Influence of an error analysis-based feedback intervention in the development of Growth mindset in Advanced English II students from Foreign Languages teaching program at UIS

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Dedication

We dedicate our dissertation work to our family and many friends. A special feeling of gratitude to our loving parents, Myrella Albarracin, Jesús Ibarra, Adelina Montero, Edgar Carreño and Yaneth Garzón, for their unwavering support and their love throughout all these years. Without them, this couldn't be possible.

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Abstract

Title: Influence of an error analysis-based feedback intervention in the development of Growth Mindset in Advanced English II students from the Foreign Languages teaching program at UIS

Authors: Catalina Carreño Garzón, José Esteban Correa Montero y Glenys Dayana Ibarra Albarracín

Keywords: Error analysis, error, Growth mindset, Fixed mindset.

Description:

Regarding the implementation of methodologies to boost students' soft skills, the current study approaches growth mindset in order to change students' negative perception of errors, by inquiring about an alternative teaching method as Error Analysis. This is why this research investigation intends to determine whether the implementation of Error-Analysis-based feedback in the classroom influences the development of Growth Mindset in Advanced English students at UIS studying a bachelor's degree in foreign Languages. For this purpose, it made use of Blackwell *et al.*'s (2007) Implicit Theories of Intelligence Scale for Children - Self form (ITIS) to assess students' mindset before and after four 60-minute session intervention that revolved around error analysis-based feedback as well as a complementary survey to find out more about participants' classroom and studying habits after the intervention. The results revealed that while 50% of the participants experienced a positive change in their mindset score after the intervention, this increment was not statistically significant. Only 7,14% of the subjects displayed an actual change in mindset (from Borderline to Growth).

Bachelor Thesis
Faculty of Humanities and Social Sciences. Language School. Director María Eugenia Rojas Villamizar.

Resumen

Título: Influencia de una intervención de retroalimentación basada en el análisis de errores en el desarrollo de la Mentalidad de Crecimiento en estudiantes de Inglés Avanzado II del programa de enseñanza de Lenguas Extranjeras de la UIS

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Palabras clave: Análisis de errores, error, Mentalidad de crecimiento, Mentalidad fija.

Descripción:

En cuanto a la implementación de metodologías para potenciar las habilidades blandas de los estudiantes, el presente estudio aborda la mentalidad de crecimiento con el fin de cambiar la percepción negativa de los estudiantes hacia los errores, indagando sobre un método de enseñanza alternativo como lo es el Análisis de Errores. Es por ello que esta investigación pretende determinar si la implementación de retroalimentación basada en el Análisis de Errores en el aula influye en el desarrollo de la Mentalidad de Crecimiento en estudiantes de Inglés Avanzado de la UIS que cursan la licenciatura en Lenguas Extranjeras. Para ello, se utilizó la Escala de Teorías Implícitas de la Inteligencia para Niños - Autoformulario (ITIS) de Blackwell et al. (2007) con el fin de evaluar la mentalidad de los estudiantes antes y después de una intervención de 4 sesiones de 60 minutos que giró en torno a la retroalimentación basada en el análisis de errores, así como una encuesta complementaria para conocer más sobre los hábitos de estudio y de clase de los participantes después de la intervención. Los resultados revelaron que, aunque el 50% de los participantes experimentaron un cambio positivo en su puntuación de mentalidad tras la intervención, este incremento no fue estadísticamente significativo. Sólo el 7,14% de los sujetos mostraron un cambio real en su mentalidad (de límite a crecimiento).

Trabajo de Grado
Facultad de Ciencias Humanas. Escuela de Idiomas. Directora María Eugenia Rojas Villamizar.

Introduction

Competitiveness has become an influential factor in academic proficiency and also in language learning. It is seen as the core of the western education system, in which it "is rooted in a 'debate culture' where there is always a right and a wrong side, which is eventually proven by the emergence of a winner and a loser" (Piovani and Togrul, 2012); therefore, errors and miscalculations are demonized and rejected in academic and professional life. Normally, "People who fall outside the current education system and/or stay unsuccessfully within it perceive that individual failures emerge from lack of individual effort or capabilities rather than from reductionist expectations of the dominant education system" (Piovani & Togrul, 2012); and in our circumstances, in a hurry to follow up on the educational policies of advanced capitalist countries, Colombia has been replicating educational aims and mindsets that cannot be entirely reached because of their standards. Those are taken out of context, and they are making Colombia's society projection unclear and unstructured in the long term. In the language learning field, several biases and beliefs have limited students'evolution in the EFL classroom leading them to have a fixed mindset, and these can be reinforced by teachers' responses towards errors; for example, a study carried out in Bogotá found that the majority of the participants had bad experiences learning English at school because of the teasing due to bad pronunciation, or pressure and impatience by teachers, conditioning the learning process through punishment, such as poor grades, anger at mistakes or negligence (Roldán Sánchez, 2016).

Taking into account the above-mentioned, circumstances like the ones explained before have recently led to several researches targeting the relationship of mindset and other factors or context, such as EFL and learners' beliefs about the role of natural talent (Mercer & Stephen, 2010) language mindset and willingness to communicate (Zarrinabadi *et al.*, 2021) or looking

at graded performance and engagement (Eren & Rakıcıoğlu-Söylemez, 2020). On the other hand, there have been studies focusing on the error itself. There have been works that were focusing merely on error correction (Morley, 2016; Jing *et al.,* 2016), students and teachers' perspectives (Septiana *et al.*, 2016; Uysal & Aydin, 2017), and the implementation of Error analysis method in EFL classrooms (Karim *et al.,* 2018; Permatasari *et al.,* 2018). Still, in foreing language learners' Soft skills, it has not been approached with a growth mindset with a EFL method such as error analysis and its role,a topic relatively new in teaching and learning.

Bearing in mind this complex and tangible issue, this research project attempts to help in the pursuit of an alternative teaching approach that counters the fixed mindset that has been created around errors and failure. This project will explore error-analysis, a teaching approach that puts errors at the forefront of the learning process, and its effects on the development of university student's growth mindset. Its purpose is to determine whether or not the implementation of the error-analysis method influences the growth mindset in a group of Advanced English II students at UIS. Considering this, the research question that we stated is:

How does the implementation of Error analysis influence the development of Growth mindset in Advanced English II students from Foreign Languages teaching program at UIS?

The purpose of this research project is to determine to what extent the implementation of error-analysis influences the growth mindset in a group of Advanced English II students at UIS. In recent years, scholars have spotted the need to study growth mindset and carry out classroom interventions in order to reduce their error-related anxiety (Levine *et al.*, 2019). This necessity stems from authors such as Curran and Hill (2019) noticing that current generations of university students experience higher levels of socially prescribed perfectionism than any

former generation and this is a tendency that seems to be on the rise. Bearing this in mind, we, as future teachers, want to contribute to the deconstruction of the teacher's beliefs towards the students' outcomes when they struggle during their learning process. We expect the results from this research to raise awareness in our colleagues about the need to use errors as a learning tool rather than a qualifier that can place the learners between good and bad in comparison with their peers. Indeed, whenever a teacher has a judging mentality or a fixed mindset when it comes to errors, students eventually develop that mindset too, leading them to struggle during their academic life which can be projected onto their professional life as well, in Reitbauer *et al.* words "it can thus disempower learners, leaving them helpless, confined by the limits of their supposed 'innate' abilities" (2013, p. 24). Hence, this study aims at looking at error-analysis as a possible solution to not only increase students' resilience and open-mindedness towards learning but also possibly change teachers' perceptions of errors.

The results in this study can help bring attention to the benefits of an unorthodox teaching methodology as it is error-analysis beyond the ones that have already been established such as helping identify the strategies that learners use as well as some of their more frequent struggles (Irawansyah, 2017). Furthermore, in an education system in which soft skills are often overlooked, this research project can serve as a guide to teachers all around the world for promoting growth mindset in their classrooms which according to Dweck (2017) is a skill that allows individuals to prosper during troubled times.

With this in mind, this study aims to:

Objectives

General objective:

Determining whether the implementation of Error-Analysis-based feedback in the classroom influences the development of Growth mindset in Advanced English students at UIS studying a bachelor's degree in foreign Languages.

Specific objectives:

1. Assessing the initial mindset towards failure of Advanced English II students at UIS using the Implicit Theories of Intelligence Scale for Children – Self Form (ITIS).
2. Analyzing the changes of Advanced English II students' mindset towards failure changes after carrying out a 1-week-long pedagogical intervention.
3. Providing further insight on participants' classroom, studying habits and beliefs after the intervention through the lens of the Growth Mindset dimensions.

Chapter I. Theoretical Framework

Mindset theory

The lens through which students view and judge themselves greatly impacts the direction their life takes and whether or not they reach the goals they set out to accomplish. This phenomenon is referred to as Mindset theory and Dweck (2017) explains it as the existence of two opposite mindsets; the first one is called fixed mindset and it occurs when an individual believes that he or she has a certain amount of intellect that cannot be changed and sees failure as a setback and as a sign of a lack of talent or intelligence. The second one is known as growth mindset and students with it see skills as malleable and ever-changing and value self-development and stretching oneself in order to learn something new. According to Jacovidis *et al.,* (2020), these mindsets and beliefs regarding learning are heavily influenced

by the interactions, input and feedback students receive from the people around them. Including parents, teachers, peers and coaches. This theory is framed under Bandura's (1989) Social cognitive theory which states that beliefs, self-perceptions and expectations mold and influence behavior. Thus, humans have the ability to grow into anything and the path that their life takes is decided by the social systems that shape them as well as their intentions and goals. The six Growth mindset dimensions (Chen *et al.,* 2021) that provide theoretical support for this investigation are risk-taking, resilience, grit, intrinsic motivation, criticism-tolerance and self-confidence. These dimensions can be defined as following:

Risk-taking is defined as "the responsibility taken by students and their desire to learn something new in uncertain situations that can lead to success or failure" (Varışoğlu & Ekinci, 2019, p. 242); resilience means "the quality that allows students who experience learning difficulties and setbacks to persist and continue to strive toward positive outcomes" (Wilson & Conyers, 2020); grit, as "the perseverance and passion to achieve long-term goals" (Wilson & Conyers, 2020); moreover, intrinsic motivation implies "the propensity for individuals to learn about new subjects and to differentiate their interests, thereby fostering a sense of purpose and meaning" (Ng, 2018); criticism-tolerance, in which criticism is "the action of expressing disapproval of something or someone" (Collins, n.d.), and if you tolerate something, you accept it even when you don't really like it (Collins, n.d); finally, self-confidence refers to "people's sense of competence and skill, their perceived capability to deal effectively with various situations" (Shrauger & Schohn, 1995, p. 256).

Growth mindset in foreign languages

In the education field, it has been proven that students with a growth mindset perform better under stressful situations than those with a fixed mindset. Dweck (2017) explains that

the transition to college is a time that brings constant pressure to pupils' lives; however, students with a growth mindset receive better grades than their fixed mindset counterparts as the former are able to bounce back after underachieving on a test while the latter tend to get stuck at the first sign of failure. Growth mindset has also evidenced its usefulness in the language acquisition domain where risk-taking and persistent motivation despite making mistakes are crucial and where approaches such as Task-based learning (TBLA) are thought to be closely linked with promoting mindset growth (Bech & Lespinasse, 2018). Furthermore, Hildrew (2018) points out that changing a mindset is possible due to the brain's plasticity that allows it to create new synapses when new information is introduced.

Error Analysis

In the 1970s, in the fields of Applied Linguistics, Error Analysis arose to investigate the language of second language learners, displacing the Contrastive Analysis, which remarked that errors were a result of L1 habits transferred to the target language (Ellis, 1994). According to Corder (1974, as cited in Hinkel, 2018), errors are noteworthy as they can supply teachers and researchers with information about how much the student has learnt and how the language itself was learnt, besides it could help learners recognize the rules of the target language. Indeed, this type of analysis is a method to document the errors that appear in a learner language, determine whether those errors are systematic, and (if possible) explain what caused them (University of Minnesota, n.d). Krashen explains that (1982, as cited in Hinkel, 2018) errors and their analyses shed light on the areas of learning difficulty that can be useful for both language teachers and language learners, and he proposes a methodology to implement in Error Analysis research: 1) Collection of samples of learners language, either in oral or written form and from a vast number of learners or just a single one; 2) Identification of errors, taking emphasis on investigating only errors and not mistakes in performance; 3) Description of

errors, whether its proportion on different language levels (e.g. syntax, grammar, morphology) or if they involve omissions, misordering, misinformation, among others; 4) Explanation of errors, which implicates establishing the source of the error (why it was made); 5) Evaluation of errors, the impact of errors on the person being addressed is taken into account in this final step. At the same time, Xie & Jiang (2007) expose some of the limitations of the EA method. They argue that if error analysis is prioritized in ESL, the teacher might omit the relevance of correct utterance and the communicative fluency in the target language, or overemphasize production data rather than comprehension; with the EA scope the universal aspects of language aren't viewed and it does not take into account the strategy of avoidance applied by learners.

Error analysis influence on Growth mindset

The rationale behind the relationship between error analysis feedback and Growth mindselt is rotted in two of the Growth mindset dimensions. Two of the most important dimensions are Risk-taking and resilience (Chen *et al.,* 2021) and both of these dimensions keep a close relationship with errors. The first dimension is about being comfortable enough with making errors that you are no longer afraid to take risks and try out things outside of your comfort zone; and the second one, it is based on being able to bounce back from your errors whenever you make them. Taking into account the behaviorist perspective of errors which is usually spread in schools, Richards and Rodgers (2014) pointed out that "errors were wrong habits that should always be eradicated" which resulted in the mistakes and errors of L2 students becoming fossilized (as cited in Sánchez & Pacheco, 2021). To tackle this perception of error, we decided to design this pedagogical intervention that intended to give positive feedback as it is seen as a way to increase students' motivation and guarantee linguistic accuracy, which has a greater bearing on the growth mindset's perception of error, that it is

seen as a tool for learning (Sánchez & Pacheco, 2021).

Previous Studies

Growth Mindset

By having a growth mindset, learners are likely to take risks and persist on tasks; even though they make mistakes or find the task difficult, they will see failure as an opportunity to learn. As it is expressed by Rattan *et al.* that:

> The malleability of emotion aims to make students establish a belief that it is their own perceptions, rather than external events, that affect their emotion. In other words, they can determine emotion by themselves. The core of this part is that emotions are malleable and regulable, which consists of the core thoughts of classic GM intervention. (2015, as cited in Huang *et al.*, 2022)

Taking a look at several studies, they have reported successful interventions to prove this malleability. Yeager and Walton (2011) set out to review the theoretical basis of different social-psychological interventions, as well as consider how to successfully implement them. In their article, the authors explain that the interventions' influence lies in addressing students' school experiences and targeting their inner beliefs and psychological processes. The authors highlight that Social-psychological interventions have not only been proven to produce remarkable improvement in academic achievement, but also, given the ideal execution and context, have the potential to present solutions to issues special to the academic field. Additionally, Yeager & Dweck conveys that if mindset interventions take into account the constantly changing nature of research and knowledge regarding adult brain plasticity, they

may be more effective. Teaching students about brain plasticity is one way that certain mindset interventions already get their message across, this aiming to a student audience who may have a more sophisticated knowledge of brain plasticity (2012, as cited in Limeri, 2020).

On the other hand, there are studies reporting little impact of intervention on the growth mindset of participants. In two meta-analyses of mindset interventions, Sisk *et al.* (2018) found that there was no average benefit of those interventions among studies with undergraduate students. In the first meta-analysis, researchers looked at potential moderators as well as the strength of the association between mindset and academic success. In the second one, they investigated the impact of mindset interventions on academic performance and other moderating variables. Nevertheless, the theory's central assumption that students with low socioeconomic status or who are academically at risk may benefit from mindset interventions was validated by some findings.

Regarding the local context, there is a lack of investigations focused on a university setting, being mostly focused on elementary school. For instance, a research conducted by Brooks (2017) with seventeen second-grade students in a private bilingual school in Colombia concluded that a number of familial and cultural factors may have a greater impact on learners' mindsets than in-school factors. Furthermore, an unpublished study developed in Colombia by Ramirez (2020) presented a multiple case study in which 15 public school language teachers in Bogotá participated in a workshop with a pre and post test about fixed and growth mindset, and 5 of them volunteered on a teaching practice with observations and feedback. The results exposed that the individual feedback was advantageous to integrate the growth mindset in their classes.

Regarding the change in mindsets, a research conducted by Limeri *et al.* (2020) in the US with 875 participants, who were students from a mid-level STEM course, pointed out that

some of the factors influencing students' mindset were academic experiences, observing peers, formal learning, among others; moreover, the study presented extensive prior researches which found that undergraduate students' mindsets were not different from the high school students'. The investigation added that existing research agrees on how introductory STEM students tend to develop fixed mindsets, but two studies that included mid- and upper-level undergraduates found no change in mindsets over time.

Finally, some criticism to this mindset have been brought up by authors like Kohn (2015, as cited in Brooks, 2017), who claimed that a focus on effort contributes to blind conformity to the status quo by directing students' attention away from appraising task quality, learning value, and the influence of structural disparities in schools and their community at large (p. 55). Despite this, Dweck's response was that the core notion of growth mindset is that improved learning can be achieved through interacting in unfamiliar content, which can only be accomplished by accepting challenges (as cited in Brooks, 2017, p. 56).

Error analysis

Error Analysis emerged as a new method that identifies and classifies the systematic errors that are made by foreign language learners, and since its introduction in the 70's after the Contrastive method in EFL, several studies have been conducted; predominantly on productive skills. Most of them focus on writing performance, as presented by Karim *et al.* (2018) in their study, 300 students from 9th and 10th grade in 6 schools from Bangladesh completed questionnaires, and 20 of them participated in an interview. In this research, the student's perceptions on error were highlighted along with the EFL learners' preference to be corrected by their teachers and not other students. The most common errors were pointed out within the aspects of grammar, misinformation, misordering, and overgeneralization. Moreover, the researchers focused on the grammatical errors which exposed the highest percent

of errors presented by the students, and these errors were classified by their type (Subject-verb agreement error, Article, Verb, Pronoun error, among others), number of errors and percentage (p. 127). Additionally, scholars such as Chaudhary & Al Zahrani (2020) investigated the types, frequency, and sources of writing errors in fifteen preparatory females students from 17 to 20 years old, who were enrolled in an advance level course, and it indicated that "limited knowledge of L2, inadequate practice in writing and carelessness of learners also contributed to the occurrence of errors" (p. 365). Meanwhile, there are some investigations that are aimed towards errors committed on a certain type of text, such as thesis proposals as presents the work done by Pescante-Malimas and Samson (2017). It remarks the typology errors in the aspects of grammar and syntax in fourth-year level students' texts who were enrolled in English 115 and in the Department of Fine Arts, during the first semester of 2016-2017, and as well, similars investigations such as Fitria's (2020) study, narrowed the scope only in spelling errors from self-description texts with only simple present tense in 24 students of STIE ASS Surkarta, Indonesia that were in their academic year 2017/2018, the findings showed the common errors of omission, substitution, insertion and transposition.

In summary, plenty of studies approach Error analysis in the performative skills and the results vary significantly depending on the chosen population due to the participants' background and previous EFL instruction; most of these projects have the intention to merely describe and provide a diagnosis of the nature of the errors. Regarding Growth Mindset, there is exploration with a different range of ages that highlight the importance of praise in the classroom in order to reshape the way students see errors, and in the local context, it is evidenced that family and cultural factors can affect student's mindset. Despite the fact that both Error Analysis and Growth Mindset have been studied independently, no study that reviews the connection between the two was found. In fact, the closest to this was the work carried out by Schroder *et al.*, (2017) which looks at the link between growth mindset and the

way in which errors are neurologically processed. This scarcity in literature, creates the need to research both variables together as proposed in this investigation.

Chapter II. Methodology

2.1 Type of Investigation

This research project used a quantitative approach allowing it to employ standards of validity and reliability and made use of statistical procedures (Creswell, 2014). Likewise, this research study can be classified as a quasi-experiment; more specifically, one with a pre-experimental one group pretest-posttest design which as noted by Creswell (2014) "includes a pretest measure followed by a treatment and a posttest for a single group" and as expressed by Cohen *et al.*, (2007), this design usually accounted for a new teaching method or curriculum change and its value. In this investigation, that innovative teaching method was Error Analysis and its effectiveness in the development of students' growth mindset will be assessed by comparing participants' mindset (either growth, fixed or borderline) before and after an Error Analysis-based feedback intervention. For this purpose, the data collected was looked at through the lens of a post-positivist paradigm which, as explained by Creswell (2014), determines and assesses the different factors that influence an outcome by devising numeric measures in line with the scientific method in order to examine the objective reality.

2.2 Hypothesis and variables

This investigation uses the following two variables in order to come up with the hypotheses below:

- Dependent variable: Growth mindset. It's defined by Dweck (2006) as "the belief that your basic qualities are things you can cultivate through your efforts…everyone can change and grow through application and experience" (p. 4).
- Independable variable: Error-Analysis-based feedback. In the words of Hasyim (2004) Error analysis "is an activity to identify, classify and interpret or describe the errors made by someone in speaking or in writing and it is carried out to obtain information on common difficulties faced by someone in speaking or in writing English sentences" (p. 43), and Feedback "it is information given to the learner about the learner's performance relative to learning goals or outcomes. It should aim to (and be capable of producing) improvement in students' learning" (Education Endowment Foundation, n.d).

- Research hypothesis: The implementation of Error analysis within the feedback affects the development of students' growth mindset according to the given perceptions and the differences between scores obtained.
- The null hypothesis: There's no significant statistical difference in the scores of the Growth mindset test after the implementation of Error analysis in students' feedback.

2.3 Participants and sampling

A group of 14 Advanced English II students from UIS' bachelor's degree on Foreign languages were chosen as the sample of the study; they are in their third year of their university program. The sampling method implemented in this study is a *non-probability sample*. It was the most suitable in order to carry out this small-scale research because it "derives from the researcher targeting a particular group, in the full knowledge that it does not represent the wider population; it simply represents itself" (Cohen *et al.,* 2007, p. 113). Moreover, it has advantages

and benefits since "they are far less complicated to set up, are considerably less expensive, and can prove perfectly adequate where researchers do not intend to generalize their findings…" (Cohen *et al.*, 2007, p. 113). Taking into account this, we had chosen one of the four types of *non-probability sample:* the *convenience sampling*. It fitted perfectly with the current scope of the study due to the fact it involves people who are closer, available and accessible at the time (Cohen *et al.*, 2007).

2.4 Data collection instruments

2.4.1 *Pre-test and Post-test*

According to Cohen *et al.*, (2007) tests are a powerful tool of data collection that allows researchers to gather information in a numerical manner instead of a verbal one. With this in mind. In order to measure students' mindset, this research study uses Blackwell *et al.*'s (2007) Implicit Theories of Intelligence Scale for Children - Self form (ITIS) (Appendix 1) which is also applicable to adults and has been tested for its validity and reliability and it reported internal consistency Cochran's alpha = 0.78 and test correlation = 0.77 (Blackwell, Trzesniewski, & Dweck, 2007). This test consists of 6 statements regarding intelligence and learning to which the participants have to answer whether they "Strongly Agree", "Agree", "Mostly Agree", "Mostly Disagree", "Disagree" or "Strongly Disagree" in a likert scale. Depending on their stance on each statement they will receive from 6 points to 1. These points are added up at the end of the test and the final score of each participant place them on one of three mindset categories: "Growth mindset", "Fixed mindset" or "Borderline" (See the scale in Appendix 1.1).

In order to be able to compare the students' initial mindset with their mindset after the pedagogical intervention Blackwell *et al.*'s (2007) Implicit Theories of Intelligence Scale for Children (ITIS) will be implemented as a pre-test and as a post-test. The reason why the same instrument will be used both times is to avoid impacting the outcome scores that an instrument change could entail as advised by Creswell (2014).

2.4.2 *Complementary Survey*

Apart from the pre and post-test, we decided to carry out a survey in order to gain further insight on participant's studying habits, beliefs and classroom behavior after the intervention was completed. In order to obtain information about the situation or a picture of the conditions that are present or evolving, this sort of instrument handles the results when the information is abstracted from a variety of individual cases (Best & Kahn, 2006). With this in mind, this instrument was chosen to help fill in the gaps that a simple test score cannot fill by comparing students' mindset scores with their answers on the survey and how often they displayed Growth mindset traits.

The survey has a total of 23 questions plus 2 demographic questions. The main 23 questions were constructed by the guidance of 6 Growth mindset dimensions: Risk-taking, resilience, grit, intrinsic motivation, criticism-tolerance and self-confidence (Chen *et al.*, 2021). After that, a piloting of the survey was executed by a group of 15 Advanced English II students, different from the participants of this research. The result of this piloting led the researchers to restructure some of the questions' syntax and survey organization which helped improve the clarity of the questions and make the questions easier to read for the participants.

In addition, the survey was subjected to a content validity process in order to verify that the survey appropriately evaluates the content it aims to; therefore, the validation instrument proposed by León and Fernández (2019) was used (See Appendix 2.2). For this purpose, 3 experts in the field of Growth mindset and neuroscience assessed each survey question following a Likert-type scale of 1 to 5, where 1 indicates Nothing/Almost nothing, and 5 Totally/A lot in terms of relevance and clarity. The results indicated that all the 23 questions were validated on both relevance and clarity, as all questions had a score over 3,76, which indicates that it could be used without revision (See Appendix 2.2, Table 2). However, some minor changes were made on the syntax of the questions to improve the understanding. The average score per dimension was the following: Risk-taking (4.54); resilience (4.72); grit (4.77); intrinsic motivation (4.87); criticism tolerance (4.72); self-confidence (4.83).

2.5 Resources and data analysis

The pre-posttest was administered face to face in printed format, meanwhile the survey was administered via Google forms due to its practicality in terms of format and time. For the analysis of the pre-post test data the researchers used inferential statistics to analyze the difference between the pre-test and post-test scores in view of the fact that this statistical procedure "infer and draw conclusions about the population undertaken for study based on the data sample collected" (Best, W. J., & Kahn, V. J., 2006, p. 333). Therefore, we choose the parametric *t*-test for dependant samples which was computed to find the significance of the correlation coefficient between the two variables: error analysis in feedback and growth mindset.

A descriptive statistical procedure was used to analyze the survey data "to organize and describe the characteristics of a collection of data" (Salkind, 2019, p. 8) in order to find the

mean and the mode in our sampling to document the averages of students whose studying and classroom habits align with the growth mindset dimensions after the pedagogical intervention was implemented.

2.6 Pedagogical intervention

The error analysis based feedback intervention carried out in this investigation consisted of four 60-minute interventions over the span of one week (Appendix 2). The purpose was to present a different methodology to assess error in the classroom, in which we, as the researchers, implemented a series of grammar-based activities such as "identify the error" and peer assessment on their own writings, as well as games such as "defend your error" along with a discussion among the students and a feedback section at the end of the class. This intervention was based on Karim *et al.'s* (2018) work who present a classification of grammatical errors, which was adjusted to better fit the English level of the subjects, as well as Yoong & Saffari's (2019) pedagogical intervention who used compassionate feedback and encouraging phrases in order to help students lose their fear of failure. Our intervention differed from the previous two studies because it took elements from both and merged them into one, using Karim *et al.*'s (2018) classification of grammatical errors to guide the content part of our intervention and Yoong & Saffari's (2019) approach to feedback at the time of correcting students. Additionally, some of the activities carried out during the sessions are inspired by the classroom activities Seale (2020) proposed to teach Mistake analysis which rely heavily on the examination of errors and the logic behind them, moreover, some of the material used such as worksheets and readings were retrieved from Miller, J. (2005) and the Advanced Language Practice: English Grammar and Vocabulary by Vince, M. & Sunderland, P. (2003); also, the information added to the slides for students explanation were taken from an article done in University of Toronto's

website about using articles (Plotnick, n.d) and Special Cases in the Use of the Definite Article (Johnston, n.d).

Chapter III. Results

3.1 Pre-test and Post-test

According to the Implicit Theories of Intelligence Scale, a score of 4 or more indicates that the participant has a growth mindset, while a score of 3 or less reveals a fixed mindset and one between 3,3 and 3,7 a score indicates a borderline mindset. The scores of both the pre-test and post-test of each participant can be seen in *Table 1*.

Table 1.

Pre-test and Post-test scores and mindsets

Pre-test scores	Pre-test mindset	Post-test scores	Post-test mindset
5,3	Growth	6	Growth
2,1	Fixed	3,1	Fixed
4,3	Growth	4,5	Growth
4,1	Growth	6	Growth
4,6	Growth	4,8	Growth
5	Growth	6	Growth
3,6	Borderline	4,1	Growth

5	Growth	5	Growth
5	Growth	5	Growth
1	Fixed	1	Fixed
5	Growth	5	Growth
5	Growth	4,3	Growth
4,8	Growth	4,5	Growth
5	Growth	4,6	Growth

Note. This table presents the scores the students got in both tests, and which mindset they have according to the classification.

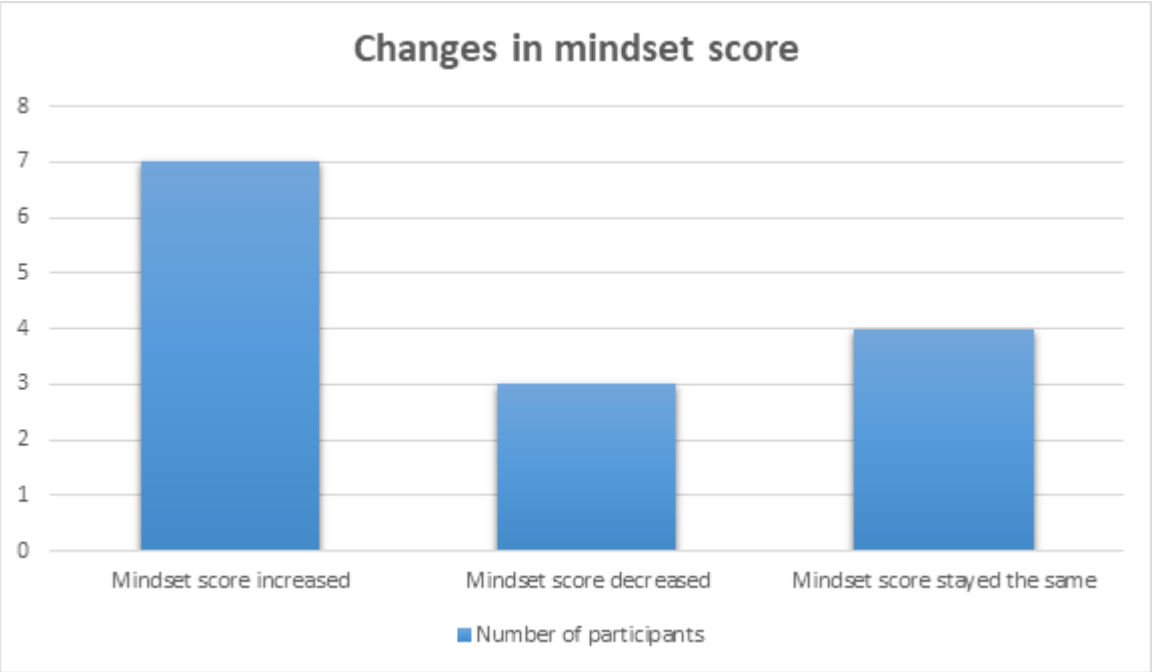
Mindset change

Looking at the changes in mindset between the pre-test and post-test, it is found that only 5,8 % of the participants (1 student) exhibited a mindset change (From Borderline to Growth). While this might seem as a very low number, changes in mindset score were far greater as 71,4% of participants (10 students) experienced a change, while the scores of the remaining 28,5% (4 students) stayed the same before and after the intervention. It is worth noting, however, that from 71,4% of participants who saw a variation in their mindset score, only 70% of them (7 students) saw a positive one, while the remaining 30% (3 students) experienced an unexpected mindset score decrease (See Figure 1). The average change in score on students whose score increased was 0.78 points with the highest increase being of 1.9 points and the lowest 0.2 points. On the other hand, the average score changes on students whose

score decreased was -0.46 points with the highest decrease being -0.7 points and the lowest of -0.3 points. All in all, the results from the T-test for dependent samples performed on the Implicit Theories of Intelligence Scale for Children – Self Form pre-test (M = 4.271, SD = 1.257) and post-test (M = 4.564, SD = 1.299) indicate that the implementation of a four 60-minute session intervention revolving around error analysis-based feedback does not impact the development of Growth mindset in Advanced English II students at UIS in any statistically significant way, t(13) = 1.6171, p = 0.1299. Thus, backing up the null hypothesis (See Table 2).

Figure 1.

Changes in mindset score from the Pre-test to the Post-test



Note. The figure presents the number of participants whose mindsets increased, decreased, or stayed the same according to the results from the tests.

Table 2.

T-test

	N	Mean	Standard deviation	Standard deviation mean
Pre-test	14	4.271	1.257	0.336
Post-test	14	4.564	1.299	0.347

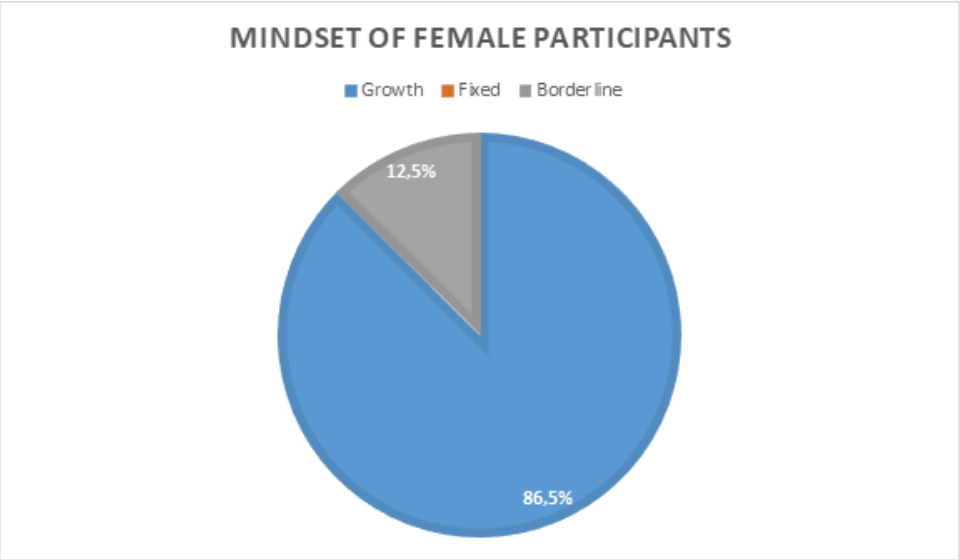
Note. In this table, the mean of the results obtained in both tests are presented, as well as the difference between them.

Gender division

The results from the pre-posttest show results in terms of gender division. All the participants who were found to have a fixed mindset identified as male. None of the female participants exhibited a fixed mindset; in fact, 87,5% of women (7 participants) displayed a growth mindset while only 12,5% of them (1 participant) displayed a borderline one, as shown in Figure 2. When comparing these results with the 50% of Fixed mindsets (2 participants) and 50% of Growth mindsets (2 participants) found in the male students (See Figure 3), it is found that among the participants, women are 37,5% more likely to have a Growth mindset while men are 50% more likely to have a fixed one, it is worth noting, however, that due to the small sample used in this investigation, these results cannot be generalized, but they can serve as the first trace of a trend that could be explored in future research.

Figure 2.

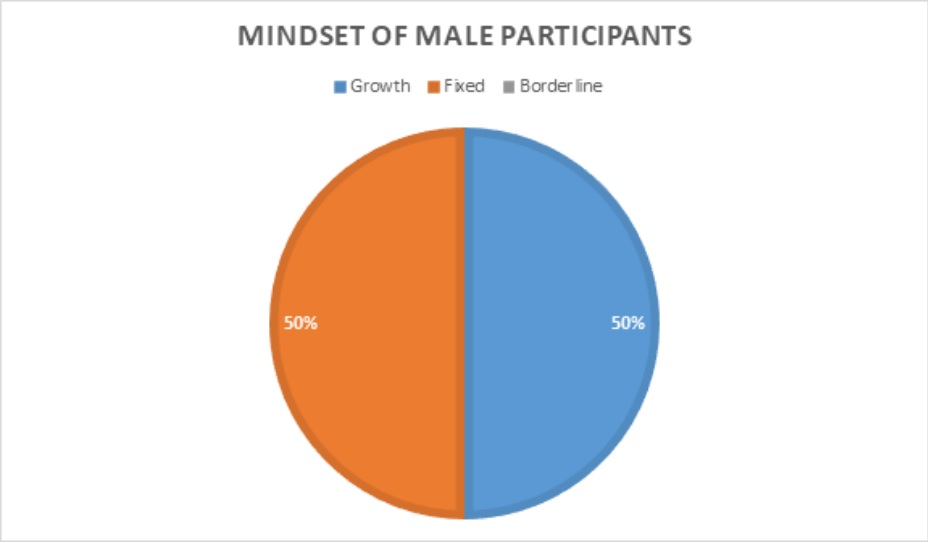
Mindset of female participants



Note. In this figure, we can see that most of the female participants have a Growth mindset.

Figure 3.

Mindset of male participants



Note. This figure presents a different result for male participants, being that half of them have a Fixed mindset, and the other half have a Growth one.

3.2 Survey

The sample of our survey was formed by 15 students from Advance English II at UIS, 10 females and 5 males, and they were between the ages of 18 and 20 years old, only two of them were between 21 and 22. The survey was designed around six dimensions of the construct growth mindset: Risk-taking, resilience, grit, intrinsic motivation, criticism tolerance and self-confidence. The purpose of this survey was to complete aspects that cannot be entirely covered by the test itself; this one measures the degree of acceptance that students have regarding the flexibility and malleability that intelligence has and whether this could be changed or improved. These extra dimensions converge crucial factors that have a big influence within the mindset and shouldn't be left out.

Risk-taking

The results from the analysis of the first dimension, Risk-taking, indicates that only 13,3 % expressed that always feel comfortable asking questions in class or requesting the teacher to clarify something that they did not understand, while the majority of them (53,3 %) have done it sometimes; an equal percentage of students also pointed out that sometimes they are willing to participate and share their opinion in class. Additionally, 46,7 % of students are willing to try new things even when they are not sure if they are doing them right and none of them expressed never, the same percentage are rarely willing to write an essay without a format or template.

Resilience

Regarding the aspects of resilience, more than half consider that they are able to improve their performance after getting a low grade, only 20 % of them rarely feel comfortable

after making a mistake. And when they have trouble learning something, 66,7 % look for a friend for help.

Grit

13,3 % of the participants report often giving up when they fail at their first try of doing something and 33,3 % of them communicated sometimes doing it; 46,7% of students express often reminding themselves of their long-term goals. Moreover, 53,3 % of participants state that sometimes they take several tries when it comes to facing academic challenges and 66,7 % of the students report experiencing both fear and excitement when it comes to these types of tasks.

Intrinsic motivation

This section shows that more than half, 60 %, can work with and without supervision; when asked about how frequently they had good time management skills, the options "Never", "Rarely" and "Often" were each chosen by 26,7 % of students. Also, 33,3% of students expressed that they often needed external validation in order to feel satisfied with their academic achievements, while 26,7% said this happened sometimes and 20% answered "always". All of the students expressed that they reflected on their mistakes with a high level of frequency in order to improve.

Criticism-tolerance

This pointed out that “rarely” or “never” students feel negatively towards someone who gives them feedback; likewise, according to their answers, they consider feedback is necessary and criticism is not a personal attack.

Self-confidence

Lastly, all the students declared that at least they know some of their strengths and weaknesses; all students state that they do self-assess; they normally score over 4.0 to themselves and 46,7 % sometimes doubt their skills when starting a new task.

Chapter IV. Conclusions

4. Discussion and conclusions

Bearing in mind the main purpose of this research project, the objective of determining to what extent the implementation of error-analysis influences the growth mindset in a group of Advanced English II students at UIS, the following factors were identified: The first part of this research investigation was assessing students' mindset before the intervention and with the use of a pre-test, it was found that 78,5 % of the participants held a growth mindset, while 14,2 % of them held a fixed one and only 7,14 % of students were classified as "Borderline". Regarding the gender division, the female participants showed a bigger tendency towards a growth mindset even though the population between males and females participants were unproportional, two of the male participants exhibited a fixed mindset and only one female was classified as borderline; this outcome can be supported by other studies that point out aspects such as "females with higher passion also have higher grit and higher mindset" (Sigmundsson *et al.*, 2020). These results can not be generalized, but they can serve as the first trace of a trend that could be explored in future research.

Secondly, this investigation aimed at analyzing the changes in students' mindset after the intervention was implemented which was accomplished with the use of a post-test. The results revealed that even though 85,7 % of the participants exhibited a growth mindset at the

end of the intervention period (a 7,2 % more than before it), this was not a statistically significant change which is in line with the findings of Sisk *et al.*,'s (2018) metastudy that revealed mindset interventions to be inconsequential in the improvement of students' academic achievement due to chance or mediating variables.

Thirdly, the final specific objective intended to provide additional insight on participants' mindset dimensions with the use of a complementary survey. This survey found that despite the overwhelming majority of students (85,7 % of them) presented a growth mindset after the intervention, 46,7 % of them expressed rarely being willing to draft an essay without a format or template, while 6,7 % indicated never being willing to do so, which reveals a fault in the Growth mindset skill of risk-taking as they tend to be more cautious and prefer working under specific guidelines because it is process-oriented, "risk-takers tend to use more complex structures in their production, and tend to accept more errors; consequently, they have a tendency to be less accurate in their productive skills" (Kiany & Pournia, 2006, as cited in Farahani & Hivechi, 2013). Moreover, when taking a look at participants' answers in the dimension of Intrinsic motivation, in order to feel satisfied with their academic achievements, it was discovered that 33,3 % of them communicated that they often needed external validation, and 20 % indicated always needing it, showing that this dimension still needs further development. Besides 60% of students considered that they are able to work on an academic task with and without supervision; however, the factor of external validation affects their intrinsic motivation significantly due to "mindset beliefs being influenced by what they learned in their psychology classes, suggesting that how authority figures (e.g., parents and teachers) talk about intelligence is still influential" (Limeri *et al.*, 2020). Be that as it may, participants' answers in the 21 remaining questions support the fact that majority of the class holds a Growth mindset as 73,3% of them reported often accepting challenging tasks and 46,7% expressed

always reflecting on their mistakes in order to improve their academic performance which are important factors of the Grit and Intrinsic motivation dimensions respectively which supports the post-test result as it is proven that the majority of the participants exhibit the traits pertaining to the Growth mindset dimensions (Chen *et al.*, 2021). Lastly, all of the students expressed that they reflected on their mistakes with a high level of frequency in order to improve. For this reason, feedback is seen as necessary and criticism is not taken as a personal attack.

Taking into account the research question: How does the implementation of Error analysis influence the development of Growth mindset in Advanced English II students from Foreign Languages teaching program at UIS? It was found that the intervention did not influence the development of Growth mindset in any statistically significant way as proven by the T-test of dependent samples. This confirms Limeri et al.'s results (2020) in which it was stated that mid- and upper-level undergraduates have no change in mindsets over time, being more feasible the change in mindset in the first year of college, and with the participants being in their third year, it makes sense that even though there were 7 students whose mindset scores increased, it did not represent a change from fixed to growth mindset.

4.1 Limitations

This research investigation has several limitations. The main one is the duration of the pedagogical intervention which was initially planned as eight 30-minute sessions that were to take place over the span of two weeks; however, given an unexpected halt of the classes, the intervention was compressed into four 60-minute sessions. This short duration is not the ideal for an intervention that intends to yield changes in mindsets, and this may have been a reason why only 1 student presented a mindset change. This is why it is expected that a longer error

analysis intervention might be more successful. Another limitation is the imbalanced number of male and female participants. This is considered a limitation because an interesting finding was that the only two students with a fixed mindset were identified as males. Despite this, it is not certain whether having a fixed mindset is related to being a male or not given that the male population of this research was very low. Taking this into account, an investigation that uses an equal number of male and female participants might offer more definitive results as well as a more holistic view on this matter.

4.2 Recommendations for future research

For further investigations with the scope of these two variables converged, it is advised to have both a control and an experimental group in order to provide additional insight that can make the results more reliable; in the same way, it is recommended to have an equal number of males and females participants so it could be proportional the genre population; it is possible to practice also in non-advanced English level students in order to verify if the factor of language level plays a relevant role in the mindset growth or not; also it is recommended to test this type of investigation in other types of populations such as childrens or old adults in order to compare whether the age is a factor for that has strong role on people's susceptibility to gain growth mindset which could offer interesting insight on how much can mindsets be changed in different life stages; lastly, it would be necessary to explore these two components in other languages, in a way that opens the discussion of error analysis in one language is more complex that other.

To conclude, this research project presents a connection on Growth mindset and Error analysis in undergraduate students, as it was believed, these two variables could have a

connection between them, in the sense that changing the perspectives of errors in the classroom from something to be punished for to something to learn from can lead students to feel more comfortable taking risks and grow from their mistakes; thus, developing their growth mindset. As explained by Dweck (2006) kids with fixed mindset report regularly receiving judgemental comments from their parents as well as feeling as though they are always being measured. Dweck goes on to say that children learn to perceive errors as something to be judged for or to be taught from very early and that this perception stems from their parents' feedback.

With this in mind, a pedagogical intervention revolving around Error analysis based feedback was designed and implemented in order to test the initial hypothesis of said intervention impacting the Growth mindset of the students. The outcome that it was possible to retrieve from this study was that the intervention did not influence students' mindset in any statistically significant way which confirms the null hypothesis. This could either mean that Error analysis and Growth mindset are not as closely connected as it was initially thought, that the intervention carried out lacked in length or intensity or that the sample chosen was affected by external events that hindered any possible mindset change such as academic experiences, taking societal cues, observing peers, formal learning and deducing logically, as suggested by Limeri *et al*., (2020). In any manner, it is advised for future researchers interested in the topic to design a more extensive intervention that could help evaluate which of the aforementioned aspects is responsible for this result.

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Appendixes

Appendix A. Pre and Post-test

Name:_____School:_____
Class:_____

Implicit Theories of Intelligence Scale for Children – Self Form

(For children age 10 and older)

Read each sentence below and then circle the one number that shows how much you agree with it. There are no right or wrong answers.

***1. You have a certain amount of intelligence, and you really can't do much to change it.**

1. Strongly agree Agree
2. Mostly agree
3. Mostly disagree
4. Disagree
5. Strongly disagree

***2. Your intelligence is something about you that you can't change very much.**

1. Strongly agree Agree
2. Mostly agree
3. Mostly disagree
4. Disagree
5. Strongly disagree

***3. You can learn new things, but you can't really change your basic intelligence.**

1. Strongly agree
2. Agree
3. Mostly agree
4. Mostly disagree
5. Disagree
6. Strongly disagree

4. No matter who you are, you can change your intelligence a lot.

1. Strongly agree
2. Agree

3. Mostly agree
4. Mostly disagree
5. Disagree
6. Strongly disagree

5. You can always greatly change how intelligent you are.

1. Strongly agree
2. Agree
3. Mostly agree
4. Mostly disagree
5. Disagree
6. Strongly disagree

6. No matter how much intelligence you have, you can always change it quite a bit.

1. Strongly agree
2. Agree
3. Mostly agree
4. Mostly disagree
5. Disagree
6. Strongly disagree

Appendix A.1 Test scores

Implicit theories of Intelligence scale for children (ITIS) - Self form

Score in the test	Mindset
1 - 3.2	Fixed
3.3 - 3.7	Borderline
3.8- 6	Growth

Appendix B. Survey

B.1 Construction process and Survey questions

Growth mindset comprises the following dimensions (Chen *et al.*, 2021):

- Risk-taking
- Resilience
- Grit

- Intrinsic motivation
- Criticism-tolerance
- Self-confidence

The previous dimensions guided the construction of the questions of the survey in the following way:

Variable definition	**Dimensions**	**Indicators**	**Questions**
The responsibility taken by students and their desire to learn something new in uncertain situations that can lead to success or failure (Varışoğlu & Ekinci, 2019).	Risk-taking	Student participates willingly Student is willing to diverge from the usual ways/templates/formats of doing assignments Student feels comfortable asking questions in class	Do you willingly participate and share your opinion in class? Are you willing to diverge from the common templates and formats at the moment of writing a text or essay? Do you feel comfortable asking questions in class or requesting the teacher to clarify something that you did not understand?
The quality that allows students who experience learning difficulties and setbacks to persist and continue to strive toward positive outcomes (Wilson & Conyers, 2020).	Resilience	Student is able to bounce back after getting a low grade in an exam Student feels comfortable participating in class even after they made a mistake on a previous intervention. When student has trouble learning something, they try different studying methods instead of	After getting a low grade, are you able to recover instead of continuing getting low grades? Do you feel comfortable participating in class even after you made a mistake on a previous occasion you participated in? When you have trouble learning something, do you try

		giving up.	different studying methods instead of giving up?
Perseverance and passion to achieve long-term goals (Wilson & Conyers, 2020).	Grit	Students present consistency of interest (CI) and perseverance of effort (PE). PE showed stronger correlations with academic achievement than CI or overall grit scores (Credé *et al*. 2017; Muenks *et al*. 2017). Students' academic achievement and engagement can be potentially enhanced through fostering grit. (Guo, Salmela-Aro,Tang & Wang, 2019).	Do you give up easily when you fail at the three first tries? How often do you remind yourself of your long-term goals when it comes to academic achievement? Are you a person who accepts challenging tasks? When you're facing academic challenges, do you feel afraid or excited? Are you a person who gives up easily? How many tries do you take when it comes to face an academic challenge?
Intrinsic motivation is inherent, as it drives the direction of an individual's behavior and self-determination. Self-determination is important in the development of beings to become more effective and refined in their reflection of ongoing experiences. When students experience the inherent satisfaction of the activity itself, they	Intrinsic motivation	Intrinsic motivation is difficult to measure in an objective manner. In order to track one's intrinsic motivation, it requires one to perform an experimental task over time. For instance, one's brain activity can be tracked during the process of performing an intrinsically motivated or optimally challenged task. With the inculcation of a growth mindset, individuals will perceive	Do you rather have any supervision when you're doing an academic task to be focused or you can focus on your own? Do you have good time management when you have to work on more than one academic task? How often do you feel satisfied when you complete an academic task by

will show intrinsically motivated behavior. intrinsic motivation is the propensity for individuals to learn about new subjects and to differentiate their interests, thereby fostering a sense of purpose and meaning **Ng, B. (2018). The neuroscience of growth mindset and intrinsic motivation. Brain sciences, 8(2), 20.**		the intrinsic value of a given task and self-regulate their behaviors to perform the task. Through internalization, individuals will generate intrinsically motivated behaviors at work or school.	yourself? Do you need constant external validation to feel satisfied with your academic life? How often do you reflect on your mistakes to improve your academic performance?
Criticism is the action of expressing disapproval of something or someone (Collins, n.d.). If you tolerate a situation or person, you accept them although you do not particularly like them (Collins, n.d).	Criticism-tolerance	Student is open to feedback. Student is respectful towards teachers and other classmates. Student doesn't perceive criticism as an attack on themselves.	When receiving feedback, do you feel it is unnecessary? Do you feel negatively towards someone who gives you feedback? Do you often perceive criticism to be an attack on yourself?
Authors: Self-confidence refers to “people's sense of competence and skill, their perceived capability to deal effectively with various situations” (Shrauger & Schohn, 1995, p. 256).	Self-confidence	Student knows their strengths and weaknesses well. The students highly self-assess their accomplishments.	Do you know your strengths and weaknesses in the English language? When giving a rubric to self-assess, you usually put a score of: A. 4.5 -5 B. 4.0-4.4 C. 3.5-3.9

		Student doesn't have doubts about the task they made.	D. Lower than 3.4 When starting a new task, do you tend to doubt your skills?

Here below, the 23 questions of the survey are presented along with the assessment rubric. Experts had to read each question and the answer options carefully, then they assessed each item according to the criteria of clarity and relevance, selecting a score from a Likert-type scale of 1 to 5, where 1 indicated Nothing/Almost nothing, and 5 Totally/A lot.

Risk-taking:

The responsibility taken by students and their desire to learn something new in uncertain situations that can lead to success or failure (Varışoğlu & Ekinci, 2019).

1. How often are you willing to participate and share your opinion in class?
    a. Always
    b. Usually
    c. Sometimes
    d. Rarely
    e. Never

2. When drafting an essay, how often are you willing to write it without a format or template?
    a. Always
    b. Usually
    c. Sometimes
    d. Rarely
    e. Never

3. Are you willing to try new things even when you are not sure you are doing them right?
    a. Always
    b. Usually
    c. Sometimes
    d. Rarely
    e. Never

4. Do you feel comfortable asking questions in class or requesting the teacher to clarify something that you did not understand?
    a. Always
    b. Usually
    c. Sometimes
    d. Rarely
    e. Never

Resilience:
The quality that allows students who experience learning difficulties and setbacks to persist and continue to strive toward positive outcomes (Wilson & Conyers, 2020).

5. After getting a low grade in an exam, how often are you able to improve your performance instead of continuing getting low grades?
    a. Always
    b. Usually
    c. Sometimes
    d. Rarely
    e. Never

6. After you made a mistake, do you feel comfortable participating in class?
    a. Always
    b. Usually
    c. Sometimes
    d. Rarely
    e. Never

7. When you have trouble learning something, what do you do?
    a. I just give up
    b. I look for a friend
    c. I go to tutoring
    d. Other: _____

Grit
Perseverance and passion to achieve long-term goals. (Wilson & Conyers, 2020).

8. When you fail to do something for the first time, how often do you give up?
    a. Always
    b. Often

c. Sometimes
d. Rarely
e. Never

9. How often does facing academic challenges take you several tries?

a. Always
b. Often
c. Sometimes
d. Rarely
e. Never

10. How often do you remind yourself of your long-term goals when it comes to academic achievement?

a. Always
b. Often
c. Sometimes
d. Rarely
e. Never

11. How often do you accept challenging tasks?
a. Always
b. Often
c. Sometimes
d. Rarely
e. Never

12. When you're facing academic challenges, do you feel afraid or excited?
a. Afraid
b. Excited
c. Both
d. None of them
e. Other:_____

Intrinsic motivation

Intrinsic motivation is the propensity for individuals to learn about new subjects and to differentiate their interests, thereby fostering a sense of purpose and meaning. (Betsy, Ng. 2018).

13. When you're doing an academic task, do you rather have any supervision to be focused or you can focus on your own?

a. I can only focus with supervision
b. I can focus on my own
c. Both of them work for me

14. Do you consider that you have good time management when it comes to completing academic tasks?

a. Always
b. Often
c. Sometimes
d. Rarely
e. Never

15. How often do you feel satisfied when you complete an academic task by yourself?

a. Always
b. Often
c. Sometimes
d. Rarely
e. Never

16. How often do you need external validation to feel satisfied in your academic achievement?

a. Always
b. Often
c. Sometimes
d. Rarely
e. Never

17. How often do you reflect on your mistakes to improve your academic performance?

a. Always
b. Often
c. Sometimes
d. Rarely
e. Never

Criticism-tolerance:

Criticism is the action of expressing disapproval of something or someone (Collins, n.d.).

If you tolerate a situation or person, you accept them although you do not particularly like them (Collins, n.d.).

18. Do you often feel that receiving feedback is unnecessary?

a. Always
b. Often
c. Sometimes
d. Rarely

e. Never

19. How often do you feel negatively towards someone who gives you feedback?
    a. Always
    b. Often
    c. Sometimes
    d. Rarely
    e. Never

20. Do you often perceive criticism as a personal attack towards you?

    a. Always
    b. Often
    c. Sometimes
    d. Rarely
    e. Never

Self-confidence:

Self-confidence refers to “people's sense of competence and skill, their perceived capability to deal effectively with various situations” (Shrauger & Schohn, 1995, p. 256).

21. Do you know your strengths and weaknesses in the English language?
    a. All of them
    b. Most of them
    c. Some of them
    d. Almost none of them
    e. None at all

22. When giving a rubric to self-assess, you usually score yourself:
    a. 4.5 - 5.0
    b. 4.4 - 4.0
    c. 3.9 - 3.5
    d. 3.4 or lower

23. When starting a new task, do you tend to doubt your skills?
    a. Always
    b. Often
    c. Sometimes
    d. Rarely
    e. Never

2.2 Survey Content Validation

To determine the validity of the survey questions, the validation avale proposed by León and Fernández (2019) was used. This instrument was adopted because of its practicality and relevance (León & Fernández, 2019). For this purpose, a matrix containing the evaluation criteria was constructed (see Table 1) and a numerical value was assigned (Table 2).

Table 1. Survey validation matrix

The questionnaire consists of 23 questions to which the experts should score each one in terms of clarity and relevance, according to a Likert-type scale of 1 to 5, where 1 indicates Nothing/Almost nothing, and 5 Totally/A lot.

Valor numérico	**Criterio**
1	Nothing/almost nothing
2	-
3	-
4	-
5	Totally/A lot

Table 2. Interpretation of the numerical score of the validation

Average numerical score	**Criterion**	**Interpretation**
0,00-1,25	Not valid	Not applicable
1,26-2,50	Somewhat valid	Can be used under a lot of revision
2,51-3,75	Valid	Can be used with little revision
3,76-5,00	Highly valid	Can be used without revision

The information was quantitatively analyzed with the following procedure: First, all the information from the three experts concerning each item of the validation instrument was tabulated. Then the average value of each question was calculated taking into account both

the clarity and relevance criteria and finally a final numerical value averaging each questions' score in the clarity and relevance sections was calculated for each question in order to determine whether they would be validated or not taking into account the classification in table 2 (see table 3).

Table 3. Summary of the results of the content validation of the input test

Question	Numerical value			Average	Criteria	Total (Clarity + Relevance)	Average score per dimension	Dimension
	Expert 1 (Teacher Vargas)	Expert 2 (Teacher Prada)	Expert 3 (Teacher Uribe)					
1 .	5	4	5	4.67	Clarity	4.83	4.54	Risk-taking
	5	5	5	5.00	Relevance			
2	4	3	5	4.00	Clarity	4.50		
	5	5	5	5.00	Relevance			
3	3	5	3	3.67	Clarity	3.83		
	3	5	4	4.00	Relevance			
4	5	5	5	5.00	Clarity	5.00		
	5	5	5	5.00	Relevance			
5	4	5	5	4.67	Clarity	4.83	4.72	Resilience
	5	5	5	5.00	Relevance			
6	4	3	5	4.00	Clarity	4.50		
	5	5	5	5.00	Relevance			
7	5	4	5	4.67	Clarity	4.83		
	5	5	5	5.00	Relevance			
8	4	4	5	4.33	Clarity	4.67	4.77	Grit
	5	5	5	5.00	Relevance			
9	4	4	3	3.67	Clarity	4.17		
	5	5	4	4.67	Relevance			

10	5	5	5	5.00	Clarity	5.00		
	5	5	5	5.00	Relevance			
11	5	5	5	5.00	Clarity	5.00		
	5	5	5	5.00	Relevance			
12	5	5	5	5.00	Clarity	5.00		
	5	5	5	5.00	Relevance			
13	4	5	4	4.33	Clarity	4.67	4.87	Intrinsic motivation
	5	5	5	5.00	Relevance			
14	5	5	5	5.00	Clarity	5.00		
	5	5	5	5.00	Relevance			
15	5	5	5	5.00	Clarity	5.00		
	5	5	5	5.00	Relevance			
16	4	4	5	4.33	Clarity	4.67		
	5	5	5	5.00	Relevance			
17	5	5	5	5.00	Clarity	5.00		
	5	5	5	5.00	Relevance			
18	5	5	5	5.00	Clarity	4.83	4.72	Criticism tolerance
	5	4	5	4.67	Relevance			
19	3	5	5	4.33	Clarity	4.67		
	5	5	5	5.00	Relevance			
20	5	5	5	5.00	Clarity	4.67		
	5	4	4	4.33	Relevance			
21	5	5	5	5.00	Clarity	5.00	4.83	Self-confidence
	5	5	5	5.00	Relevance			
22	5	5	5	5.00	Clarity	4.50		
	2	5	5	4.00	Relevance			
23	5	5	5	5.00	Clarity	5.00		

	5	5	5	5.00	Relevance			

Appendix C. Pedagogical intervention: Planning lessons

Date: Wednesday, July 13th	**Session # 1 Topic: Pre-test and Error analysis**
Stage	Description
Opening (10 min)	- Greet students and explain what the project is about. (Number of interventions and time)
Data gathering (15 min)	- Students answered the pre-test. - Consent form. - Thank students for answering the test and consent form.
Introduction (5 min)	- Ask students about their perceptions on errors, are they good or bad? How do their previous teachers deal with errors? Do they know the difference between mistakes and errors?
Procedure (20 min)	- Students watched a video about errors (Ted Talk) and then, they reflected on the opinions they had before watching the video, did they think differently now? - Teachers explained the benefits of committing errors while learning a second language.
Closure (5 min)	- Students shared their points about errors and teachers wrapped up the class summarizing the main points.

Date: Friday, July 15th	**Session # 2 Topic: Article and Verb + preposition**
Stage	Description
Introduction (5 min)	- Students received a worksheet that has four texts which had several errors, firstly, related with the use of definite, indefinite and zero articles, and secondly the collocations: verb + preposition.
Procedure (15 min)	- Starting with the **first section (Articles)**, students in the first part had only to point out and change the wrong article, there were

	only **10 to be corrected.** - Followed up, it was shown on a slide the right answers, they had to mark the scoring that they'd had. - Next, it was shown a slide where it said **"did I make errors or mistakes?"** and then, it was shown the types of errors that they could have committed. - ***After, it was explained to them the rules normally used for definite, indefinite and zero articles***. - And lastly they had to do the second text but this time, bearing in mind, the rules and errors types previously explained.
Follow up topic introduction (20 min)	- Starting with the **second section (Collocations: verb + prepositions),** students in the first part had only to point out and change the wrong preposition; there are only **6 to be corrected.** - Followed up, it was shown on a slide the right answers, they had to mark the scoring that they'd had. - Next, it was shown a slide where it said **"did I make error or mistakes?"** and then, it was shown the types of errors that they could have committed. - ***Afterwards, it is explained to them that there weren't fixed rules for these types of collocations, rather normally they are learned by heart; they different from the meaning given by the speaker.*** - And lastly, they had to do the second text but this time, bearing in mind, errors types previously explained and the basic knowledge that they have regarding collocations.
Closure (10 min)	- Teachers requested all the worksheets and pointed out the relevance of knowing the rules of topics, that seem to be simple but are not, and the need of practice in both. Not only is it essential for their language development but also, as future teachers, to make diagnoses of the types of errors that their future students can do.

Date: Monday, July 18th	**Session # 3** **Topic: Adjective + noun collocation and Verb + noun collocation**
Stage	Description
Introduction (10 min)	- Teachers made sure students knew what collocations are and their importance. - Teachers asked students if they remember any example of Adjective + noun collocations. - Teachers showed students some examples and asked them why they think these two words go together (why not another word?).

Introductory activity (8 min)	- Students were given a card with either an adjective or a noun. There were around 4 adjectives and 13 nouns. Students with nouns cards had to find an adjective that their noun matches with and then explain their choice to the rest of the class.
Second activity (10 min)	- In groups, students were given a sheet of paper with different adjective + noun collocations errors and they rated them from 1 to 5 according to how understandable or passable they thought that error was. One person of each group shared the group's ratings with the rest of the class.
Third activity (18 min)	- Students were divided in two teams and one at a time, one student from each team went to the board. They were given one verb and one minute to write as many nouns that go with that verb as possible. The team that wrote the most correct nouns for the respective verb won the round. If a student wrote an incorrect noun they were asked why they related that noun to that verb and were corrected in a gentle manner.
Fourth activity (10 min)	- In groups, students were given a list of verbs with different nouns for each one. One of the nouns given did not match the verb and students had to find the intruder noun in each case. One person of each group shared the group's decision with the rest of the class.
Closure (4 min)	- Teachers reviewed the session by asking some students for something they learned that day regarding making errors, thanking students for their participation and saying goodbye.

Date: Tuesday, July 19th	**Session # 4** **Topic: Tense and Post-test with the survey**
Stage	Description
Introduction (10 min)	- Teachers asked students how they usually tell a story to someone else (which verb tense they tend to use). - Teachers asked students how often they use tenses such as the passive voice or perfect continuous.
Procedure (10 min)	- Students were given a text with a story, they had to highlight the sentences that they considered can be changed (in terms of tense). Then, students modified the story with the verbal tense they considered appropriate. Some students shared the new story with the rest of the class and asked other classmates if they had something similar.
Activity (5 min)	- Teachers explained that there are several ways to express the same idea or tell a story, but that students should try different ways to do it and get out of their comfort zone.

Last data gathering (25 min)	- Students answered the post-test. - Students answered the survey.
Closure (2 min)	- Teachers thanked students for their participation and commitment.