

Analysis of activities used in English classes according to the Universal Design for Learning, and their effects on the motivation of neurotypical and neurodivergent students

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Abstract

Title: Analysis of activities used in English classes according to the Universal Design for Learning, and their effects on the motivation of neurotypical and neurodivergent students.*

Authors: Lina Alejandra Aranda Bonilla and Sofy Geraldinne Vesga Rodríguez. **

Keywords: Universal Design for Learning, Activities, Neurotypical Students, Neurodivergent Students, Motivation.

Research on Universal Design for Learning (UDL) is mostly bibliographical, while studies on its implementation in public schools in Colombia are scarce. Therefore, we conducted this mixed-methods study at a public school in Piedecuesta to analyze some activities according to the UDL guidelines and their impact on the motivation of neurotypical and neurodivergent students. One teacher and 38 students participated in this study through various data collection instruments, such as an interview with the English teacher, observation of activities, and a questionnaire administered to the class. As a result, we found that the most frequently used activities by the teacher are worksheets because of the large number of students. We also found that the most commonly applied UDL criteria are those that do not depend on the use of technological tools because of a lack of resources. Additionally, neurodivergent students show a greater preference for activities with audiovisual resources; however, the overall motivation of the group for the English class was similar.

* Bachelor Thesis.

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Resumen

Título: Análisis de actividades utilizadas en clases de inglés según el Diseño Universal de Aprendizaje, y sus Efectos en la Motivación de Estudiantes Neurotípicos y Neurodivergentes.*

Autoras: Lina Alejandra Aranda Bonilla y Sofy Geraldinne Vesga Rodríguez. **

Palabras clave: Diseño Universal de Aprendizaje, Actividades, Estudiantes Neurotípicos, Estudiantes Neurodivergentes, Motivación.

Las investigaciones alrededor del Diseño Universal de Aprendizaje son en su mayoría de tipo bibliográfico, mientras que los estudios sobre su implementación en los colegios públicos en Colombia son escasos. Por ello se llevó a cabo el presente estudio mixto en un colegio público de Piedecuesta, con el objetivo de revisar algunas actividades según el Diseño Universal de Aprendizaje (DUA) y su impacto en la motivación de estudiantes neurotípicos y neurodivergentes. En este estudio participó un profesor y 38 estudiantes mediante diferentes instrumentos de recolección de datos tales como una entrevista al profesor de inglés, la observación de actividades, y la aplicación de un cuestionario al grupo de clase. Como resultado se pudo evidenciar que las actividades más frecuentadas por el profesor son las guías debido al gran número de estudiantes que maneja. También se encontró que los criterios más utilizados en la implementación del DUA son aquellos que no dependen del uso de herramientas tecnológicas a causa de la falta de recursos. Además, los estudiantes neurodivergentes muestran una mayor afinidad por las actividades con recursos audiovisuales; sin embargo, el nivel de motivación del grupo por la clase de inglés fue similar.

* Trabajo de grado.

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Introduction

Effective inclusion and bilingualism in public education have been challenges that the Colombian government has faced in the last decades. Significant efforts have been made to provide high-quality bilingual education from preschool through high school, as evidenced by the law 1651 of 2013 which highlights the government's commitment to developing students' communicative abilities in a foreign language. Additionally, initiatives like the 'Colombia Bilingüe' program have proposed a curriculum specifically for English teachers to help students to graduate from high school with a B2 proficiency level. However, this research did not focus on measuring English proficiency within educational institutions but on examining how inclusion was implemented in English classes and comparing the motivation of neurotypical and neurodivergent students toward this school subject.

To address the topic of inclusion, the Universal Design for Learning (UDL) framework has emerged as an important approach, supporting the learning of both neurotypical and neurodivergent students by promoting flexible and inclusive instructional methods (Aguilar, Melero, & Perabá, 2020). However, implementing this framework has not been an easy task since there might be different kinds of special educational needs in a single classroom. To illustrate, Nadezhda (2018) highlighted that students with varying forms of autism may face challenges in working collaboratively during language-learning activities, while students with ADHD often struggle with following instructions and engaging effectively in games and discussions.

In conducting this research, we began with a literature review presented in [Chapter 1](#), which includes definitions of key terms and relevant laws on inclusive education in Colombia. Next, we designed the methodology to gather new information, detailed in [Chapter 2](#), including descriptions of the study population and data collection instruments.

Subsequently, we organized the collected data to present the results in [Chapter 3](#). Finally, we discussed these results in [Chapter 4](#) to conclude the what and why of the most frequent of the most frequent activities used in the study group, the most commonly applied UDL criteria, and the motivation of neurotypical and neurodivergent students.

Research Question

What are the most frequent criteria in the implementation of UDL found in activities developed by an English teacher at a public school in Piedecuesta, and do these activities influence differently the motivation of neurotypical and neurodivergent students?

Justification

The role of the teacher is fundamental in the classroom, especially in the current context, where diversity is increasingly evident. Classrooms are a microcosm of society, reflecting the neurodiversity present in the world. In this sense, it becomes essential to design classrooms as inclusive spaces, capable of accommodating different learning styles and the students' needs. UDL emerges as a flexible educational framework that addresses this diversity, promoting equal opportunities and supporting each student in reaching their full potential (Menoscal & Navarrete, 2023).

As future educators, our main goal with this research is to enrich our teaching practices by analyzing activities carried out on the English subject with a group from a public school in a municipality of Santander, identifying how teachers incorporate various UDL criteria in the classroom. Additionally, this study expands the literature on the practical application of UDL by teachers in the public sector of Santander, which also allows for the recognition of both the strengths and challenges in implementing this educational framework in the region.

1. Objectives

1.1 General Objective

To analyze activities implemented by English teachers in the public sector of Piedecuesta according to Universal Design for Learning (UDL) and their impact on the motivation of neurotypical and neurodivergent students.

1.2 Specific Objectives

1. To identify some activities implemented in class by English teachers at a public school.
2. To identify the most frequent criteria in the implementation of UDL.
3. To compare the motivation between neurotypical and neurodivergent students.

2. Theoretical Framework

2.1 Literature review

2.1.1 Neurotypical and neurodivergent people

Neurodiversity distinguishes two groups of individuals: neurotypical and neurodivergent. On the one hand, Bailey (2023) states that neurotypical refers to individuals whose brain and mental functions meet the standards commonly accepted by society. These people tend to process information conventionally and exhibit socially expected patterns of behavior. On the other hand, according to Cooks-Campbell (2022), neurodivergent individuals have contrasting reactions and interactions compared to neurotypical individuals due to their distinct way of processing external stimuli. These significant variations in their brain and mental functions can manifest in a wide range of conditions, such as autism spectrum disorder, attention deficit hyperactivity disorder (ADHD), bipolar disorder, among others.

2.1.2 Impact of teachers' knowledge of UDL

The concept of UDL is not recent, but its implementation remains an innovative element in Colombian classrooms. Although scholars worldwide have extensively studied UDL, a literature review conducted by Sánchez-Serrano (2022) examined twenty-seven papers on the topic and found that more than 80% of them were conducted in the United States. Therefore, strengthening the application and research of UDL in Colombia represents an area with multiple potential benefits for students and teachers.

The principles of UDL are based on the recognition of learning barriers and flexibility to provide equal opportunities for students. According to Johnson-Harris and Mundschenk (2014), UDL allows for the creation of a safe environment in which students maintain interest in the class since they know the “what” and “why” of the content, while providing them different assessment options to choose the one that best fits their strengths.

Teachers' ability to implement UDL in their planning and class execution allows a more effective learning environment, increasing commitment and independence in the learning process (Cooper-Martin and Wolanin, 2014). According to a study carried out in Colombia, the effectiveness of UDL leads to the achievement of learning competencies, good results in summative assessment, and willingness to participate in class (Tobón and Cuesta, 2020).

Internalizing UDL guidelines can be tedious at first, so it is common for teachers to lack a practical understanding or be inconsistent with the guidelines suggested by the UDL framework (Johnson-Harris & Mundschenk, 2014; Cooper-Martin, 2014). However, teachers report feeling more capable or having increased their confidence and perception of self-efficacy to meet the educational needs of their students after receiving instruction about the implementation of this framework (Sánchez-Serrano, 2022).

2.2 Theoretical foundations

2.2.1 Academic motivation

Motivation is a crucial factor for academic success and the integral development of students. According to Broussard and Garrison (2004), motivation is the set of internal or external factors that drive a person to act, adopt a behavior, or pursue a specific goal. Deci et al. (1999) declare that intrinsic motivation energizes and sustains activities through spontaneous satisfaction, so people engage in them for pleasure, interest, or self-actualization. In contrast, extrinsic motivation arises from external factors, such as rewards or punishments (Ryan & Deci, 2000). Teachers view intrinsic motivation as more desirable and as producing better learning outcomes than extrinsic motivation.

It is important to keep in mind that students who frequently face difficulties in their learning tend to experience negative emotions. By addressing these emotional responses

through positive and supportive learning environments, it is possible to enhance motivation and overcome emotional barriers (Ford, 1992).

2.2.2 Stephen Krashen's Input Hypothesis

The pedagogical activities that teachers carry out in their English classes can influence students' commitment when learning a second language; therefore, the input hypothesis proposed by Stephen Krashen is relevant for this analysis. According to this hypothesis, for foreign language learning to be effective, learners must be exposed to comprehensible input that they can understand based on their existing knowledge (Krashen, 1992).

Building on the aforementioned, Stephen Krashen's Input Hypothesis introduces the concept of " $i + 1$," where " i " represents the learner's current level of competence, and " $+1$ " refers to slightly more advanced input that pushes learners beyond their comfort zone while remaining comprehensible (Krashen, 1992). This principle ensures that language learning is most effective when learners are challenged just enough to avoid frustration from overly difficult material and boredom from content they have already mastered. Exposure to input just above their current level allows learners to understand while gradually acquiring new linguistic structures and vocabulary, fostering a natural and smooth progression in language acquisition (Bisson et al., 2014).

2.2.3 Universal Design for Learning (UDL)

The goal of Universal Design for Learning (UDL) is to provide teachers with a framework that reduces or eliminates obstacles during class (Meyer et al., 2014). According to the Higher Education Opportunity Act of 2008 in the United States, UDL guides educational practice towards flexibility in the presentation and assessment of content to students, through various accommodations that allow for high academic achievement

expectations to be maintained, even for students with disabilities or limited English proficiency, which is the native language in the United States.

It is important to highlight that these accommodations do not seek to individualize teaching but to create a conducive learning environment for all students in the classroom (Carmona, 2020). In order to achieve this goal, UDL is guided by three principles: 1) multiple means of engagement, 2) multiple means of representation, and 3) multiple means of action and expression. Each of these principles is subdivided into three guidelines, which in turn contain different checkpoints, as presented in [Figure 1](#).

Figure 1.

Universal design for learning guidelines version 2.2 (CAST, 2018).



2.3 Legal reference

2.3.1 Normative framework for inclusive education in Colombia

In Colombia, education is a right guaranteed by the State and is mandatory for children between the ages of five and fifteen, as outlined in Article 67 of the 1991 Colombian Constitution. Additionally, Article 46 of the General Education Law (Law 115 of 1994) introduced an integrative approach to education, ensuring that students with disabilities or exceptional talents could study at specialized institutions. This integrative approach was further reinforced by Law 361 of 1997, which in Articles 10 and 16, mandates that education must be provided in environments that best meet the special needs of each student.

In recent years, the government has changed its stance, moving from an integrative approach to an inclusive approach. Law 1618 of 2013 formalized this change, stating that educational institutions must acknowledge students with disabilities as active contributors to building a diverse society, instead of treating them as individuals needing social assistance. The law also introduces the concept of Universal Design for Learning (UDL) and encourages higher education institutions to research technologies and strategies for gradual implementation across all educational levels.

Additionally, a term recently added to the inclusive education system in Colombia is the Individual Plan for Reasonable Adjustments (PIAR), presented through Decree 1421 of August 2017, which refers to a planning instrument that is carried out according to the needs special educational needs of each student who is present in a classroom and for whom the DUA has not been sufficient.

Based on this inclusive approach, the Congress of the Republic of Colombia approved Law 2216 of 2022, that establishes that local governments, through development and budget plans, must look for strategies and mechanisms for the timely identification of students with learning difficulties.

For instance, the different cities of the country reflect the evolution of the national panorama regarding the education for people with disabilities. One of the best-known cases in the metropolitan area of Bucaramanga is the ‘Instituto de Problemas de Aprendizaje’, which provided its services since 1975 and began a restructuring process in 2019 in response to Resolution 1169 of 2019 of the municipality. The resolution made it possible for the students at that particular institution to be taught alongside students without impairments or disorders.

3. Methodology

3.1 Type of research

The approach of this research is a case study, which allows us to study in depth the effects of various activities on motivation in a group of 38 students, including three neurodivergent students. This approach facilitates observation in real contexts, which is one of its main strengths (Cohen et al., 2007). Initially, the research employed a quantitative approach to collect measurable data. A rubric was used to identify the frequency of the implementation of UDL criteria, while a questionnaire facilitated the comparison of motivation between neurodivergent and neurotypical students. However, as the study progressed, qualitative methods were integrated, transforming it into a mixed-methods study. Incorporating a teacher interview added a valuable perspective, enriching the understanding of classroom dynamics.

The chosen paradigm for this study is interpretive since it seeks to understand the perception of neurodivergent and neurotypical students regarding the motivation they feel when carrying out different activities in the classroom.

3.2 Population and sample

The criteria for selecting the study population were as follows: being a secondary school group from a public school of Santander with students diagnosed and registered in the enrollment system with specific learning disorders. Due to time constraints, we employed convenience sampling, which involves choosing the closest individuals to serve as respondents until the required sample size is obtained from those who are available and accessible at the time (Cohen et al., 2018). Therefore, the sampling population consisted of a group of 38 sixth graders, including three neurodivergent students: two with Attention Deficit Hyperactivity Disorder (ADHD), and one student with a physical and intellectual disability.

The teacher responsible for the observed English classes was also included in our study population, participating through an interview. During the interview, he shared that, despite being a systems engineer, he has been working as a teacher for 20 years.

3.3 Data collection instruments

In order to meet the objectives of this study, we collected data through classroom observations, questionnaires, and an interview.

3.3.1 Stage 1: Classroom observation

According to Hernández and Mendoza (2018), observations allow researchers to explore environments and understand patterns and actors. For this reason, we conducted twelve hours of observations of the study group. During these observations, we identified the most frequent activities the English teacher implemented in March and April 2024. We also analyzed the availability of resources in the classroom, the teacher-student and student-student interactions, and how the teacher aimed to provide equal learning opportunities to all students. Furthermore, we examined the students' perceived motivation to complete the activities proposed by the teacher.

In order to measure the information collected, we designed a checklist with 13 criteria grouped according to the principles and guidelines of UDL. Moreover, considering that the procedure for each activity is different, the format allowed determining whether the UDL guidelines were met or not, or if said guideline did not apply to the activity (see [Appendix A](#)).

3.3.2 Stage 2: Survey

To compare the motivation between neurodivergent and neurotypical students, 38 students from the study group answered a questionnaire. We designed the questionnaire with close-ended questions to facilitate the analysis of the answers which students answered in 40 minutes. This type of question facilitates comparison and avoids ambiguity (Hernandez and

Mendoza, 2018). The questions were aimed at measuring the students' motivation, inquiring on how they felt about the activities related to the four language skills (listening, speaking, reading, and writing), their motivation to learn the language, their favorite activities to learn English, their interest in learning about the language or any of the topics seen outside the classroom. Likewise, the questions measured how often the students found the English class engaging and the extent to which they finished the activities assigned by the teachers (See [Appendix B](#)).

3.3.3 Stage 3: Interview

To complement the information collected from the observations and questionnaires, we interviewed the English teacher of the study group. According to Hadi et al. (2023), interviews are relevant in qualitative research since they allow the participant to relate their experiences with the topic of study. We decided to arrange a semi-structured interview, through a phone call due to the time convenience of both the researchers and the teacher participating in the study. We recorded the 30-minute call to make transcription and subsequent analysis. The interview consisted of thirteen questions. The first four questions of the interview focused on experience and professional career, aiming to gather information about the years of experience teaching, the most frequent tools and activities in the classroom, and its goals. In addition, the following three questions addressed the teacher's perception of his students' motivation in the English class. Finally, the last six questions focus on topics of inclusion in the classroom, such as the perception of neurodivergent people, UDL, and strategies and approaches used to ensure that all students have equal learning opportunities in the classroom (See [Appendix C](#)).

3.4 Resources and Analysis Techniques

In this research project, we employed various analysis techniques within a mixed approach. For the qualitative aspect, we transcribed and coded the English teacher's interview

responses into three main categories: diversity in the classroom, student and teacher perceptions of English activities, and UDL in the classroom. This technique is based on Qualitative Data Analysis, which Seidel (1998) states that this process can be understood through three key steps: observing, collecting and reflecting on relevant aspects. This model simplifies the complexity of qualitative analysis by highlighting these fundamental elements, providing flexibility in its application.

For the quantitative part, we analyzed the frequency of implementation of each criterion related to UDL during the observed classes. To organize the collected data, we created a document on Google Drive Sheets. To abbreviate the content of the table, we used the number 1 to indicate that the criterion was met during the development of the activity, the number 2 to indicate that it was not met, and the number 3 to indicate that the criterion did not apply to the observed activity (See [Appendix E](#)). In addition, we created another Google Drive Sheets to perform a comparative analysis of the data between neurodivergent and neurotypical students, using bar graphs to visualize the results (See [Appendix F](#)).

4. Results

According to the specific objectives of the research, we divide the presentation of the results into three main categories. In the first category, we introduce the observed activities and their objectives reported by the teacher during the interview. In the second category, we present the frequency of the implementation of the different UDL criteria in the observed activities. In the third category, we explain the data collected from neurotypical and neurodivergent students regarding their perceived motivation toward the English class.

4.1 Activities Implemented in Class by an English Teacher at a Public School in Santander, Colombia.

After twelve hours of observing classroom dynamics, we found that students spent most of their time working individually on worksheets, which included translation exercises, fill-in-the-blank activities, word searches, reading short texts, and creating illustrations. The teacher explained during the interview that the frequent use of worksheets is necessary because the group consists of over 35 students, making classroom management challenging. He also emphasized that these worksheets are essential for preparing students for state tests, which primarily assess reading and writing skills.

The number of activities that include technological tools is scarce since the classroom does not have these resources, and it was the teacher who brought his own computer, wireless mouse, video beam, and speaker, to offer students the opportunity to do some online exercises and to watch videos. This is relevant since the teacher mentioned that the purpose of such activities, such as watching videos, is to improve the retention of concepts, practice English pronunciation, and strengthen listening skills in the language.

Regarding the group's activity preferences, the teacher observed that students enjoyed gaming the most, particularly when they took turns solving exercises online, which were displayed to the entire class using a video projector.

4.2 Frequent Criteria in the Implementation of UDL

To analyze the activities carried out during the observed English classes, a rubric with 13 criteria was developed based on the principles, guidelines, and checkpoints of UDL (see [Table 1](#)). This rubric allowed for measuring which UDL criteria were most implemented by the teacher.

Table 1.

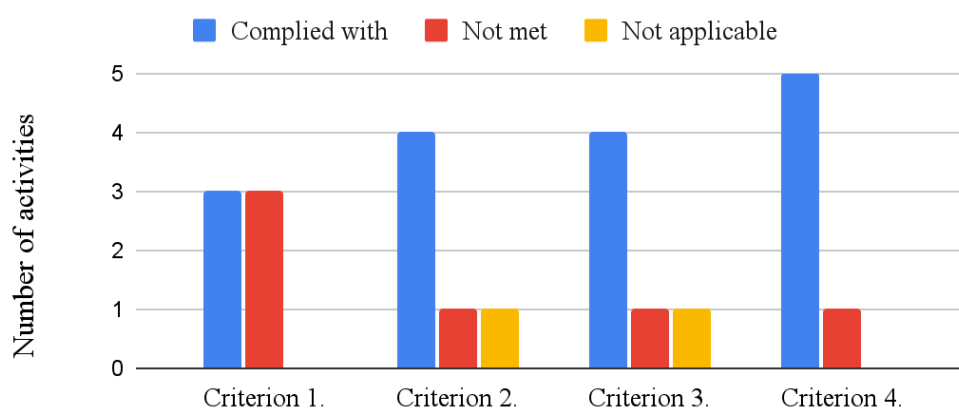
List of Evaluated Criteria.

Criteria
1. Minimizes the likelihood of creating a mocking environment.
2. Provides feedback to the student that values success.
3. Provides feedback to the student that promotes learning from mistakes.
4. Applies the comprehensible input hypothesis, meaning the activity has a higher level of complexity than the previous one (Input+1).
5. Presents a sequence of graphics, videos, or body language that can clearly express a text.
6. Highlights important words and ideas on worksheets so that the student reads them first.
7. Read aloud, or use a text reader.
8. Provides a glossary of terms related to the lesson content.
9. Encourages team studying.
10. Shows examples of correctly completed work to serve as a model.
11. Facilitates access to support tools and technologies, such as providing access to audiobooks.
12. Provides the student with multiple opportunities to read the same text.
13. Allows more time for writing if necessary.

4.2.1 Principle: Multiple Forms of Engagement

Figure 2.

Frequency of Principle 1: Multiple Forms of Engagement



The first principle of UDL aims to increase and maintain student engagement in order to meet the class objectives. Following the criteria of this principle, the present study decided to observe the students' interest in the English class, analyzing whether the classroom environment was conducive to learning or if distractions were predominant. Likewise, the guideline suggesting the provision of different options to maintain effort during the class was considered.

We found that the most frequent criterion of the first UDL principle was the application of the comprehensible input hypothesis, meaning that the activity had a level of complexity higher than the previous one (Input +1), and feedback to the student in a way that valued their successes and persistence (See [Figure 2](#)).

Below we describe how each guideline of this principle was implemented during the observed English classes.

Guideline: Capturing Interest. The class maintained a favorable learning environment during activities that had significant weight in the academic period, such as the final assessment of the term, which generated a greater sense of commitment from the students. However, managing the class was challenging most of the time due to the number of students and their behavior, which was especially noticeable in activities that required more individual monitoring by the teacher for each student. In these situations, we observed a lack of effective strategies to maintain the students' attention, causing them to become easily distracted by their surroundings.

At various points during the class, the teacher's timely actions eliminated the mocking atmosphere that was already present. For example, when students were disrespectful to each other, the teacher invited them to reflect on their actions. However, at times these problematic environments were reduced, but not according to UDL criteria, as this was done through threats, such as behavior reports, calls to parents, or suspension from school.

Guideline: Provide options to sustain effort and persistence. Feedback was present in most activities, specifically on an individual basis, as the teacher went to each desk to check that the students had answered the proposed exercises correctly. Additionally, the teacher encouraged learning from mistakes, allowing students to approach and ask questions about the class topic when they noticed conceptual gaps while completing the activities. This also meant that the answers were reviewed more than once, so that students could identify their weaknesses without feeling pressured to receive low grades.

However, we perceived a lack of feedback in activities that involved transcribing terms from the board to their notebooks, such as creating an adjective glossary with drawings. After the time allotted for this activity ended, the teacher did not check whether most students had correctly recorded the concepts in their notebooks. As a result, students might have

developed incorrect or incomplete concepts, which could affect their understanding and retention of the topic.

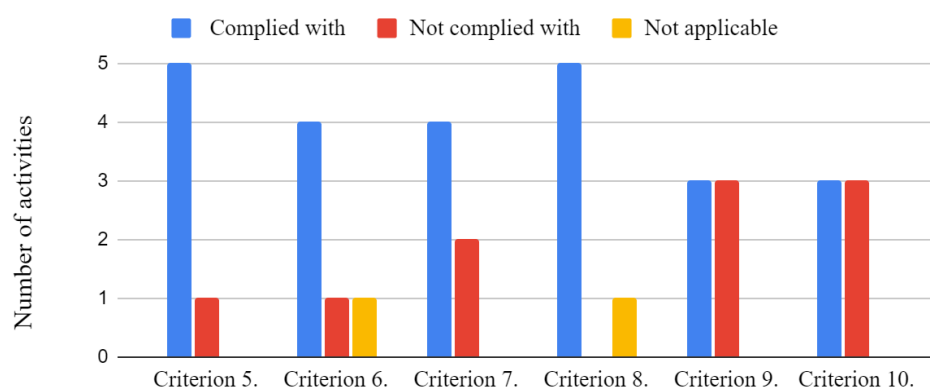
Likewise, we consider that for the end-of-course evaluation activity the feedback criteria were not applied, since we were only able to observe the moment of application, but not the moment when the students received their results. It is at that moment when the teacher would be expected to give the feedback in the way he considered most convenient, either individually or in a group.

Students also maintained their effort and persistence if the teacher proposed activities with a slightly higher level of difficulty than the previous activity (Input +1). Usually, the teacher introduced words related to a certain topic at the beginning and gradually incorporated more complex sentences as they progressed through the activity, gradually increasing the difficulty. At the end of the class, students were expected to create short sentences using this vocabulary. However, in a worksheet focused on reading comprehension of a fable, words and expressions were encountered that students did not know, as they had not yet achieved advanced proficiency in the English language. For this reason, students resorted to translating the text to complete the activity.

4.2.2 Principle: Multiple forms of representation

Figure 3.

Frequency of Principle 2: Multiple Forms of Representation



The second principle of the UDL invites teachers to use different ways to represent the content of the class. Therefore, we reviewed the didactic materials, such as worksheets, web pages and videos used in class. We verified compliance with the options guideline for perception, observing whether the materials included graphics, whether the most important words of the topic were highlighted, and whether there was a reading aloud by the teacher or by some technological means. According to the options guideline for language, it was checked whether the teacher provided a glossary with the terms necessary to complete the activities. Finally, for the comprehension options guideline, it was observed how often group work was done and whether examples of completed exercises were presented.

The most frequent criterion of the second UDL principle were the presentation of sequences of graphics, videos or body language that could clearly express the texts, as well as the provision of glossaries with terms related to the content of each lesson, which is part of the options for language and symbols (See [Figure 3](#)).

The following is a description of how compliance with each of the guidelines of this principle was carried out during the English classes observed.

Guideline: Provide options for perception. In most of the classes, worksheets were used, which always included images that clearly illustrated the text. However, in the materials that the teacher could not modify, such as web pages, a multiple-choice question activity was carried out that only contained text, without graphics that would facilitate a better understanding of the information.

The worksheets had illustrations and the most important words underlined. On the contrary, in materials such as the academic test, which was not under the teacher's design but was delivered by the school coordinator, although there were illustrations, there was no emphasis on the most important words in the document.

During the first classes observed, the teacher facilitated comprehension of the text by

reading aloud and specifying what the activity was about. However, during the assessment activity and in the creation of an illustrated glossary, students were expected to develop these activities autonomously, so the teacher did not perform the reading aloud.

Guideline: Provide options for language and symbols. It was observed that in all activities, except for the final assessment of the unit, a glossary of unknown, new, or related words to the topic of the class was provided. This is consistent with the guidelines for language options, as it provides useful terms and concepts to conclude the activities.

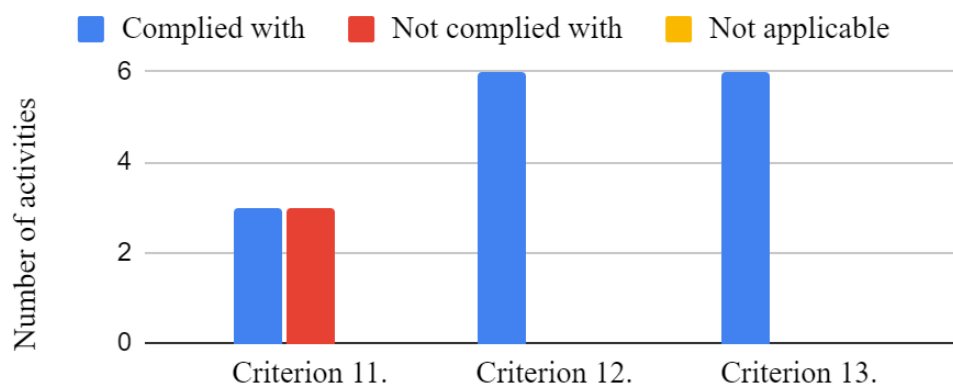
Guideline: Provide options for understanding. During the development of the worksheets, it was not observed that the teacher encouraged teamwork. However, students, on their own initiative, met with their classmates to compare their answers, and the teacher did not oppose this moment. Also, in activities involving web pages, each student had the opportunity to answer only one question, since there was only a videobeam and a mouse available for this purpose, which limited team discussions to choose the correct answer. In addition, in the last class it was observed that the evaluation activities and the creation of the glossary did not provide space for team study.

At certain times, the teacher would present completed exercises as a reference for the correct completion of the activities. For example, after handing out the worksheets to the students, the teacher read aloud and then developed an exercise in front of the whole class. Similarly, when using the web pages, the teacher developed the first exercise and then provided the opportunity to the students to continue. For the glossary activity, some terms were illustrated on the board so that students were aware that they had to illustrate all the other terms. However, in the other activities this guideline was not present.

4.2.3 Principle: multiple forms of action and expression

Figure 4.

Frequency of Principle 3: Multiple Forms of Action and Expression.



The third UDL principle invites teachers to provide different opportunities for students to demonstrate what they understand or what they have learned in class. In order to check this, we looked at whether students were allowed to use technological tools to present their knowledge, read the same text several times, and have more time to write if needed.

The most frequent criteria of the third UDL principle were 1) providing the student with several opportunities to read the same text and 2) allowing more time for writing when necessary, both relate to the options for executive function. The following is a description of how compliance with each of the guidelines of this principle was carried out during the English classes observed.

Guideline: provide options for physical action. The classroom did not have any technological resources available which limited the number of activities that could incorporate interactive or multimedia elements. Moreover, according to the teacher in the interview, the students' guardians had limited financial capacity, so it was unlikely that they had computers at home, preventing them from doing work at home other than worksheets. However, the teacher did facilitate access to technological tools of his own so that the students could watch some videos related to the topic and perform exercises on the internet.

Guideline: provide options for executive function. During all the classes observed, it was identified that it was difficult for students to complete their worksheets without being distracted by their surroundings, so the teacher allowed them to read the same text several

times, first through a group reading, and then individually. For this same reason, he provided more time for writing so that all students had the opportunity to complete the exercises.

4.3 Motivation of neurotypical and neurodivergent students

This last section of results presents the data collected from an 11-question questionnaire, answered by 38 of the observed students. This instrument explored their general attitudes toward English classes and their motivation. The group was divided into two subgroups: the first was composed of 35 neurotypical students, and the second of 3 neurodivergent students.

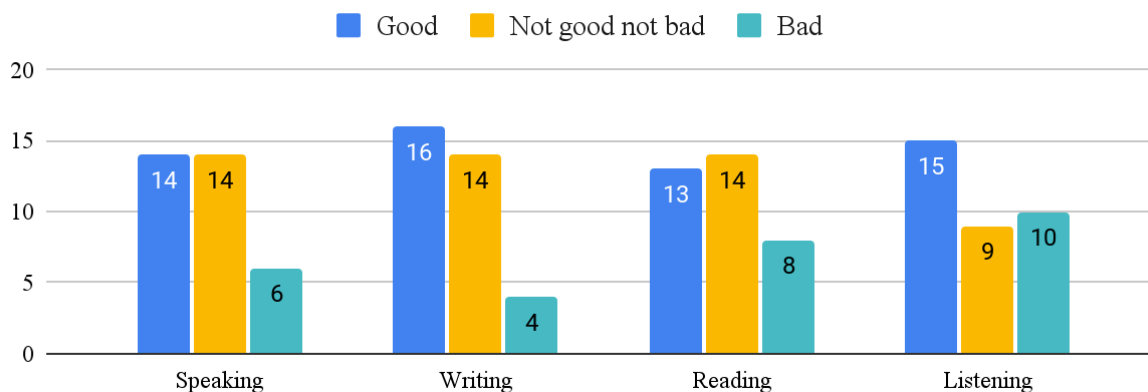
The questionnaire used is designed to explore various dimensions of students' experience in their English classes. It is divided into five main categories: Feelings toward classroom activities, which seeks to understand how students feel during their classes; interest and motivation, which examines the factors that drive students to learn English; activity preferences, which identifies the activities that students find most appealing; commitment and participation, which assesses students' level of engagement and participation in class; and opinions about materials and topics, which captures students' perceptions about the resources and content used in classes.

It is important to note that not all participants responded to all the questions in the questionnaire, due to different reasons, such as lack of attention to the indications given or lack of interest in completing the questionnaire. Therefore, the number of responses may vary for each question.

4.3.1 Feelings toward Classroom Activities

Figure 5.

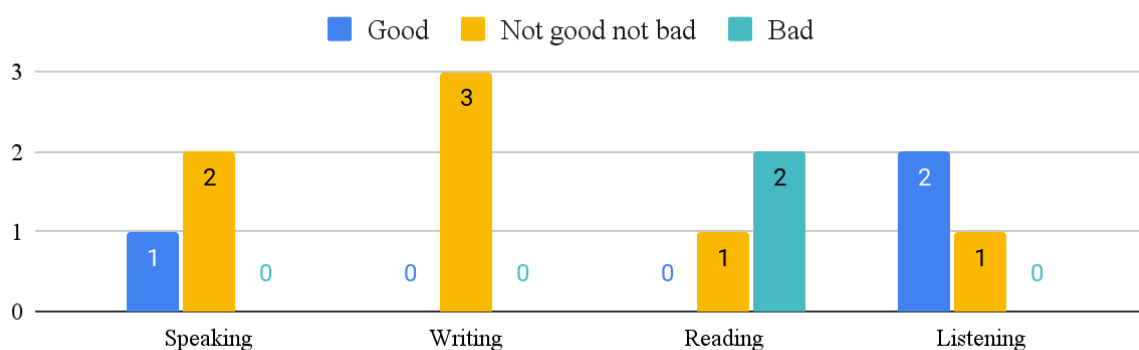
Neurotypical students: How do you feel about doing the following activities in English class?



Regarding speaking in English, 41.2% feel good, while another 41.2% feel not good not bad, and 17.6% feel bad. Regarding writing in English, 47.1% report feeling good about doing this activity, 41.2% feel not good not bad, while 11.8% feel bad. Regarding reading in English, 38.2% feel good, 41.2% not good not bad, and 20.6% feel bad. Listening to someone speak English, 44.1% feel good, while 26.5% not good not bad, and 29.4% feel bad.

Figure 6.

Neurodivergent students: How do you feel about doing the following activities in English class?

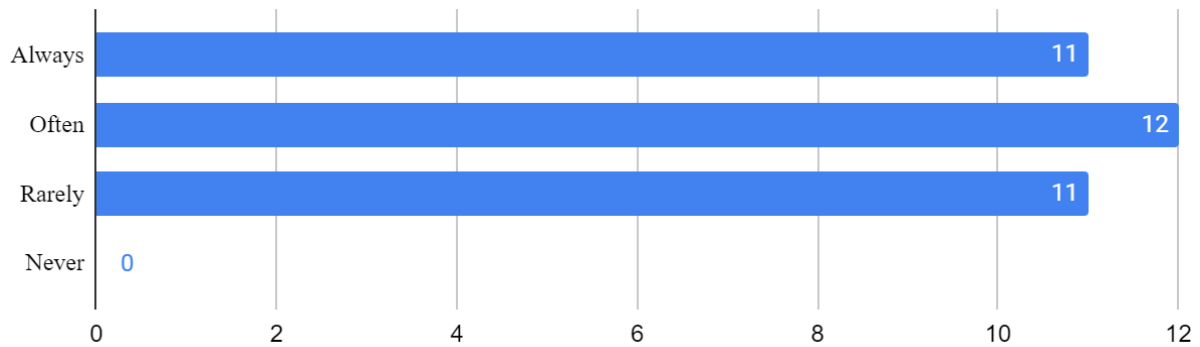


When speaking English, 33.3% feel good while 66.7% feel not good not bad. When writing in English, 100% feel not good not bad. When reading in English, none feel good, 33.3% feel not good not bad and 66.7% feel bad. When it comes to listening to someone speak English, 66.7% feel good and 33.3% feel not good not bad.

4.3.2 Interest and motivation

Figure 7.

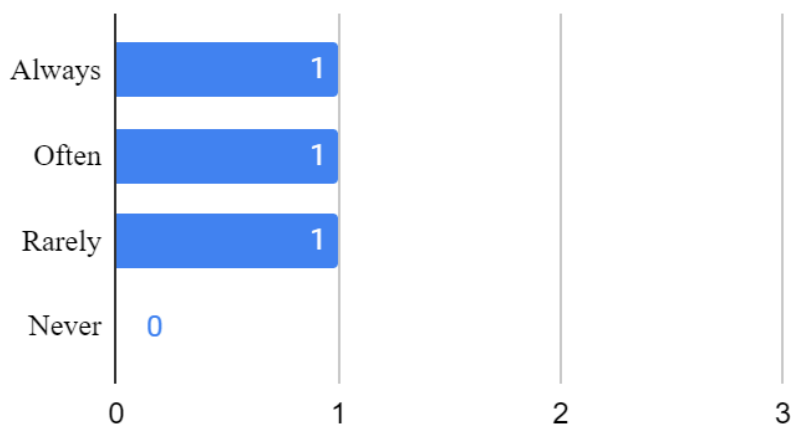
Neurotypical students: Is the English class interesting?



The students' perception of English class reveals a significant level of interest. Of the 34 students who answered this question, 32.4% always find English class interesting, while 35.3% almost always find it interesting, and 32.4% find it interesting sometimes.

Figure 8.

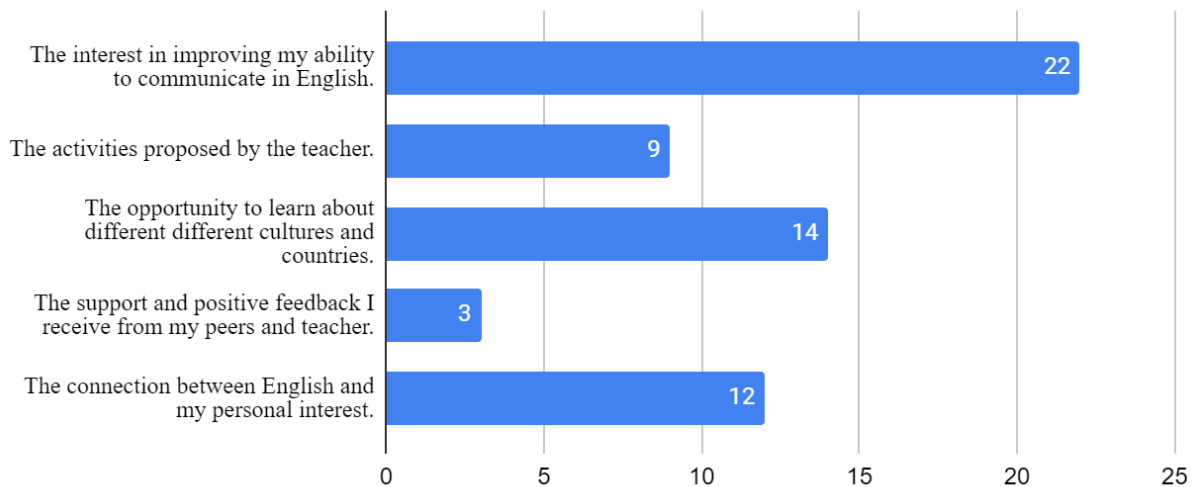
Neurodivergent students: Is the English class interesting?



The perception of the English class in terms of interest shows that of the 100% of neurodivergent students surveyed, 33.3% always find the class interesting, another 33.3% almost always find it interesting, and 33.3% find it interesting sometimes.

Figure 9.

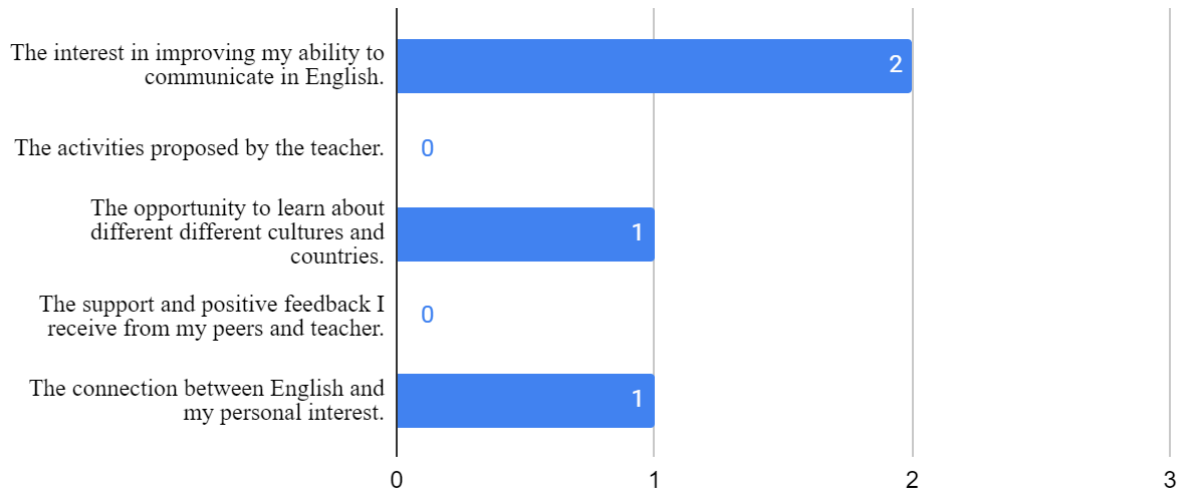
Neurotypical students: What motivates you to participate in English class?



In this question, students had multiple response options, which is reflected in the variety of reasons about what motivates them to participate in English classes. 62.9% are motivated by an interest in improving their ability to communicate in English. In addition, 25.7% are motivated by the interactive and dynamic activities provided by the teacher, while 40% are motivated by the opportunity to learn about different cultures and countries. Only 8.6% are motivated by positive feedback from peers and teachers, and 34.3% are motivated by the connection of English with their personal interests.

Figure 10.

Neurodivergent students: What motivates you to participate in English class?



Of the neurodivergent students surveyed, 66.7% are motivated by an interest in improving their ability to communicate in English. 33.3% are motivated by the opportunity to learn about different cultures and countries, and 33.3% are motivated by the connection between English and their personal interests.

Figure 11.

Neurotypical students: Do you feel motivated to learn more English after class?



Regarding motivation to learn more English after class, of the 35 neurotypical students who completed this section of the questionnaire, 77.1% feel motivated to continue their learning, while 22.9% do not feel motivated.

Figure 12.

Neurodivergent students: Do you feel motivated to learn more English after class?



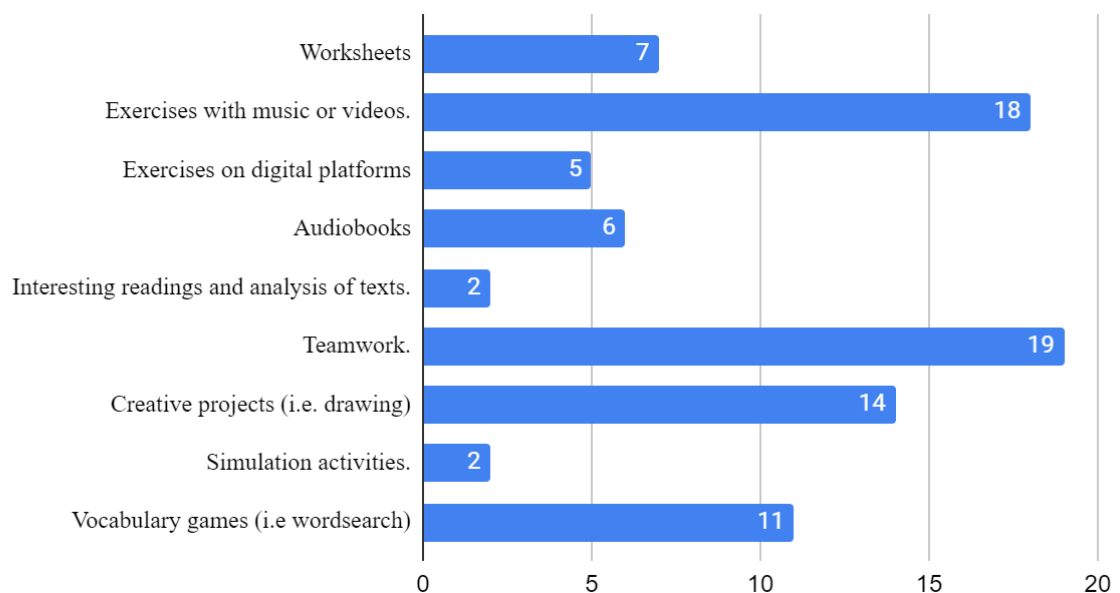
Of the neurodivergent students surveyed, 66.7% feel motivated to continue their English learning process after class, and 33.3% do not feel motivated.

4.3.3 Activities Preferences

To measure the students' preferred activities, a list was included in the questionnaire from which they could select all the activities they liked.

Figure 13.

Neurotypical students: What activities do you like best in English class?

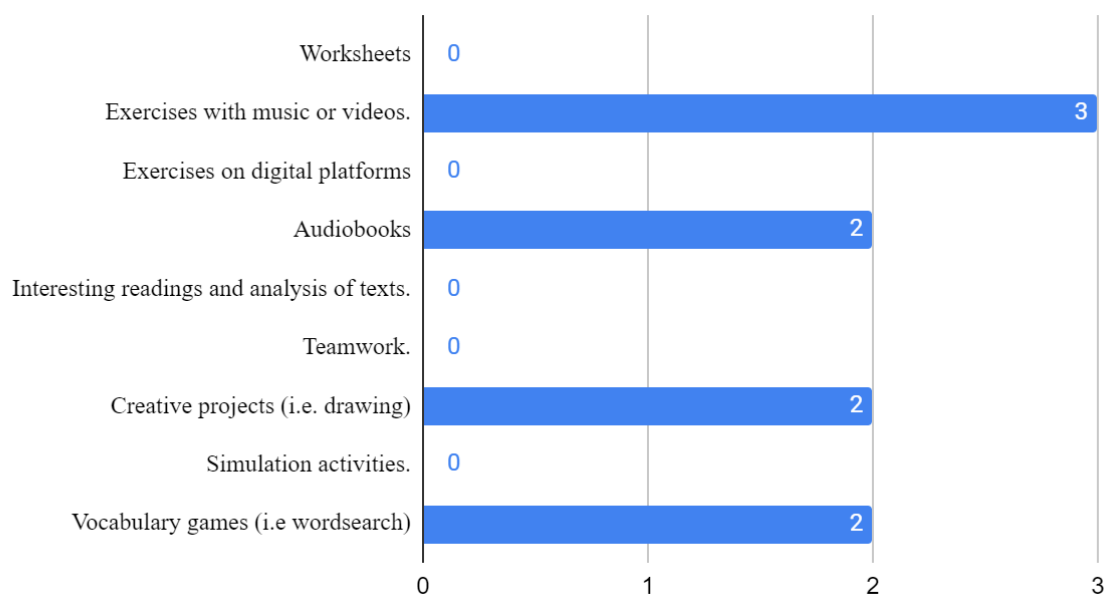


Preferences for activities in the English classroom also show a wide diversity. Of the 34 neurotypical students who completed this question, 20.6% prefer worksheets, while 52.9%

prefer exercises with music or videos, indicating a general preference for audio-visual learning methods. In addition, 14.7% prefer exercises on digital platforms, and 17.6% prefer audio stories. Only 5.9% prefer readings and analysis of interesting texts. Working in pairs or teams is preferred by 55.9% of the students. In addition, 41.2% prefer creative projects such as drawing and coloring, and 5.9% prefer simulations of real situations in English. Vocabulary or grammar games, such as word searches, are preferred by 32.4% of the students, and others mentioned activities such as physical games and speaking in English constantly.

Figure 14.

Neurodivergent students: What activities do you like best in English class?

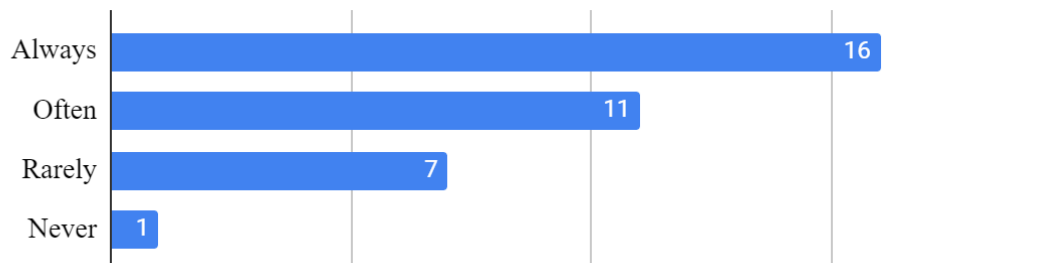


Preferences for activities in English class among the 3 neurodivergent students surveyed show that 100% prefer exercises with music or videos, 66.7% prefer audio stories, 66.7% prefer creative projects involving drawing and coloring, and 66.7% prefer vocabulary or grammar games, such as word searches.

4.3.4 Commitment and Participation

Figure 15.

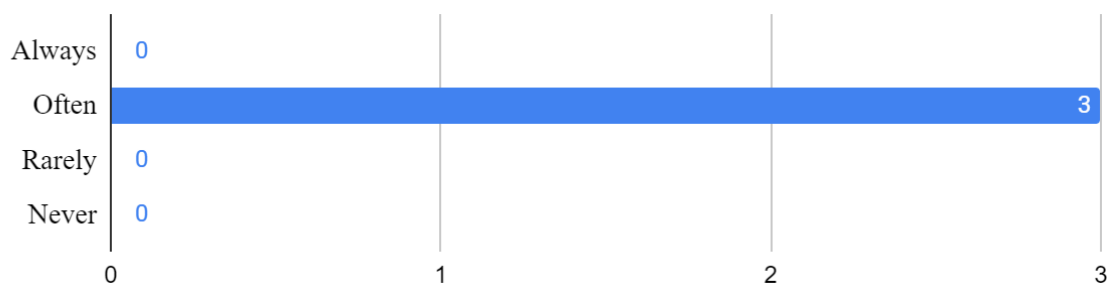
Neurotypical students: Do you complete the activities proposed by the English teacher?



Commitment with the activities proposed by the English teacher shows a positive trend. Of the 35 students surveyed, 45.7% always complete the activities, while 31.4% almost always complete the activities. Twenty percent of the students complete the activities sometimes, and only 2.9% never complete the activities. These results suggest a high level of commitment and participation by most students in the tasks assigned in class.

Figure 16.

Neurodivergent students: Do you complete the activities proposed by the English teacher?

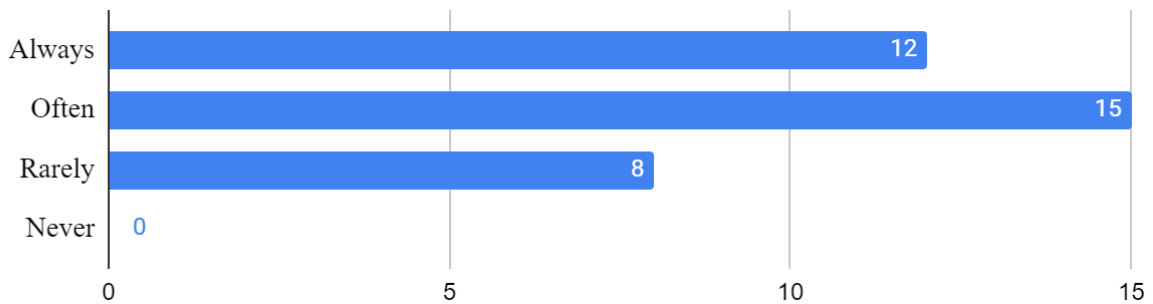


In relation to compliance with the activities proposed by the English teacher, 100% of the neurodivergent students almost always complete the activities.

4.3.5 Opinions on Educational videos and Themes

Figure 17.

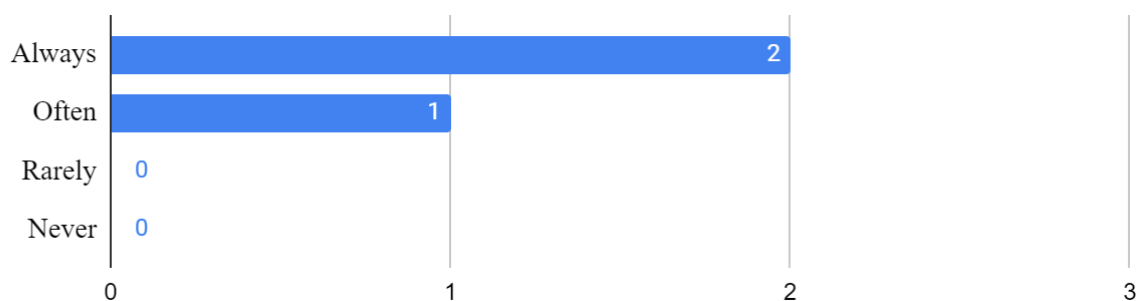
Neurotypical students: Do you find the videos that the teacher projects during English class interesting?



The perception of the videos shown during English classes is mostly positive. Of the 35 students who completed the questionnaire, 34.3% always find the videos interesting, 42.9% almost always find them interesting, while 22.9% find the videos interesting sometimes. This reflects the effectiveness of videos as an educational tool in the English class.

Figure 18.

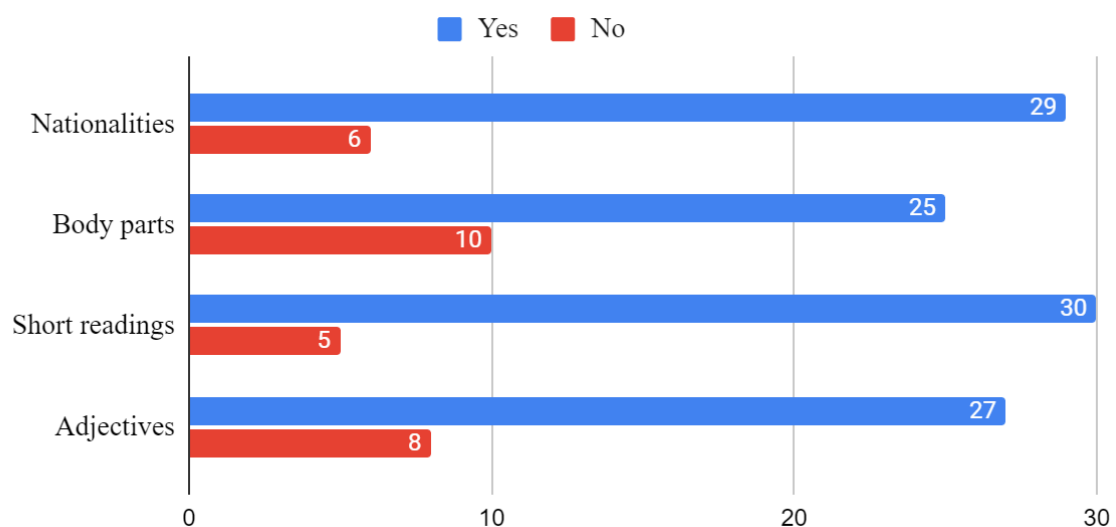
Neurodivergent students: Do you find the videos that the teacher shows during English class interesting?



Neurodivergent students' perceptions of videos presented in English classes reveal that 66.7% always find the videos interesting, while 33.3% report that they find them often interesting.

Figure 19.

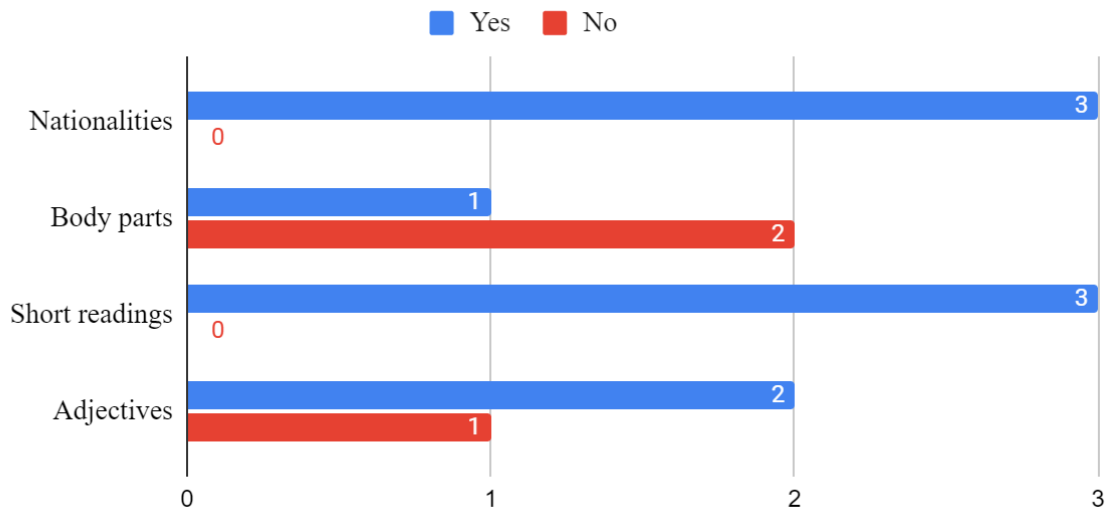
Neurotypical students: Are you curious to learn more about the topic of: ?



In terms of curiosity to learn more about specific topics, students show varied interest. Out of the total of 35 neurotypical students, 82.9% are curious to learn more about the topic of nationalities, while 17.1% are not curious. In relation to the topic of body parts, 71.4% are curious, while 28.6% are not. 85.7% of students enjoy lessons on short readings, such as the fable of the hare and the tortoise, while 14.3% do not enjoy them. Finally, in relation to the topic of adjectives, 77.1% are curious, while 22.9% are not.

Figure 20.

Neurodivergent students: Are you curious to learn more about the topic of: ?



Regarding curiosity to learn more about the topic of nationalities, 100% of neurodivergent students are curious. On the topic of body parts, 33.3% are curious, while 66.7% are not curious. Regarding classes on short readings, 100% of the surveyed students enjoy these classes. Finally, in terms of curiosity to learn more about the topic of adjectives, 66.7% are curious, while 33.3% are not curious.

5. Discussion

After collecting and analyzing information on the activities implemented in classes by the English teacher in a public school in Santander, Colombia, the frequent criteria in the implementation of UDL, and the motivation of neurotypical and neurodivergent students, significant findings have been obtained that add value to this research.

5.1 Activities Implemented in Class by an English Teacher at a Public School in Santander, Colombia.

The most frequent activity in class by the observed English teacher was the use of individual worksheets, including exercises for reading comprehension, vocabulary retention, and translation, which correspond to a traditional type of language teaching. The teacher expressed that one reason for the constant use of worksheets is the high number of students, which agrees with the findings of the study carried out in Ecuador by Calle et al. (2012), in which they concluded that there is a strong inclination toward more traditionalist methodologies since the large number of students in public schools makes it difficult to control and manage the class in more dynamic activities. Likewise, another reason given by the teacher arguing for the use of worksheets is to achieve excellent results in the ICFES tests. However, if the English class is mostly directed to achieve good results in this test, it cannot fully meet the objective of Law 1651 of 2013, as it only strengthens reading and writing skills.

Other less frequent activities in the classroom were watching videos and doing online exercises. The teacher mentioned that the videos served as a complement to the worksheets, and reinforced pronunciation and listening of the language. However, we did not observe that the teacher carried out activities in which he asked the students to read aloud to check if the students were learning the pronunciation of the terms in the class. Likewise, online exercises helped to consolidate learning and practice the concepts addressed in the lesson. According to

what we observed, these activities increase students' participation since they look enthusiastic about using technology and breaking with the monotony of the worksheets.

5.2 Frequent Criteria in the Implementation of UDL

This section analyzes the most frequent criteria for each UDL principle. Thus, the criteria analyzed were (1) applying the hypothesis of comprehensible input (Input+1), (2) the presentation of sequences of graphics, videos, or body language that could clearly express the texts, (3) the provision of glossaries with terms related to the content of each lesson, (4) providing the student with several opportunities to read the same text and (5) more time to write if necessary.

5.2.1 Principle multiple Forms of Engagement

During the observations, we found that the most frequent guideline to keep student engagement up is to provide options to maintain effort and persistence by providing comprehensible input. According to Stephen Krashen's Input+1 hypothesis, students learn most effectively when they encounter material that is slightly more advanced than their current level (Krashen, 1981). The teacher reflected this in his pedagogy by beginning the class by introducing words, then phrases, and finally having students create short sentences, thus gradually increasing the difficulty. This approach seems to reinforce students' self-confidence, allowing them to complete different tasks without losing motivation.

However, not all activities observed involved the application of comprehensible input. This was the case in the reading comprehension worksheet, where the vocabulary and expressions used were not adjusted to the English level of the class, resulting in students resorting to a full translation of the text to complete the task. This suggests that the task disrupted the balance needed to maintain their effort and underlines the importance of adjusting the difficulty of activities to avoid demotivation and reliance on less effective strategies for learning the English language.

5.2.2 Principle: multiple forms of representation

One of the most frequent criteria for providing multiple ways to represent the content of the class was the presentation of graphics, videos, or body language that served to express a text more clearly. Since worksheets are the most frequent pedagogical resource in the classroom, we observed that the teacher carefully chose and/or designed the content of the worksheets to make it visually attractive to the students through the use of images and the presentation of some videos. These audiovisual aids, according to Halwani (2017), allow students to be able to understand the concept, even if the activity or topic is complicated. In addition, Pateşan et al. (2018) found that audiovisual materials help students retain new vocabulary more easily. As a result, we found that the information presented in the worksheets was accessible to most students, regardless of their learning styles.

Another most frequent criterion was to provide a glossary related to the class content. During the observed classes, students worked on different topics, and to introduce each of these topics, the teacher began by presenting a glossary to the students and then developing the worksheets. According to what the teacher reported during class, the objective of these glossaries was for the students to be familiar with the topic and to provide them with tools to have autonomy when developing the worksheet. This agrees with the Theory of Meaningful Learning, which maintains that a glossary can function as a prior organizer, helping students prepare to integrate new information by connecting the newly introduced words with what they already know (Ausubel, 1983).

5.2.3 Principle: multiple forms of action and expression

The observed activities consistently included criteria such as providing multiple opportunities for students to read the same text and allowing extra time for writing when needed. One reason why these criteria were always present is that the only resource needed to carry them out is time, unlike other criteria that require technological resources that the

classroom did not have. Additionally, repeated reading helped students better understand the texts and instructions provided by the teacher.

5.3 Motivation of neurotypical and neurodivergent students

5.3.1 Feelings about Classroom Activities

Most students report feeling more confident when speaking, writing and listening in English. However, when reading in English, they manifest a lack of confidence, suggesting that these activities present greater challenges for students and require more support to improve their performance in these areas. This may be due to the complexity of understanding and processing information in a foreign language, particularly for receptive skills such as reading.

5.3.2 Interest and motivation

The perception of interest in both neurodivergent students and the class as a whole follows a similar pattern. The data suggest that the English class maintains a high level of interest, with two-thirds of students in both groups finding the class interesting always or almost always. Only one-third seem to lose interest occasionally. As there are no significant differences in the distribution of interest between these two groups, it could suggest that the English class is designed in a way that appeals to both neurotypical and neurodivergent students similarly.

5.3.3 Activity Preferences

We found similarities in both groups regarding activities preferences, as they showed a strong inclination toward audiovisual methods, such as exercises with music or videos. These resources seem to better capture their attention and facilitate the learning process, indicating that students benefit from the combination of visual and auditory stimuli to understand the content in English. This confirms the findings found in the study by Wazeema and Kareema (2017), which indicate that students show greater enthusiasm and energy when

actively participating in the classroom using audiovisual aids. These multimedia resources make classes more interesting and stimulate students to learn more effectively.

5.3.4 Commitment and Participation

Most students, both neurotypical and neurodivergent, show a high level of commitment to complete the activities. On the one hand, 77.1% of neurotypical students show frequent or full completion of activities. On the other hand, 100% of neurodivergent students almost always complete the activities, highlighting a high commitment among this group. This is an indicator of motivation toward the English class and reflects that the teacher's strategies are working well in terms of student engagement.

5.3.5 Opinions on Materials and Themes

Students' opinions regarding class materials confirm the group's inclination toward audiovisual resources. Based on the results, we can conclude that videos are an attractive educational tool for both groups, although they have a slightly greater impact on neurodivergent students (See [Figures 17](#) and [Figure 18](#)). 77.2% of neurotypical students rate videos positively, either constantly or almost always, and in the case of neurotypical students, we find a more positive perception, since 100% of them consider videos to be interesting always or almost always.

6. Conclusion

The present research project carried out in a public school in Piedecuesta met the proposed objectives satisfactorily, finding the trends in the activities implemented by the English teacher and their positive impact on student learning.

We found that the most frequent activity is the use of worksheets, which are sometimes accompanied by online exercises, audio stories, or videos. The scarcity in the variety of activities is due not only to the limited resources available in the classroom but also to the lack of effective group management strategies to maintain the attention of more than 35 students.

We also found that the most frequent criteria in the implementation of UDL were the application of the hypothesis of comprehensible input (Input+1), the presentation of a sequence of graphics, videos, or body language that can clearly express a text, providing glossaries of terms related to the content of the lesson, and the provision of more time to the student to read the same text and to write if necessary. From this, we can conclude that the most frequent criteria are those that do not require technological support tools, but rather good time management in class and the creation and/or selection of the worksheets used in class.

Regarding student motivation, our findings indicate that overall motivation for English class was equivalent across the group. Both neurotypical and neurodivergent students expressed similar reasons that drive them to learn English and a shared desire to continue studying the language. However, differences emerged in material preferences, with neurodivergent students showing a stronger preference for audiovisual media than their neurotypical peers.

This project has broadened our understanding of the current state of public education in the region, particularly the human and technological resources available to schools. The

first school that permitted us to carry out this project was waiting for an English teacher to be appointed. However, after more than a month, when we saw that no teacher had yet been appointed, we decided to ask at another school where we conducted the research. This school also did not have an English teacher appointed by the Santander Education Secretary, but the school coordinator assigned temporary teachers for this group.

We suggest conducting a larger-scale study, as the current sample is limited to only three neurodivergent students. A study with a larger sample could provide a more complete and varied view of the results, allowing for a better understanding of the needs and challenges of these students in learning English.

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Appendix A. Classroom Observation Checklist: Universal Design for Learning.**Escuela de Idiomas****Licenciatura en Lenguas Extranjeras con Énfasis en Inglés****Trabajo de Grado****Fecha de la observación: 05/03/2024****Nombre del observador:** Sofy Geraldinne Vesga Rodriguez**Tema de la clase:** Countries and nationalities**Actividad 1:** Worksheet about countries and nationalities

Principio	Ítem (Criterio) La actividad:	Si se cumple	No se cumple	No aplica
1. Múltiples formas de compromiso	Criterio 1. Minimiza las posibilidades de generar un ambiente de burla (Pauta 1.1).		X Debido a la cantidad de estudiantes.	
	Criterio 2. Provee retroalimentación al estudiante de modo que se valoren los aciertos (Pauta 1.2).	X		
	Criterio 3. Provee retroalimentación al estudiante de modo que se genere aprendizaje a partir del error.	X		
	Criterio 4. Aplica la hipótesis del input comprensible, es decir que la actividad tiene un nivel de complejidad mayor al anterior (Input+1).	X		
2. Múltiples formas de representación	Criterio 5. Presenta una secuencia de gráficos, videos, o lenguaje corporal que puedan expresar con claridad un texto.	X		
	Criterio 6. Resalta palabras e ideas importantes en las hojas de trabajo.	X		
	Criterio 7. Realiza lectura en voz alta, o utiliza un lector de texto.	X		
	Criterio 8. Proporciona un glosario de términos relacionados con el contenido de la lección.	X		
	Criterio 9. Fomenta estudiar en equipo.	X		

	Criterio 10. Muestra ejemplos de trabajos terminados correctamente que sirvan como modelo.	X		
3. Múltiples formas de acción y expresión	Criterio 11. Facilita el acceso a herramientas y tecnologías de apoyo. Por ejemplo proveer el acceso a audiolibros.	X		
	Criterio 12. Proporciona al estudiante varias oportunidades para leer el mismo texto.	X		
	Criterio 13. Permita más tiempo para leer y escribir de ser necesario.	X		



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Trabajo de Grado

Fecha de la observación: 05/03/2024

Nombre del observador: Sofy Geraldinne Vesga Rodriguez

Tema de la clase: Countries and nationalities

Actividad 2: Choose the correct answer (AgendaWeb).

Principio	Ítem (Criterio) La actividad:	Si se cumple	No se cumple	No aplica
1. Múltiples formas de compromiso	Criterio 1. Minimiza las posibilidades de generar un ambiente de burla.		X Debido a la cantidad de estudiantes.	
	Criterio 2. Provee retroalimentación al estudiante de modo que se valoren los aciertos.	X		
	Criterio 3. Provee retroalimentación al estudiante de modo que se genere aprendizaje a partir del error.	X		
	Criterio 4. Aplica la hipótesis del input comprensible, es decir que la actividad tiene un nivel de complejidad mayor al anterior (Input+1).	X		
2. Múltiples formas de representación	Criterio 5. Presenta una secuencia de gráficos, videos, o lenguaje corporal que puedan expresar con claridad un texto.		X	
	Criterio 6. Resalta palabras e ideas importantes en las hojas de trabajo para que el alumno las lea primero.	X		
	Criterio 7. Realiza lectura en voz alta, o utiliza un lector de texto.	X		
	Criterio 8. Proporciona un glosario de términos relacionados con el contenido de la lección.	X		
	Criterio 9. Fomenta estudiar en equipo.		X	

	Criterio 10. Muestra ejemplos de trabajos terminados correctamente que sirvan como modelo.	X		
3. Múltiples formas de acción y expresión	Criterio 11. Facilita el acceso a herramientas y tecnologías de apoyo. Por ejemplo proveer el acceso a audiolibros.	X		
	Criterio 12. Proporciona al estudiante varias oportunidades para leer el mismo texto.	X		
	Criterio 13. Permita más tiempo para leer y escribir de ser necesario.	X		



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Trabajo de Grado

Fecha de la observación: 12/03/2024

Nombre del observador: Sofy Geraldinne Vesga Rodriguez

Tema de la clase: Proyecto lector (The hare and the tortoise)

Actividad 1: Worksheet.

Principio	Ítem (Criterio) La actividad:	Si se cumple	No se cumple	No aplica
1. Múltiples formas de compromiso	Criterio 1. Minimiza las posibilidades de generar un ambiente de burla.		X	
	Criterio 2. Provee retroalimentación al estudiante de modo que se valoren los aciertos.	X		
	Criterio 3. Provee retroalimentación al estudiante de modo que se genere aprendizaje a partir del error.	X		
	Criterio 4. Aplica la hipótesis del input comprensible, es decir que la actividad tiene un nivel de complejidad mayor al anterior (Input+1).		X La lectura contiene vocabulario avanzado, por lo que se convierte en una comprensión lectora en español.	
2. Múltiples formas de representación	Criterio 5. Presenta una secuencia de gráficos, videos, o lenguaje corporal que puedan expresar con claridad un texto.	X Las imágenes tienen texto difícil de leer.		
	Criterio 6. Resalta palabras e ideas importantes en las hojas de trabajo para que el alumno las lea primero.	X		
	Criterio 7. Realiza lectura en voz alta, o utiliza un lector de texto.	X		

	Criterio 8. Proporciona un glosario de términos relacionados con el contenido de la lección.	X		
	Criterio 9. Fomenta estudiar en equipo.	X		
	Criterio 10. Muestra ejemplos de trabajos terminados correctamente que sirvan como modelo.		X	
3. Múltiples formas de acción y expresión	Criterio 11. Facilita el acceso a herramientas y tecnologías de apoyo. Por ejemplo proveer el acceso a audiolibros.	X		
	Criterio 12. Proporciona al estudiante varias oportunidades para leer el mismo texto.	X		
	Criterio 13. Permita más tiempo para leer y escribir de ser necesario.	X		



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Trabajo de Grado

Fecha de la observación: 16/04/2024

Nombre del observador: Sofy Geraldinne Vesga Rodriguez

Tema de la clase: Evaluación y adjetivos.

Actividad 1: Aprueba-T.

Principio	Ítem (Criterio) La actividad:	Si se cumple	No se cumple	No aplica
1. Múltiples formas de compromiso	Criterio 1. Minimiza las posibilidades de generar un ambiente de burla.	X		
	Criterio 2. Provee retroalimentación al estudiante de modo que se valoren los aciertos.			X
	Criterio 3. Provee retroalimentación al estudiante de modo que se genere aprendizaje a partir del error.			X
2. Múltiples formas de representación	Criterio 4. Aplica la hipótesis del input comprensible, es decir que la actividad tiene un nivel de complejidad mayor al anterior (Input+1).	X		
	Criterio 5. Presenta una secuencia de gráficos, videos, o lenguaje corporal que puedan expresar con claridad un texto.	X		
	Criterio 6. Resalta palabras e ideas importantes en las hojas de trabajo para que el alumno las lea primero.		X	
	Criterio 7. Realiza lectura en voz alta, o utiliza un lector de texto.		X	
	Criterio 8. Proporciona un glosario de términos relacionados con el contenido de la lección.			X
	Criterio 9. Muestra ejemplos de trabajos terminados correctamente que sirvan como modelo.		X	

3. Múltiples formas de acción y expresión	Criterio 10. Fomenta estudiar en equipo.		X El colegio no cuenta con los recursos tecnológicos.	
	Criterio 11. Facilita el acceso a herramientas y tecnologías de apoyo. Por ejemplo proveer el acceso a audiolibros		X	
	Criterio 12. Proporciona al estudiante varias oportunidades para leer el mismo texto.	X		
	Criterio 13. Permita más tiempo para leer y escribir de ser necesario.	X		



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Trabajo de Grado

Fecha de la observación: 16/04/2024

Nombre del observador: Sofy Geraldinne Vesga Rodriguez

Tema de la clase: Evaluación y adjetivos.

Actividad 1: Glosario con dibujos (27 palabras).

Principio	Ítem (Criterio) La actividad:	Si se cumple	No se cumple	No aplica
1. Múltiples formas de compromiso	Criterio 1. Minimiza las posibilidades de generar un ambiente de burla.	X		
	Criterio 2. Provee retroalimentación al estudiante de modo que se valoren los aciertos.		X	
	Criterio 3. Provee retroalimentación al estudiante de modo que se genere aprendizaje a partir del error.		X	
	Criterio 4. Aplica la hipótesis del input comprensible, es decir que la actividad tiene un nivel de complejidad mayor al anterior (Input+1).	X		
2. Múltiples formas de representación	Criterio 5. Presenta una secuencia de gráficos, videos, o lenguaje corporal que puedan expresar con claridad un texto.	X		
	Criterio 6. Resalta palabras e ideas importantes en las hojas de trabajo para que el alumno las lea primero.			X
	Criterio 7. Realiza lectura en voz alta, o utiliza un lector de texto.		X	
	Criterio 8. Proporciona un glosario de términos relacionados con el contenido de la lección.	X		
	Criterio 9. Fomenta estudiar en equipo.		X	
	Criterio 10. Muestra ejemplos de trabajos	X		

	terminados correctamente que sirvan como modelo.			
3. Múltiples formas de acción y expresión	Criterio 11. Facilita el acceso a herramientas y tecnologías de apoyo. Por ejemplo proveer el acceso a audiolibros.		X El colegio no cuenta con los recursos tecnológicos.	
	Criterio 12. Proporciona al estudiante varias oportunidades para leer el mismo texto.	X		
	Criterio 13. Permita más tiempo para leer y escribir de ser necesario.	X		



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Fecha de la observación: 12 / 03 / 2024

Nombre del observador: Lina Alejandra Aranda Bonilla

Actividad: Lectura sobre Fábula

Principio	Ítem (Criterio) La actividad:	Si se cumple	No se cumple	No aplica
1. Múltiples formas de compromiso	Criterio 1. Minimiza las posibilidades de generar un ambiente de burla.		x	
	Criterio 2. Provee retroalimentación al estudiante de modo que se valoren los aciertos.	x		
	Criterio 3. Provee retroalimentación al estudiante de modo que se genere aprendizaje a partir del error.	x		
	Criterio 4. Aplica la hipótesis del input comprensible, es decir que la actividad tiene un nivel de complejidad mayor al anterior (Input+1).		x	
2. Múltiples formas de representación	Criterio 5. Presenta una secuencia de gráficos, videos, o lenguaje corporal que puedan expresar con claridad un texto.	x		
	Criterio 6. Resalta palabras e ideas importantes en las hojas de trabajo para que el alumno las lea primero.	x		
	Criterio 7. Realiza lectura en voz alta, o utiliza un lector de texto.	x		
	Criterio 8. Proporciona un glosario de términos relacionados con el contenido de la lección.	x		
	Criterio 9. Muestra ejemplos de trabajos terminados correctamente que	X		

	sirvan como modelo.			
	Criterio 10. Fomenta estudiar en equipo.			x
3. Múltiples formas de acción y expresión	Criterio 11. Facilita el acceso a herramientas y tecnologías de apoyo. Por ejemplo proveer el acceso a audiolibros.	x		
	Criterio 12. Proporciona al estudiante varias oportunidades para leer el mismo texto.	x		
	Criterio 13. Permita más tiempo para leer y escribir de ser necesario.	x		



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Trabajo de Grado

Fecha de la observación: __ 19 __ / __ 03 __ / __ 2024 __

Nombre del observador: __ Lina Alejandra Aranda Bonilla

Actividad: __ Vocabulary about parts of the body

Principio	Ítem (Criterio) La actividad:	Si se cumple	No se cumple	No aplica
1. Múltiples formas de compromiso	Criterio 1. Minimiza las posibilidades de generar un ambiente de burla.	x		
	Criterio 2. Provee retroalimentación al estudiante de modo que se valoren los aciertos.	x		
	Criterio 3. Provee retroalimentación al estudiante de modo que se genere aprendizaje a partir del error.	x		
	Criterio 4. Aplica la hipótesis del input comprensible, es decir que la actividad tiene un nivel de complejidad mayor al anterior (Input+1).			
2. Múltiples formas de representación	Criterio 5. Presenta una secuencia de gráficos, videos, o lenguaje corporal que puedan expresar con claridad un texto.	x		
	Criterio 6. Resalta palabras e ideas importantes en las hojas de trabajo para que el alumno las lea primero.	x		
	Criterio 7. Realiza lectura en voz alta, o utiliza un lector de texto.	x		
	Criterio 8. Proporciona un glosario de términos relacionados con el contenido de la lección.	x		
	Criterio 9. Muestra ejemplos de trabajos terminados correctamente que sirvan como modelo.	x		
	Criterio 10. Fomenta estudiar en		x	

	equipo.			
	Criterio 11. Facilita el acceso a herramientas y tecnologías de apoyo. Por ejemplo proveer el acceso a audiolibros.			x
3. Múltiples formas de acción y expresión	Criterio 12. Proporciona al estudiante varias oportunidades para leer el mismo texto.	x		
	Criterio 13. Permita más tiempo para leer y escribir de ser necesario.	x		

Appendix B. Questionnaire about students self-perceived motivation.

<https://drive.google.com/file/d/1FnthZtUr20WfJ-6F86-RnN8zDV0F1v9K/view?usp=sharing>

Appendix C. Interview with the English teacher.



Escuela de Idiomas

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Trabajo de Grado

Fecha de la entrevista: 03 / mayo / 2024

Entrevistador(es): Sofy Geraldinne Vesga Rodríguez

Entrevistado: Profesor 1

Objetivo general:

Revisar actividades implementadas por docentes de inglés del sector público de Piedecuesta según el Diseño Universal de Aprendizaje (DUA) y su impacto en la motivación de estudiantes neurotípicos y neurodivergentes.

Relacionadas con la profesión

- ¿Cuánto tiempo lleva ejerciendo la docencia?

Llevo desde que estaba en el colegio, le explicaba a un muchacho que vivía ahí en mi casa que era el hijo de la señora que nos ayudaba ahí en la casa, pero lo hacía a nivel de ayudar al chico, porque él tenía un problema de aprendizaje, él estuvo en el IPA. No se si usted haya escuchado hablar de eso. Era un instituto que se encargaba de personas con problemas de aprendizaje. Él fue mi primer estudiante.

Ya a nivel profesional, desde el 2005 estoy trabajando en docencia, porque yo soy ingeniero de sistemas, y entré por concurso.

- ¿Con qué herramientas cuenta el aula de clase?
Ese salón tenía básicamente el tablero. Lo que llevaba son cosas mías, yo llevaba videobeam, y un parlante de sonido [y un mouse inalámbrico]. Pero como no trabajo en ese colegio, no se si de pronto tengan algún sistema para préstamo de materiales, pero no se que prestan, ni la dependencia donde prestan esos materiales. Si se que tienen un aula de informática, porque yo he estado en la sala de informática a nivel de unas reuniones que nos han programado y hemos estado en sala de informática con los profesores. Yo llevaba mis materiales, yo me encargaba de llevar mis cosas.
- ¿Cuáles son las actividades que más frecuente en su clase?
Yo utilizo mucho las guías, sobre todo con grupos que son así con mucho problema de disciplina y orden, entonces con esos grupos me gusta utilizar mucho las fotocopias, la guía que ellos pueden trabajar en ese momento en clase. Ya a veces colocaba videobeam para que ellos hicieran ejercicios, bien sea ejercicios pasando el mouse o haciendo ejercicios dinámicos, también viendo videos para que mejoraran la retención de los conceptos y de la pronunciación en inglés.
- ¿Cuál es el propósito de dichas actividades? (por ejemplo: fortalecimiento de alguna de las cuatro habilidades del idioma).
(de la respuesta anterior): viendo videos para que mejoraran la retención de los conceptos y de la pronunciación en inglés.
Con las guías se busca reforzar lo que evalúan las pruebas ICFES. En el ICFES lo que evalúan es el reading y el writing, En ello no se evalúa nada de listening y speaking. Entonces es para trabajar un poco más esa parte.

Relacionadas con la percepción de motivación de los estudiantes

- Podría brindarnos una descripción del grupo 606
Es un grupo muy diverso, bastante heterogéneo. Hay muchachos que vienen de realidades sociales muy duras, muy complicadas. Muchachos que vienen de la invasión, En la primera clase les pregunté en dónde vivían, y muchos de ellos viven en Nueva Colombia, en la parte de la invasión que queda hacia Guatiguara. Entonces, uno ya conoce esa zona, y yo sé que allá hay mucho problema de drogadicción, de delincuencia. Son familias muchas veces descompuestas, y eso se ve reflejado. Muchos de esos chicos traen ya sus comportamientos asociados a ese tipo de población.
A muchos de ellos uno ya les nota en la forma de ellos comportarse y en la forma actuar es similar a la de las barras bravas que van a los partidos, son comportamientos que ellos van adoptando y uno los alcanza a percibir en ellos.
Y también así como hay chicos así, hay chicos muy juiciosos. Había unas niñas que yo inclusive estaba un poco asombrado porque yo no sabía a que grupo me estaba enfrentando y me encuentro de sorpresa que si había chicos muy pilosos, muy inteligentes, y que de pronto siento que se estaban estancando un poco en ese grupo porque los otros no dejaban atender en clase, entonces ahí como que les complicaba

un poco el poder avanzar quizás más, porque yo se que son chicos que yo se que podrian dar mas.

- ¿Cuáles son las actividades que más disfruta el grupo en general?
Las verdad que con los chicos, así sobretodo en la edad que están ellos, 12 -13 años, pues lo que a ellos más les gusta es el juego, esas actividades que tengan que ver con un juego o algo asi les gusta mucho, entonces yo creo que lo que mas les llama así a veces la atención es la interacción a través de ejercicios por internet por el mouse conectándolo con el videobeam, eso les gusta a ellos bastante. No lo podía hacer en muchas ocasiones, no porque no quisiera, sino porque de todas maneras siempre era un poquito complicado el asunto del control del grupo, pero si eso les gustaba a ellos muchas veces. Al principio les daba miedo hacer el ejercicio y ya después les iban perdiendo el miedo, y ya después querían participar con eso.
- ¿Cuáles son las actividades que desde su percepción motivan la participación de los estudiantes neurodivergentes?
Eso varia de la persona y varía también de cómo se siente el chico en el salón. Entonces yo no sé. Mi percepción es de que en algunos momentos si se sentían cómodos y en otros no tanto. Sobre todo cuando requieren mucha más personalizado. Hay chicos que son muy introvertidos, muy cohibidos de participar, y son cuestiones que tienen que ver con el carácter de la persona. Pero para poder que la persona vaya soltándose o vaya dejando de lado la timidez y todas esas cosas, esos son procesos largos, e inclusive requieren un acompañamiento más de cerca. y estamos hablando de un grupo que eran más de 30 estudiantes, entonces enfocarse uno en un solo muchacho y descuidar los otros 29 que hay ahí es difícil.

Relacionadas con la inclusión en clase

- ¿Cómo definirías los conceptos ‘neurotípico’ y ‘neurodivergente’?
Un neuro me imagino que se refiere a la cuestión neuronal, como funcionan las neuronas, específicamente el cerebro, como se da ese proceso, digamos que es un proceso físico químico que se da a nivel de sinapsis y cómo pues trabaja este cerebro para aprender. Me imagino que tiene que ver en este caso de cómo aprenden los muchachos.

Lo que pasa es que en este tipo de población, yo tengo entendido que ahí viene una cuestión de valoración, porque pues al colegio están yendo unas psicólogas a valorar esos casos, o a remitir, si es el caso al profesional de la salud que está capacitado para diagnosticar la condición de estos chicos. Pero pues si **cada chico es un universo**.
- ¿Cómo describe las dificultades del estudiante con coeficiente intelectual leve?
Las dificultades muchas veces tiene que ver primero que todo con lo que es más básico en todo ser humano que es la convivencia, como esta persona es aceptada dentro del grupo, porque si dentro del mismo grupo hay prejuicios, o hay otros

muchachos que de pronto no le hablan a esa persona, poco se relacionan, o lo dejan allí en un rincón, que es lo que uno ve, que es lo que uno se da cuenta. Uno decía, este muchacho poco lo tratan, poco se relacionan con él, entonces yo creo que partiendo de ahí eso es lo primero, antes de hablar de cuestiones de pedagogía es como se siente la persona, como es que se está sintiendo en ese momento, como se está relacionando con el otro. Yo creo que eso es lo más básico, lo primero que uno debe revisar y es complicado esto porque ya le digo son cuarenta muchachos, cada uno con su mundo, y con esas diferentes realidades y algunos con entornos muy complicados, y están estos otros chicos que tienen su cuestión divergente, y bueno, de pronto no son aceptados, no encajan muy bien, y todo eso se va sumando.

- ¿Cómo describe las dificultades de los estudiantes con Trastorno de Déficit de Atención?

Había un chico que era repitente por ejemplo, y creo que las notas que yo le vi que llevaba en otras materias no eran muy buenas, entonces yo creo que muy poco se estaba haciendo por muchacho, creo que estaba cayendo en lo mismo, notas mala, el muchacho no daba el desempeño deseado en las actividades o en las evaluaciones y en clase yo cuando hablaba con él, le preguntaba sobre la guía o lo que estamos viendo en clase y parecía que no supiera mayor cosa, no se ha enfocado en el tema ni cada, no copia en su cuaderno. Yo no me atrevería a decir si estaba o no estaba interesado en la clase porque de todas formas el muchacho tenía dificultades mucho más a fondo. Yo no los conozco porque ni siquiera sé cómo está el muchacho catalogado en el SIMAT con qué diagnóstico lo tengan a él. Lo cierto es que el muchacho lo tienen ahí en el grupo en una esquina en la parte de adelante, pero no más.

De decir que a mi me dijeron o me informaron “Mire profesor, aquí está esto así, y como está organizado la cuestión de los muchachos que tienen dificultades”, a mi en ningún momento no me dieron una inducción para eso ni nada. Yo entro a asumir un grupo que básicamente no había un profesor de inglés, necesitaban a alguien ahí que les dieran clases porque estaban perdiendo clases de inglés y lo necesitaban ya, o sea es una cuestión que dice que necesitamos alguien que venga a cubrir unas horas. Entonces yo en ese momento tomé la decisión de ayudar en eso pero porque yo estaba esperando que me resultara otro programa que ya se abrió, entonces mientras se autoriza ese otro programa yo voy y ayudé en esas clases. Entonces fue una cuestión más temporal lo que estaba haciendo, entonces por eso tampoco me empape del asunto de como están estos niños porque deben estar me imagino yo en el SIMAT, deben aparecer con un diagnóstico o algo.

- ¿Cómo garantiza la igualdad de oportunidades de aprendizaje por parte de sus estudiantes en el aula?

Todos los chicos son importantes. La verdad yo no tengo una fórmula para eso pero yo creo que si verdaderamente estamos apuntando a una educación inclusiva tiene que llevar como la forma de hacer eso. Porque no vamos a decirnos mentiras, eso en el

papel suena muy bonito, pero a la hora de la verdad si se están atendiendo las problemáticas sociales de esos muchachos? por ejemplo los que yo digo que vienen de esas realidades tan fuertes, que de pronto sus papas son expendedores de droga, porque ahí estamos hablando de divergencia. Entonces con esos muchachos se está llevando algún acompañamiento con esos muchachos? incluso con el uso de estupefacientes, porque de pronto muchos de esos muchachos ya hayan probado, se hayan iniciado en ese mundo, sepan mucho eso.

En última instancia, haga de cuenta que en este tipo de grupos que son tan heterogéneos debería haber personal de apoyo. porque un maestro no puede estar pendiente de cuarenta realidades diferentes, es muy difícil. Es el reto, pero no es algo que en la práctica se pueda decir que se está haciendo, realmente es difícil, es muy complicado, y yo he visto en colegios que están abanderando estos proceso de inclusión y tienen maestros de apoyo. Por ejemplo en otra institución que trabaje tuve maestro de apoyo. Tenía un grupo donde tenía un ciego, uno en silla de ruedas, uno con síndrome de down, un muchacho de la barra brava de Bucaramanga que consumía drogas. Era un grupo así muy diverso, un poquito más pesado, y allí tenía un maestro de apoyo que hacía un trabajo especialmente con el chico que era ciego y se encargaba de hacer unas actividades y estar mirando como iba el proceso con el chico, y me apoyaba. Yo creo que el asunto es así, si queremos realmente hablar de que vamos a trabajar en la divergencia y la inclusión.

- ¿Has escuchado sobre el DUA (Diseño Universal de Aprendizaje)? ¿Qué conoce sobre este marco de aprendizaje?

A nosotros nos dieron una capacitación en pandemia sobre eso y pues tiene que ver bastante con desarrollar de acuerdo a las necesidades del estudiantes, las actividades que vayan encaminadas a favorecer al estudiante en todo lo que sean las dificultades que tiene para su aprendizaje. El Diseño Universal apunta a eso, y apunta a que también los curriculum sean flexibles y se puedan adaptar para estos muchachos que tienen esas dificultades. De pronto no alcanzar a todos los logros que se esperarían, todos los desempeños, pero si de pronto en un nivel inferior que puedan alcanzar algunos de esos desempeños. Entonces es adaptar un poco el currículum para eso.

- ¿Tiene en cuenta las pautas del DUA al momento de planear las clases?

Yo vengo haciendo esto como algo temporal, si se hubiese dado con más tiempo el asunto seguramente que uno hubiera diseñado alguna estrategias con estos estudiantes, pero ese no fue mi caso porque yo no duré ahí sino prácticamente un mes. Eso fue lo que yo dure ahí dando clases y pues dígame usted en un mes, si apenas alcanza medio a ver la realidad de los muchachos. Entonces, ya la verdad, si usted me dice que si yo le diseñe a ellos unas actividades especiales para eso, no. No hubo tiempo para eso.

Me acerque a ellos, hable con ellos, me di cuenta de lo que estaba sucediendo y no hice solo con los muchachos que tenían problemas de aprendizaje. También incluso lo hice con quienes eran buenos estudiantes. Incluso yo le pregunté a una niña ‘bueno,

¿usted por qué está aquí en este grupo?’ porque me parece a mí tan extraño este grupo, tan diverso, y pues era una chica muy buena, se veía que era una niña muy juiciosa, muy pilosa en las clases le iba muy bien y todo. Entonces yo decía unos porque no avanzan, otros porque se estancan, no pueden avanzar, otros porque bueno, no se ha podido mirar como esa cuestión, entonces es algo que no sé bajo qué criterio se arman los grupos ahí.

Appendix D. Informed consent to the teacher.**DOCUMENTO DE CONSENTIMIENTO INFORMADO****Análisis de actividades utilizadas en clases de inglés según el Diseño Universal de Aprendizaje, y sus Efectos en la Motivación de Estudiantes Neurotípicos y Neurodivergentes.****I. INFORMACIÓN**

Has sido invitado a participar en la investigación cuyo objetivo es revisar actividades implementadas por docentes de inglés del sector público de Piedecuesta según el Diseño Universal de Aprendizaje (DUA) y su impacto en la motivación de estudiantes neurotípicos y neurodivergentes..

Los investigadores responsables de este estudio son los estudiantes Lina Alejandra Aranda Bonilla y Sofy Geraldinne Vesga Rodríguez de la Facultad de Ciencias Humanas de la Universidad Industrial de Santander.

Para decidir participar en esta investigación, es importante que consideres la siguiente información.

Participación: Tu participación consistirá en una entrevista que durará alrededor de 20 minutos. Para facilitar el análisis, esta entrevista será grabada. En cualquier caso, tú podrás interrumpir la grabación en cualquier momento, y retomarla cuando quieras.

Además, estaremos presentes durante cuatro clases de inglés con el objetivo de analizar y ver cómo se llevan a cabo las actividades académicas.

Beneficios: Tú no recibirás ningún beneficio económico directo por participar en este estudio. Sin embargo, tu participación permitirá generar información para complementar los vacíos de investigación presentes en esta área de estudio.

Voluntariedad: Declaras que autorizas tu participación. Además, tendrás la libertad de contestar las preguntas que desees, como también de detener tu participación en cualquier momento. Esto no implicará ningún perjuicio para ti.

Confidencialidad: Todas tus opiniones serán confidenciales, y mantenidas en reserva. En las presentaciones y publicaciones de esta investigación, tu nombre y el de la institución educativa no aparecerán.

Conocimiento de los resultados: Tienes derecho a conocer los resultados de esta investigación. Una vez que la investigación finalice, te compartiremos el resultado final, por medio de tu información de contacto proporcionada, si así lo desearas.

Datos de contacto: Si requieres mayor información, o comunicarse por cualquier motivo relacionado con esta investigación, puedes contactar a las investigadoras responsables de este estudio:

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También puedes comunicarte con la profesora

Prof. Luisa Fernanda Hernández Valdivieso

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Fecha: _____

Yo, _____, acepto participar voluntariamente en el estudio Análisis de actividades utilizadas en clases de inglés según el Diseño Universal para el Aprendizaje, y sus Efectos en la Motivación de Estudiantes de Inclusión: Un estudio de Caso. Declaro que comprendo las condiciones de mi participación en este estudio.

He tenido la oportunidad de hacer preguntas y han sido respondidas. No tengo dudas al respecto.

Firma Participante

Firma Investigador Responsable

Fecha: _____

Este documento se firma en dos ejemplares, quedando una copia en poder de cada parte.

Appendix E. Frequency table of UDL criteria

https://docs.google.com/spreadsheets/d/16PuUDLfKjD2yjePAPIWul4QXHXT_B27Tifz-25Vv4h4/edit?usp=sharing

Appendix F. Tables with the results of the questionnaire to the students.

<https://docs.google.com/spreadsheets/d/1KFwUh3v9dxxvibKRq6qkvUSMiYEEh6i7ZSDU7BVdkDM/edit?usp=sharing>