new ways of living. *Ponencia presentada al VII Congreso Internacional sobre Investigación en Didáctica de las Ciencias*.
- Llanos, G., & Bravo-Agapito, J. (2017). Flipped Classroom como puente hacia nuevos retos en la educación primaria. *Revista Tecnología, Ciencia y Educación*, (8), 39-49.
- Martín, D., & Campión, R. S. (2015). ¿Es el flipped classroom un Modelo Pedagógico eficaz? *Comunicación y pedagogía: Nuevas tecnologías y recursos didácticos*, 29-35.
- Martín, D., & Tourón, J. (2017). El enfoque flipped learning en estudios de magisterio: percepción de los alumnos. . *RIED. Revista Iberoamericana de Educación a Distancia*, 20(2), 187-211.
- Ministerio de Educación. (2016). *Ministerio de Educación*. Retrieved from <https://educacion.gob.ec/curriculo-lengua-extranjera/>
- Nielsen, L. (2012). Five reasons I'm not flipping over the flipped classroom. . *Technology & Learning*, 46-46.
- Núñez, A., & Gutiérrez, I. (2016). Flipped learning para el aprendizaje de inglés en educación primaria. . *Revista Electrónica de Tecnología Educativa*, (56), 89-102.
- OCDE. (2015). Making Reforms Happen. Growing and sustaining innovative learning environments. *Education Policy Outlook 2015*, 137-153.
- Ojando, E., Simón, K., Prats, M., & Avila, X. (2016). Experiencia de Flipped Classroom en tres escuelas de educación primaria de Barcelona. . *Comunicación y Pedagogía: Nuevas Tecnologías y Recursos Didácticos*, (285-286), 53-58.
- Ortíz, T. I. (2020). *Modelo de Aula Invertida para el aprendizaje de la materia de Derechos Humanos en la carrera de Derecho de la Universidad Central del Ecuador. (Tesis de Posgrado)*, Universidad Regional Autónoma de los Andes. Ambato.
- Quiroz, J. (2017). *Aplicación de la estrategia del aprendizaje basado en equipos en el modelo educativo de la clase inversa para desarrollar los procesos cognitivos en los estudiantes de educación secundaria. (Tesis de Posgrado)*, Universidad de Piura.
- Roach, P. (2002). *Introduction to Language Study: Phonetics*. Oxford: Oxford University Press.

- Roach, P. (2002). *Peter Roach's English phonetics and phonology: a practical course (3rd edition)*. Cambridge: Cambridge University Press.
- Romero, V. F. (2018). *Implementación de la estrategia Aula Invertida para disminuir el índice de tareas no entregadas a tiempo. (Tesis de Posgrado), Universidad Nacional de Educación, Azogues.*
- Schmidt, S., & Ralph, D. (2016). The flipped classroom: a twist on teaching. *Contemporary Issues in Education Research (Online)*, 9(1), 1-6, 1-6.
- Shu-Yuan, T., Yun-Hsuan, H., & Mei-Jia, T. (2016). Applying the flipped classroom with game-based learning in elementary school students English learning. . *Proceedings of the International Conference on Educational Innovation through Technology*, 59-63.
- Strayer, J. (2012). How learning in an inverted classroom influences cooperation, innovation and task orientation. . *Learning Environments Research*, 15(2), 171-193.
- Strieder, R., Bravo, B., & Gil, M. (2017). Ciencia-tecnología-sociedad: ¿Qué estamos haciendo en el ámbito de la investigación en educación en ciencias? . *Enseñanza de las Ciencias*, 29-49.
- Torrecilla, S. (2018). Flipped Classroom: Un modelo pedagógico eficaz en el aprendizaje de Science. *Educación CTS / Educação CTS*, 9-22.
- Tourón, J., Santiago, R., & Díez, A. (2014). The Flipped Classroom: Cómo convertir la escuela en un espacio de aprendizaje. *Grupo Océano*.
- Tourón, J., Santiago, R., & Díez, A. (2014). The Flipped Classroom: Cómo convertir la escuela en un espacio de aprendizaje. Barcelona. *Barcelona: Grupo Océano*.
- Tucker, B. (2012). The flipped classroom. *Education Next*, 82-83.
- Vázquez, S., & López, S. (2016). Escuela, TIC e innovación educativa. . *Digital Education Review*, 248-261.
- Zainuddin, Z., & Halili, S. H. (2016). Flipped classroom research and trends from different fields of study. . *The International Review of Research in Open and Distributed Learning*, 17(3), 313-340.
- Zhang, H., Du, X., Yuan, X., & Zhang, L. (2016). The Effectiveness of the Flipped Classroom Model on the English Pronunciation Course. *Creative Education*, 3-6.

ANNEXES

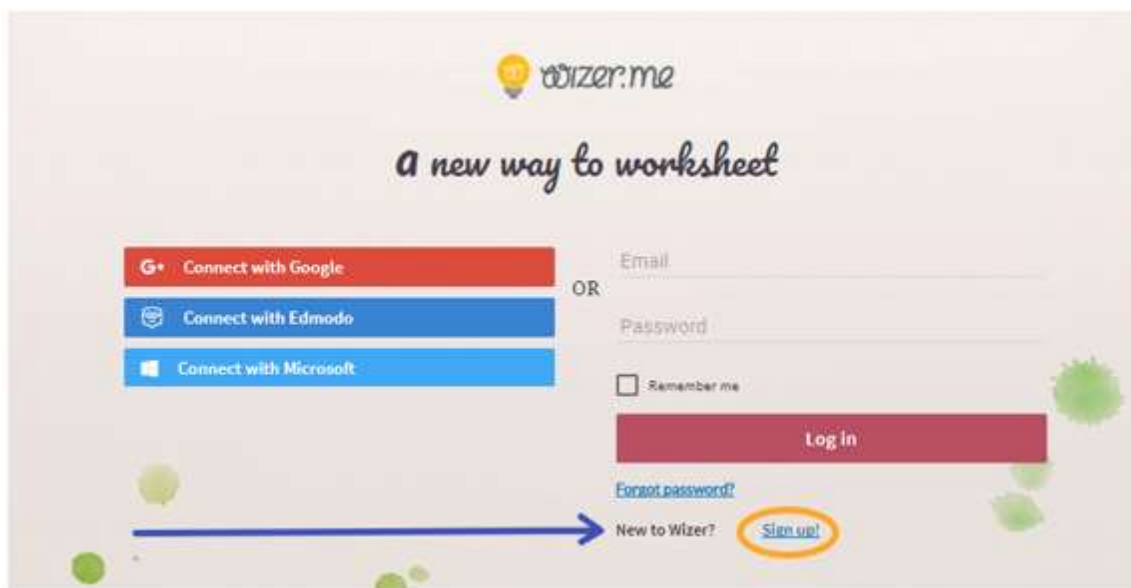
Annex 1: Activities

Figure 4

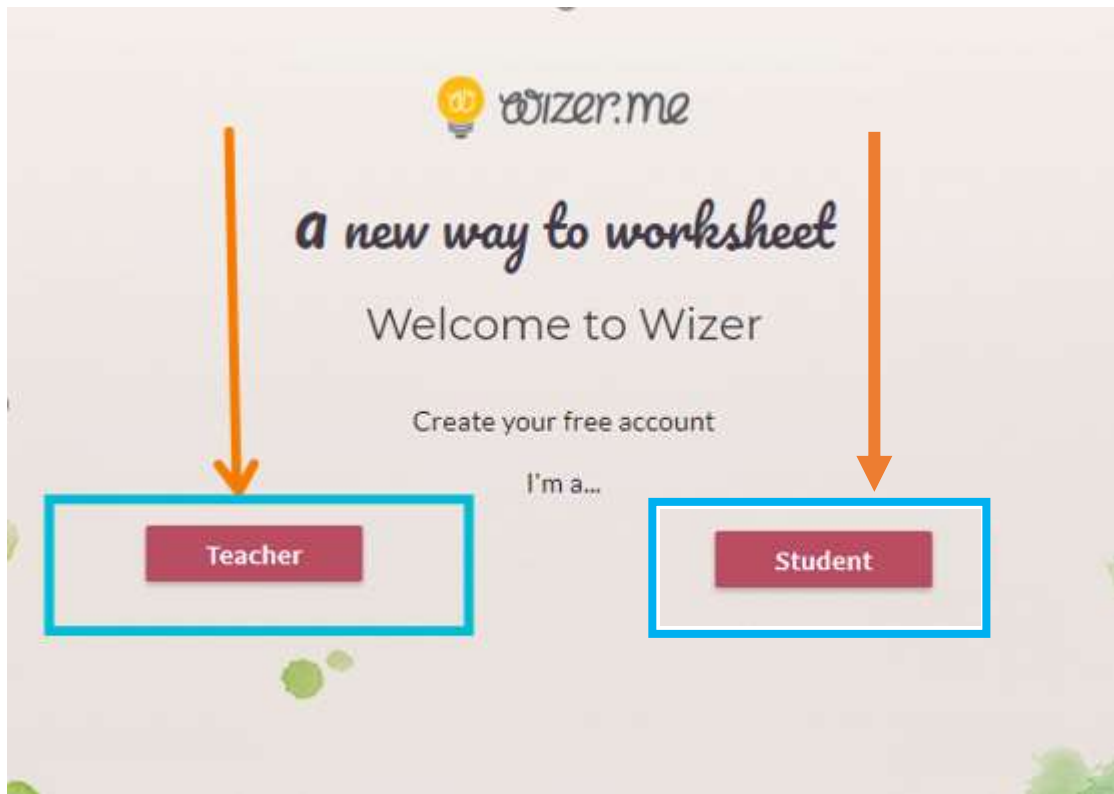
Wizer.me Instructions



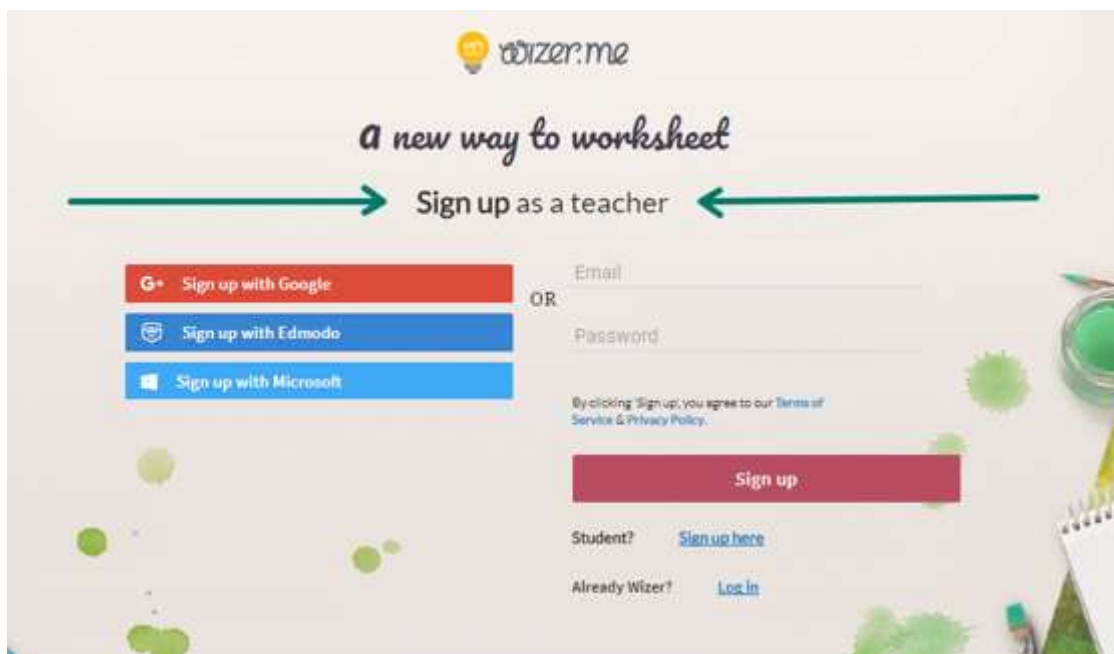
2. Click on Sign Up



3. Click on "Teacher or Student, it depends on your role"



4. Create an account using an email and create a password (be sure to record your password).



Source: Selfmade

Note. The images show the process to create an account step by step in the application

Figure 5*Pre-test, Evaluation*

EVALUATION

SET POINT VALUE (2) ...

RECORD YOUR VOICE AND PRONOUNCE THE FOLLOWING WORD CORRECTLY

STEP

B

U

T

🔥

😊

🖼️

🔗

📌

Ω

x_2

x^2

↶

↷

✍️

Write your answer...

Answer recorder (optional) -  Voice

SET POINT VALUE (2)

...

RECORD YOUR VOICE AND PRONOUNCE THE FOLLOWING WORD CORRECTLY

STEEL

B	<u>U</u>	Tt	•	☺	🖼️	🔗	↩	Ω	x ₂	x ²	↺	↻	✍
Write your answer...													

Answer recorder (optional) -  Voice

SET POINT VALUE (2)

...

RECORD YOUR VOICE AND PRONOUNCE THE FOLLOWING WORD CORRECTLY

STORE

B	<u>U</u>	Tt	•	☺	🖼️	🔗	↩	Ω	x ₂	x ²	↺	↻	✍
Write your answer...													

Answer recorder (optional) -  Voice

SET POINT VALUE (2)

...

RECORD YOUR VOICE AND PRONOUNCE THE FOLLOWING WORD CORRECTLY

STING

B	<u>U</u>	Tt	•	☺	🖼️	🔗	↩	Ω	x ₂	x ²	↺	↻	✍
Write your answer...													

Answer recorder (optional) -  Voice

SET POINT VALUE (2) ***

RECORD YOUR VOICE AND PRONOUNCE THE FOLLOWING WORD CORRECTLY

STAGE

B U T       x_2 x^3   

Write your answer...

Answer recorder (optional) -  Voice

Source: Selfmade

Note. The images show how the assessment test was developed for the students by using the Wizer.me

Figure 6*/st/ Consonant Cluster*

/ST/ CONSONANT CLUSTER

PLEASE CLICK HERE [HTTPS://WWW.YOUTUBE.COM/WATCH?V=YqKWW2PVDCQ](https://www.youtube.com/watch?v=YqKWW2PVDCQ)

Hi, students, Please, watch the following video and repeat the words correctly.

RECORD YOUR VOICES WHILE REPEATING THE FOLLOWING WORDS.

Record your voices, repeat the words, save your recordings.

WORDS

- Stomach
- Stop
- Stomp
- Strawberry
- Storm
- Stickers

Write your answer...

Answer recorder (optional) - Voice

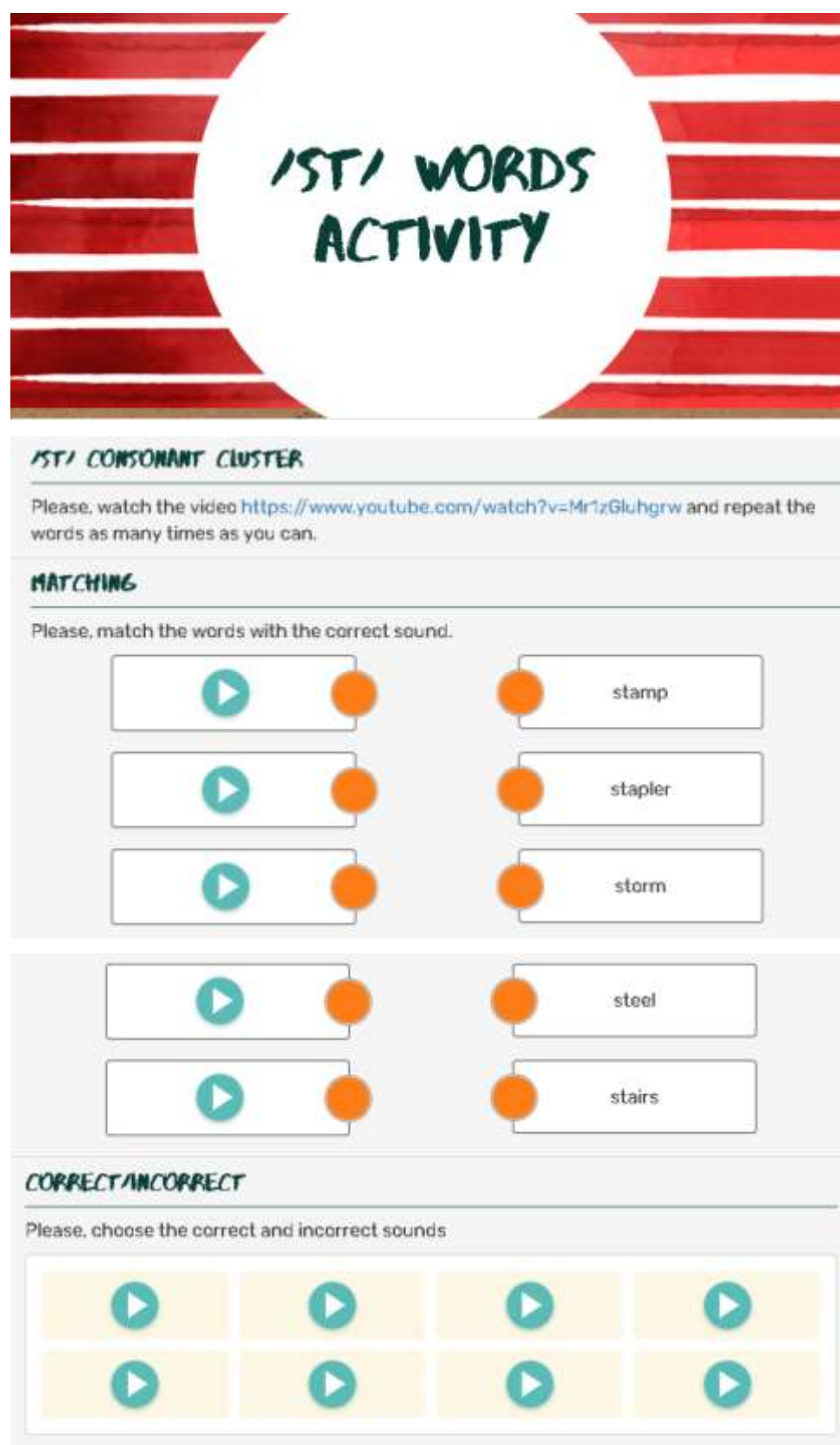
Source: Selfmade

Note. The images show the list of words with which the students will practice recording themselves when they are pronounced.

On this sheet the students must watch a video on YouTube, which shows a variety of words with the pronunciation of a native speaker, it explains the correct way to pronounce the words, once this activity is done, the students must record the listed words and send the teacher for evaluation.

Figure 7

Words Activity



1ST/ WORDS ACTIVITY

1ST/ CONSONANT CLUSTER

Please, watch the video <https://www.youtube.com/watch?v=M1zGluhgrw> and repeat the words as many times as you can.

MATCHING

Please, match the words with the correct sound.

			stamp
			stapler
			storm
			steel
			stairs

CORRECT/INCORRECT

Please, choose the correct and incorrect sounds

INCORRECT

CORRECT

ORAL SECTION

Please, choose 5 /ST/ words and record your voices.

B U T[•]

Write your answer...

Answer recorder (optional) - Voice

Source: Selfmade

Note. The images show the activities that the students must carry out using audio from the YouTube platform.

On sheet 4 the teacher provides a video on YouTube which is used to practice the pronunciation of the study word, once this activity is done the students must match the audio with the words to which they belong, finally, they must choose five words and record themselves for their evaluation.

Figure 8

Get Fun /st/



GET FUN /ST/

FIND /ST/ WORDS

Please, find the /st/ words you have in the crossword puzzle.

Circle them with different colors

Do it, here! in WIZER.ME

DO NOT PRINT THE PAPER.

Find the Words That Begin With st

Find the hidden words. The words are horizontal, vertical or diagonal.

l	a	i	s	p	v	n	s	s	m	n
z	v	p	n	t	y	f	f	f	l	g
l	c	d	g	a	e	p	a	u	q	e
y	p	p	v	i	s	r	q	f	r	m
s	d	s	o	e	e	b	s	t	u	n
t	s	u	t	i	n	s	t	a	y	s
i	t	y	t	o	z	d	s	r	t	e
c	a	u	r	s	v	t	a	u	i	o
k	m	i	r	o	e	n	c	z	t	y
p	p	y	f	n	t	g	s	t	o	p
h	k	r	e	y	x	s	x	s	t	a

[illegible]

ST BINGO.

Cross out the words you will listen

Source: Selfmade

Note. The activities presented are based on games that help students study words such as puzzles and bingo.

The previous sheets work together since they are a kind of game that will develop the critical thinking of the students, the activities focus on listening to words which they must look for in a puzzle and a bingo, after these students must select words and record them for evaluation.

Figure 9*Get Fun with Pictures*

GET FUN WITH PICTURES

PLEASE, RECORD YOUR VOICE WHILE SAYING THE NAME OF EACH PICTURE.



Write your answer...

Answer recorder (optional) - Voice

PLEASE, RECORD YOUR VOICE WHILE SAYING THE NAME OF EACH PICTURE.



Write your answer...

Answer recorder (optional) - Voice

PLEASE, RECORD YOUR VOICE WHILE SAYING THE NAME OF EACH PICTURE.



B U T L A O W F Y G O X P C E

Write your answer...

Answer recorder (optional) -  Voice

PLEASE, RECORD YOUR VOICE WHILE SAYING THE NAME OF EACH PICTURE.



B U T L A O W F Y G O X P C E

Write your answer...

Answer recorder (optional) -  Voice

PLEASE, RECORD YOUR VOICE WHILE SAYING THE NAME OF EACH PICTURE.



B U T L A O W F Y G O X P C E

Write your answer...

Answer recorder (optional) -  Voice

PLEASE, RECORD YOUR VOICE WHILE SAYING THE NAME OF EACH PICTURE.



Write your answer...

Answer recorder (optional) - Voice

PLEASE, RECORD YOUR VOICE WHILE SAYING THE NAME OF EACH PICTURE.



Write your answer...

Answer recorder (optional) - Voice

PLEASE, RECORD YOUR VOICE WHILE SAYING THE NAME OF EACH PICTURE.



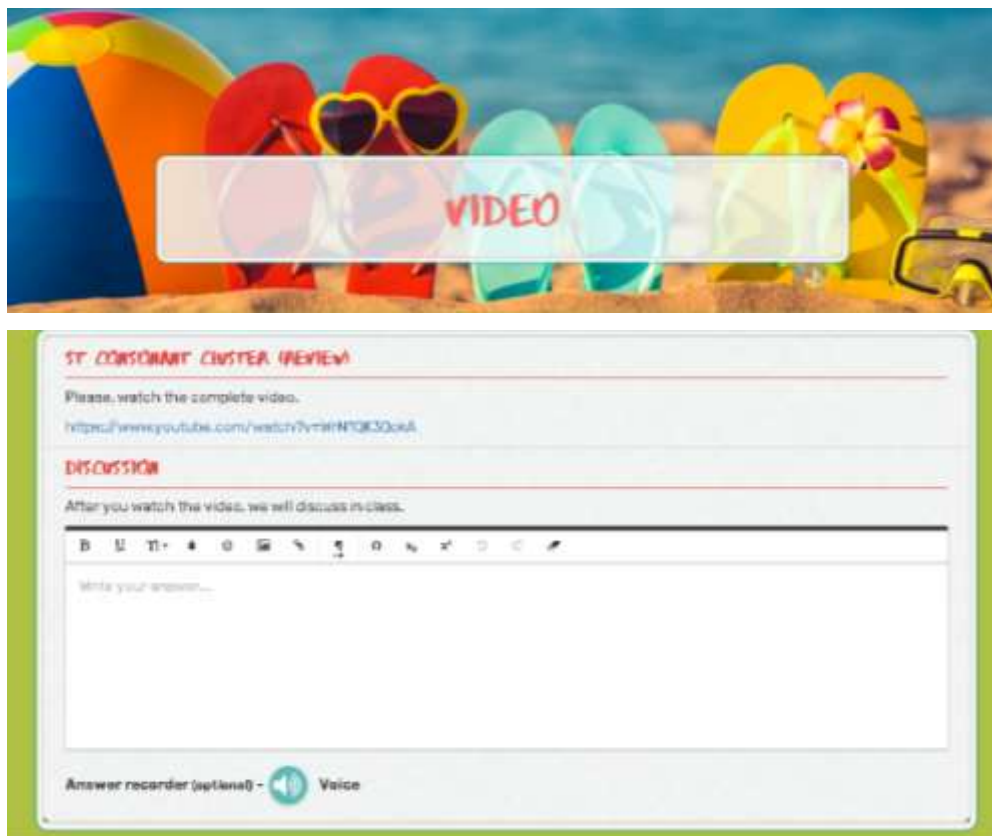
Write your answer...

Answer recorder (optional) - Voice

Source: Selfmade

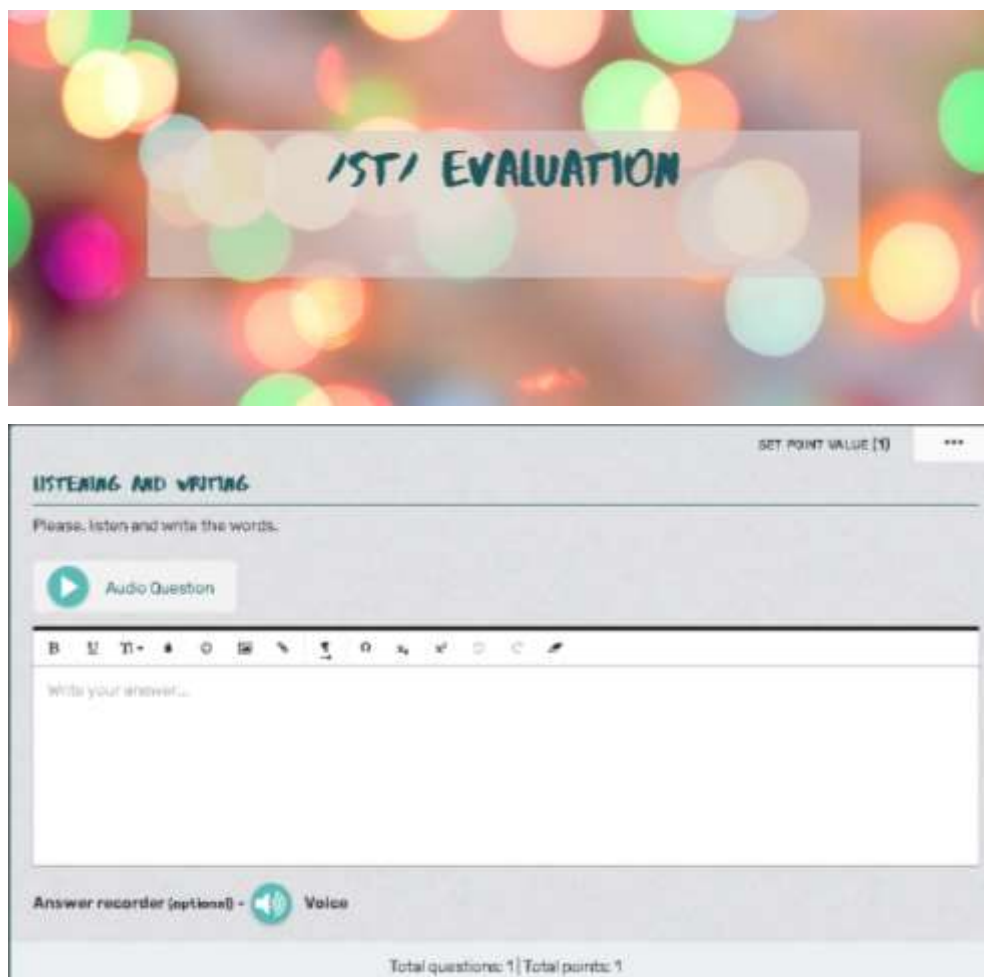
Note. The activities focus on the production of the words in which the students record their voices saying the study words.

This activity proposes that the students look at the images and record themselves at the moment of saying what they represent, as the students have already been reviewing the words in previous activities, they will be ready to be able to describe the images.

Figure 10*Video**Source:* Selfmade

Note. This activity presents a review of the topic to be investigated where students must watch a video and conduct a discussion in class.

Activity 8 is based on watching a video posted on YouTube, which will serve as a review of all the lessons reviewed during the research project, that video is a reinforcement for the final evaluation which will include all the words studied where the students will put to test its effectiveness when speaking.

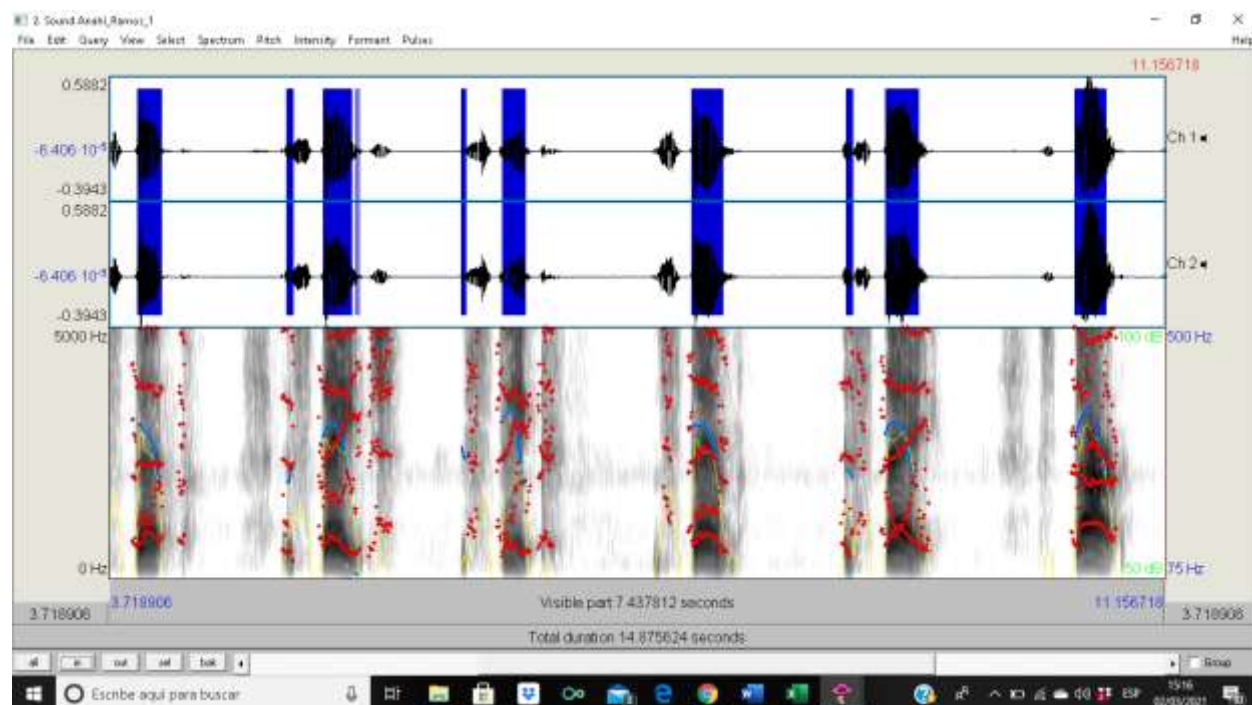
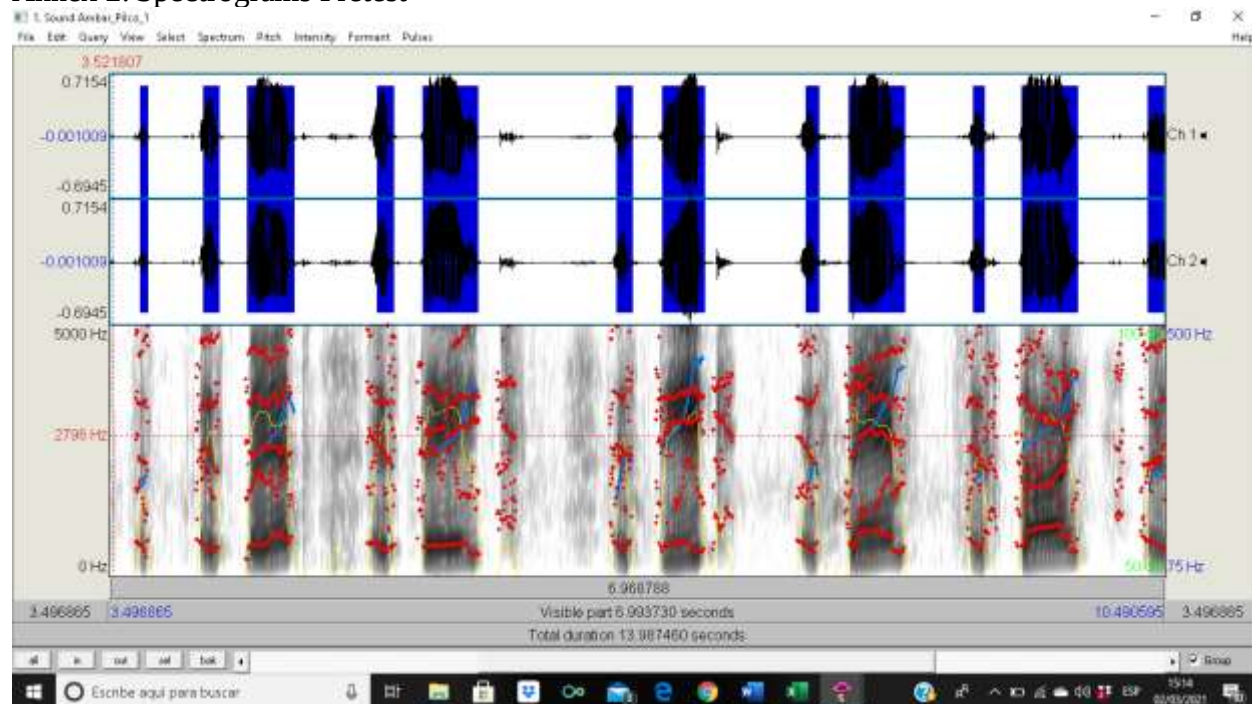
Figure 11*/st/ Evaluation*

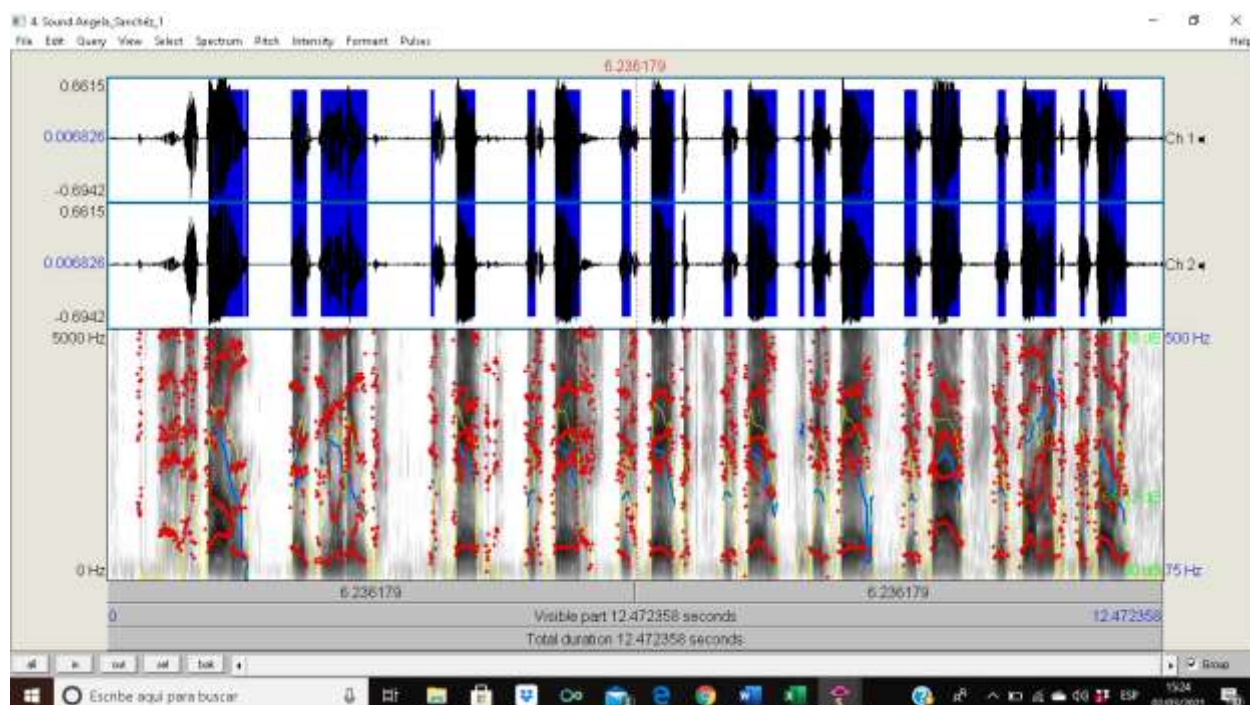
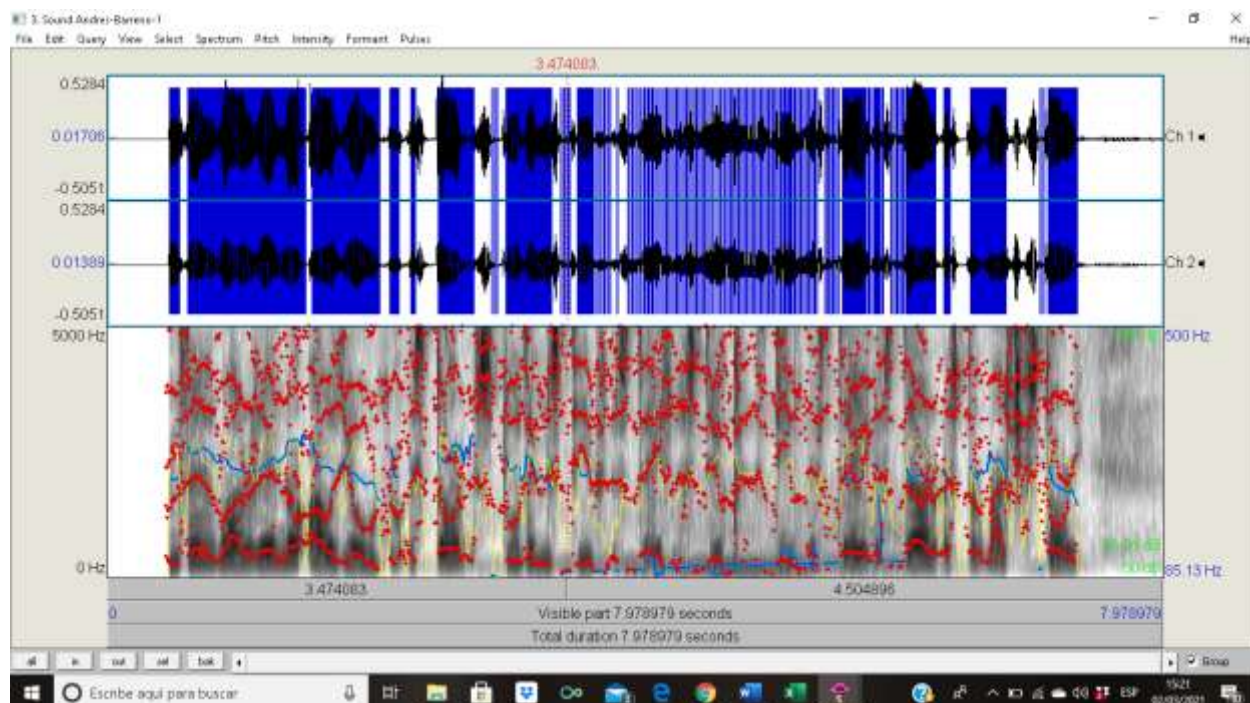
Source: Selfmade

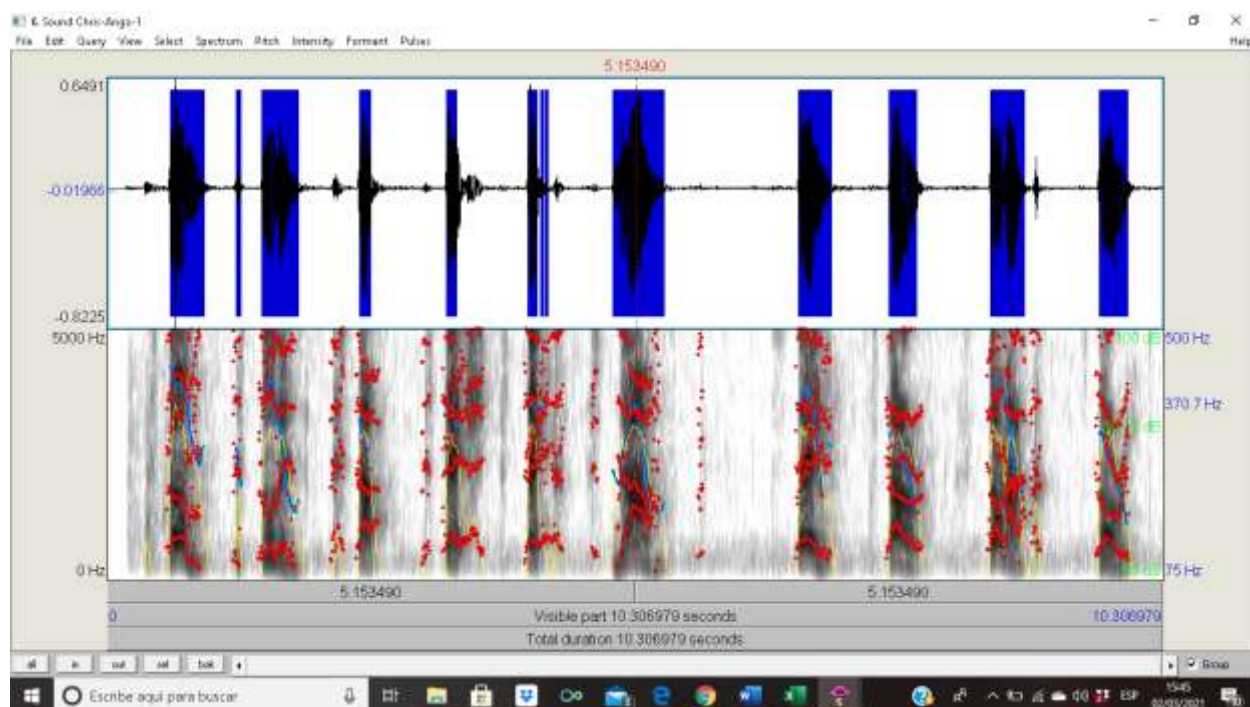
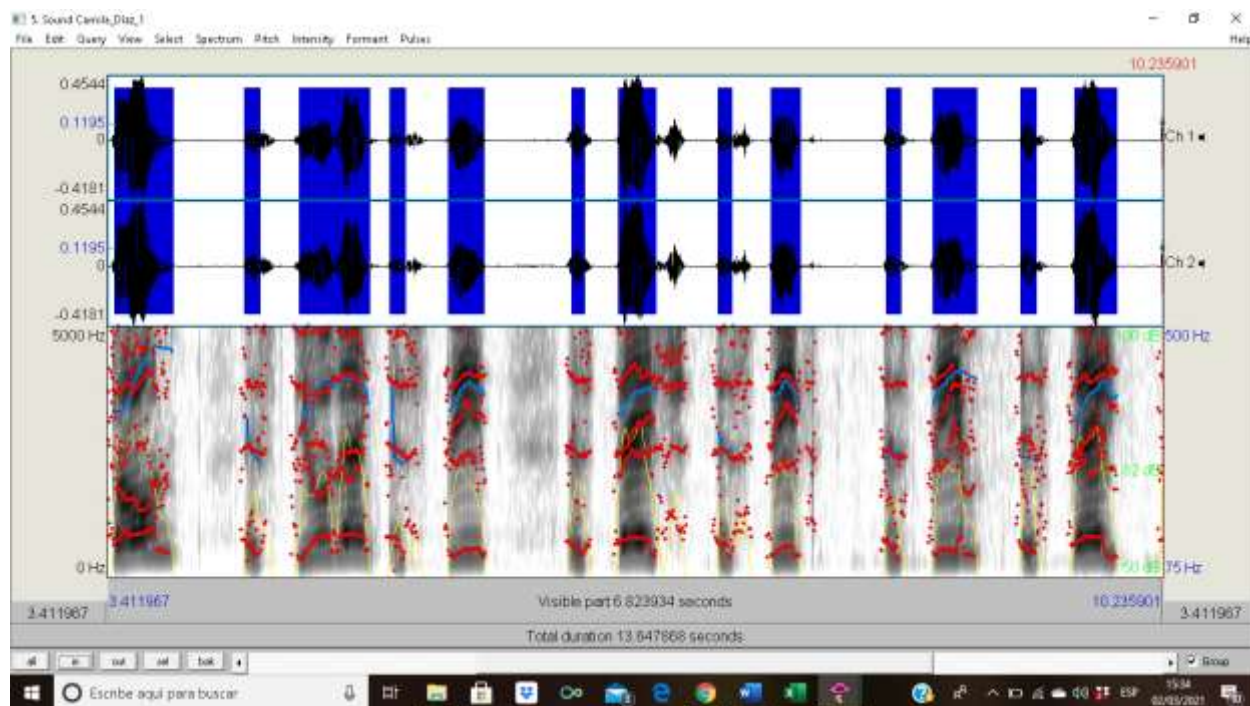
Note. This image shows the completion of the investigation where the researcher applies the final evaluation.

Activity 9 represents all the work done by the teacher and at the same time assumed by the students, this activity is based on listening to a list of the words which they will be able to recognize and be able to write or record as the case may be, the final evaluation represents all the effort given by the teacher and the students, once the students have sent the answers, they will be evaluated through the Praat program as reported at the beginning of the project.

Annex 2: Spectrograms Pretest







Annex 3: Spectrograms Post-test

