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INCIDENCE OF LATERAL THINKING IN THE FREE DEVELOPMENT OF ACTIVITIES IN ENGLISH CLASSES IN UNIVERSITY STUDENTS

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Abstract: Purpose: To verify the incidence of lateral thinking in the different options created by students of different undergraduate programs in a private university in Valledupar to develop activities in English classes. **Methods**: For the implementation of this research, a quantitative non-experimental design was used. The target population of this research was composed by 1,437 students from different undergraduate programs of a private university, located in Valledupar, Colombia. A sample of 61 students from second to eighth semester, 25 men (41%) and 36 women (59%), 7 from the Bachelor in Law, 13 from the Bachelor in Social Communication, 20 from the Bachelor in Industrial Engineering program and 21 from the Bachelor in Early Childhood Education belonging to Elective I (English) and transversal courses English 2 and English 3 was extracted. The age range of the participants is from 16 to 41 years old. In order to investigate the incidence of lateral thinking in the free development of activities in English classes, six activities were designed with their respective diagramming and a general procedure that the students never knew, in order to compare it with the possibilities that they propose. The students' answers were collected using the *Quizizz* application. **Results**: The results show a strong incidence of lateral thinking in the free development of activities in English classes. **Conclusions**: The relationship between achieving an accomplishment or discovering the simplest way to perform a task taking into account individual experience and divergence of options from lateral thinking and the motivation represented by being able to make that individual perspective known was shown to be positive.

Keywords: Lateral thinking; creativity; motivation; divergence; attention; concentration; perception: individual experience; contextualization; bilingualism; English classes.

INTRODUCTION

The processes of lateral thinking and creativity in the educational field represent a pillar for the production of results and the creation of knowledge, since they allow the two main actors (teacher and students) a wide range of options to find answers to all the problems that arise on a daily basis in the classroom.

This results in the importance of the incidence of educational neuropsychology in the work that is executed from the teacher's preparation and planning to the way in which students assimilate the topics that day after day are presented and shared in the classroom. It is then where all the re-considerations that are discussed about what should be the correct action of the teacher take effect and provide support to make use of divergence and find different ways to teach.

Taking into account the influence of educational neuropsychology and variables such as lateral thinking, attention, concentration, perception and the different types of memory in the preparation and execution of any class (in this specific case English classes), this research aims to present alternatives that facilitate the work of students by providing them with different possibilities so that they can achieve the objectives of each session and/or topic with reference to the vocabulary and specific contexts worked on in class.

Faced with the cause-effect, question-answer and activity-result stimulus, teachers manage the daily routine of their classes by maintaining a pre-established order within their classrooms, which is always expected to guarantee a good direction of what they intend to teach or guide. Then, many of the lessons that in the permanence of time are oriented are pigeonholed in the establishment so that things "do not get out of control" avoiding as much as possible any possibility of disrespect,

indiscipline and distancing from the designed objectives. This pre-establishment ignores many times the creative capacities of university students, which contrasts with what was evidenced by Hurtado, García, Rivera and Forgiony (2018), who concluded that university students demonstrate greater elaboration in terms of creativity. They also stated that creativity and learning strategies improve as one is in a higher academic degree.

The student learns what the teacher wants them to learn and how they learn. Pérez (2013) based part of his work on the leading role of student autonomy. He proposed that this is evident in the observation of actions that demonstrate this independence. Insisting on the importance of autonomy, Cabrales, Cáceres and Feria (2010) concluded that it can be enhanced by class work that allows collaboration with classmates, capacity for self-monitoring and optimal time management, which can be summarized as styles to disengage from the formal and magisterial procedure to guide classes.

The general objective of this research is to verify the incidence of lateral thinking in the different options that students of the different undergraduate programs of a private university in Valledupar create to develop activities in English classes. On the other hand, it is proposed to design intuitive activities for English classes in specific contexts in which students propose different procedures to solve them, implement the intuitive activities designed for English classes to collect the different options that students propose to develop them and validate the incidence of lateral thinking in the freedom given to students to propose different procedures for the designed activities.

LATERAL THINKING

This is the most important variable in this research. Its incidence determines the relevance or not of the activities designed and their application. The term was introduced by De Bono (1970) and refers to the use of information as a means to cause a dispersion of models and their subsequent rearrangement for the production of new ideas. Osorio (2013) defines it as the inquiry of alternative and unconventional solutions to specific situations. Ferrando and Ferrándiz (2013) point out that lateral thinking is dependent on other types of thinking such as logical thinking, abstraction and imagination. Acevedo, Cachay and Linares (2016) rely on lateral thinking and its conceptualization to demonstrate decision-making styles to solve problems. They propose in their paradigm two points from which divergence takes place: sensing and reflective observation. Rodriguez (2016) presents what he calls perceptual redefinition. He explains that it is the basis of lateral/divergent thinking and defines it as the "ability to rearrange ideas, concepts, people and objects, transposing their functions, and to use and interpret them in new ways". Faisal and Ratna (2020) state it as a dimension of creative thinking and elaborate on the fact that those who possess lateral thinking think creatively at the same time. Viel, Domínguez and Lorié (2020) reiterate the prevalence of lateral thinking in the university, since it demands the highest level in learning processes conditioned to intellectual and academic development. Santa María, Solis, Flores, Romero and Gálvez (2020) certify the importance of cognitive neuroscience in the study of higher mental processes. They emphasize the relevance of neuronal activity in the stimulation of sensory actions that result in the understanding of cognitive experience. Santa María, Soto, Rojas and Castillo (2021) formulate their research postulating that

all students are capable of communicating, paraphrasing and explaining. According to their conclusions, lateral thinking becomes a habit and a daily mental procedure that acts irrationally in search of achieving the aforementioned reordering of the pre-established.

CREATIVITY

Treffinger and Selby (1993) maintain that this is the configuration of four components: the characteristics of the individual, emphasizing their cognitive abilities, elements such as intrinsic motivation and learning styles, added to the individual's mental operations that are equivalent to the specific techniques carried out to generate ideas and solve problems through decision making, the context that encloses the situation to be solved and the result or achievements obtained after the effort to make creative contributions. De Bono (1970) divides the uses of creativity into two well-defined fields: everyday creativity and specific creativity. He defines the first one as the one in which creativity is part of normal thinking and therefore is part of any situation that needs the usefulness of thought. Regarding specific creativity, the author points out that it is needed as a specific need. Hernández, Alvarado and Luna (2015) assume creativity as a generic transversal competence in professional training. They also conceive it as the combination between existing ideas and concepts with those generated from the confrontation with any problematic cause. Jurado, Piedra, Morocho and Avello (2019) speak of creative education. They formulate it as a developmental and self-fulfilling education.

MOTIVATION

Lozano, García and Gallo (2000) point out that this variable is essential for learning not to be exclusively memoristic but to depend to a greater extent on a process of assimilation. Gerena (2001) highlight that motivation is a kind of spring that pushes the individual to act, in addition to directing behavior. It is the one that guides the person with will to reach a goal, an objective. Héctor (2012) also analyzes the role of motivation in university students. He first defines it as the engine for the success of learning processes since he conceives it as the axis that grounds the actions that students take to reach their achievements in the short, medium and long term. Beltrán (2015) developed his conceptualization based on the influence of the socio-cultural environment on this variable. He indicates that the context has a greater incidence on the development of motivation for foreign language learning, since students are attracted to cultures where this language is spoken. Abreu, Barrera, Breijo and Bonilla (2018) likewise directed their work in addressing the teaching-learning process and its affectation by motivation. From the integrality that for them constitutes this process, they encounter motivation and understand it as the set of needs and motives that lead the teacher and the students to direct their work from the effective relationship of the contents and their interest. Barragán, Colcha and Herrera (2019) not only associate the importance of motivation from the student's perspective, but also from the teacher's perspective involved in the way in which it is noticed they can enjoy their class lessons. Hernández and Cordero (2021) take up the predominance of intrinsic motivation by English learners. They propose that in order to learn the language, students must be the protagonists of the actions.

ATTENTION

Estévez, García and Junqué (1997) separate attention from other terms that are sometimes considered synonyms such as seeing, listening and perceiving. They call it the selective focusing of consciousness, where information that is not considered important is filtered and discarded. De la torre (2002) groups in his work the multidimensional models of attention, with which he reinforces that attention is not a single construct, naming it as several parts that constitute a unit, which according to his results make it complex. Rebollo and Montiel (2006) worked on the relationship between attention and executive functions. They suggest that attention is a property of functional systems and is characterized by maintaining its activation while new stimuli are being incorporated. Portellano and Garcia (2014) define attention as the mechanism that the brain uses to execute any activity, which supports it as a prerequisite for cognition, working as a filter system capable of selecting, classifying and processing information. Kolb and Whishaw (2015) conceptualize it in similar terms. They postulate that this term implies that the individual concentrates on a mental focus after certain sensory afferences, motor programs, memories, or internal representations.

Few investigations and researches have been found in which the study of the incidence of lateral thinking in the development of activities in English classes has been projected, so it is interesting to propose the objectives indicated to strengthen the bibliography regarding this relationship. Martínez and Rodríguez (2007) studied the development of lateral thinking in English through literary creation workshops. Their work consisted of designing these workshops to develop lateral thinking skills in students of an advanced English course at Universidad de San Buenaventura. Among their conclusions, Martínez and Rodríguez (2007) deduced the importance of fostering lateral thinking in English classes through activities such as the literary creation workshop. In 2017, Prado, Viteri and Rojas addressed the contribution of lateral thinking to the development of linguistic intelligence. They based their research on the analysis of the contribution of this type of thinking and its study as scientific bases and its direct relationship with the strengthening of linguistic intelligence. In their literature reviews, they detailed as an important need to know if teachers know and manage lateral thinking and much more if this has an impact on the development of linguistic intelligence. The conclusions of the review by Prado et al. (2017) are oriented to the importance of lateral thinking as an agent that enhances linguistic intelligence. Vergara, Navarrete and Morán (2018) studied the influence of creativity in the process of teaching English language learning at the higher level at the Agrarian University of Ecuador. Their research focused on giving a new vision to the teaching of English through the inclusion of creativity in classes, seeking to prevent students from becoming demotivated and also to change the conception of what it is to learn the second language. Its objective was "to provide a methodological guide with creative activities for the teaching - learning of the English language, through training, which generates changes in student behavior in university classrooms" (Vergara et al., 2018).

METHODOLOGY

For the implementation of this research, a quantitative non-experimental design was used. Non-experimental because it is developed in a real situation (the English class) and because the incidence of the studied variable (lateral thinking) was not manipulated, the responses and measurements of the participants were recorded exactly as they are registered. Quantitative because

the quantitative results of the research subjects were recorded, an objective view was presented, it seeks to generalize the results from the sample that is representative, it focuses on observable phenomena and aims to know and explain the reality set out in the objectives in order to control it and make predictions about it (Albert, 2007; Latorre, Rincón & Arnal, 2003; Mateo & Vidal, 2000).

The target population of this research was composed of 1,437 students from different undergraduate programs of a private university in Valledupar, Colombia. A sample of 61 students from second to eighth semester, 25 men (41%) and 36 women (59%), 7 from the Bachelor's degree in Law, 13 from the Bachelor's degree in Social Communication, 20 from the Bachelor's degree in Industrial Engineering and 21 from the Bachelor's degree program in Early Childhood Education of the Elective I (English) and transversal courses English 2 and English 3 were extracted.

Variables	Average	S.D.	Mín.	Máx.
Age	20,50	4,21	16	41
Gender (N° of students)				
Male	25			
Female	36			
N° of students by Bachelor's program				
Law students	7			
Social communication students	13			
Industrial engineering students	20			
Early childhood education	21			
Total of students	61			

Chart 1. *Demographic description of the sample (Prepared by the authors)*

Note: D.T.: Standard Deviation; Mín.: Mínimum; Máx.: Máximum

The influence of lateral thinking in the free development of activities in English classes was measured by applying a survey of one question to each student: How do you think the activity should be developed? To collect the answers, the online application *Quizizz* waas used as an instrument, in which each participant had a specific time to observe the diagram presented for the corresponding activity and then respond by describing the procedure that each one considered appropriate to execute the proposed task. The answers for each activity were also recorded in an Excel document in order to obtain the statistics necessary to proceed with the analysis of the data and the conclusions generated from it.

In order to investigate the incidence of lateral thinking in the free development of activities in the English classes of the students of the above mentioned Bachelor's programs, six activities were designed with their respective diagramming and a general procedure that the students never knew, this with the purpose of comparing it with the possibilities that they proposed. These tasks took into account the context and vocabulary that they had worked on the previous week according to the micro curriculum suggested for each subject. It was proposed that the diagramming to be suggestive and related to the topics that will be developed in each class so that it does not imply too much time for the students to suggest how to execute them. Thus, a two-phase procedure was developed:

In the first one, the activities were implemented in the weekly classes. It took six weeks to present them and ask the students in each session to propose the way they consider should be followed to achieve the objective of the session. The teacher showed the students the design of the task and gave them five minutes to think, organize their idea and enter the *Quizizz* application with the code that was provided. For each activity, students had to individually answer the following question: How do you think the activity should be developed?

Finally, phase two consisted of collecting all the students' responses after the end of the six weeks, tabulating them against each activity and the original procedure, recording the different options proposed by them and reviewing the impact of lateral thinking on these responses. Then, the pertinent data was configured to make the statistics that allowed demonstrating the percentage of incidence of lateral thinking in the free development of activities in English classes, the validation or not of the hypotheses proposed and the conclusions that arose from the results of this research.

RESULTS

According to the proposed objectives, the following results were obtained:

Percentage of responses equal to the original procedure			
Activities	**Elective 1-English**	**English 2**	**English 3**
Activity 1	19%	0%	10%
Activity 2	0%	0%	5%
Activity 3	32%	33%	25%
Activity 4	23%	0%	0%
Activity 5	5%	11%	19%
Activity 6	39%	33%	25%

Chart 2. *Percentage of responses equal to the original procedure (Prepared by the authors)*

It shows that the range of responses equal to the originally stated procedure for each activity ranges from a minimum of zero percent to a maximum of twenty-five percent of each student's total submissions.

Percentage of responses different to the original procedure			
Activities	**Elective 1-English**	**English 2**	**English 3**
Activity 1	81%	100%	90%
Activity 2	100%	100%	95%
Activity 3	68%	67%	75%
Activity 4	77%	100%	100%
Activity 5	95%	89%	81%
Activity 6	61%	67%	75%

Chart 3. *Percentage of responses different to the original procedure (Prepared by the authors)*

It is evident that the range of responses different from the originally stated procedure for each activity ranges from a minimum of seventy-five percent to a maximum of one hundred percent of each student's total submissions.

Average percentages of responses equal to the original procedure	
Elective 1-English	19,7%
English 2	12,8%
English 3	14%
Total	15,5%

Chart 4. *Average percentages of responses equal to the original procedure (Prepared by the authors)*

On average, the number of responses equal to the original approach for the six activities in each subject does not exceed twenty percent of the total, with 19,7% being the highest percentage for this item.

Average percentages of responses different to the original procedure	
Elective 1-English	80,3%
English 2	87,2%
English 3	86%
Total	84,5%

Chart 5. *Average percentages of responses different to the original procedure (Prepared by the authors)*

On average, the number of responses different from the original approach for the six activities in each subject are not less than eighty percent of the total, with 80,3% being the lowest percentage in this item.

CONCLUSIONS

The main purpose of this work was to demonstrate how lateral thinking influences the free development of activities in English classes and as a consequence to obtain greater participation and diverse responses to the activities that the teacher presented to the students according to the topics worked on and the suggestions established in the curriculum of each subject. Based on this point, the results obtained showed that this incidence is predominant and supposes an alternative since the point of view of the educational neuropsychology to improve the production processes in English classes from the imagination and creativity of each student, from their individual conception of the world and the personal interpretation of the context from diverse associations referred to their own experiences. This is directly related to the idea that Osorio (2013) presented when saying that the lateral thinking allows students to inquire for alternative and non-conventional solutions facing specific situations.

According to the general hypothesis, it is formalized that lateral thinking does have a positive influence on the free way in which activities are developed in English classes by the subjects participating in this study. It was surprising how the percentages of divergence in the answers that each individual sent as a proposal to solve the tasks that were shown from the schematization proposed by the teacher were all higher than 80%, which validates this hypothesis. That influence is well defined by Rodríguez (2016) when presented his *perceptual redefinition*, what explains that is a base of the lateral thinking and is defined as the capacity to accommodate ideas, people, concepts, etc., and using them with a different interpretation.

The activities proposed and designed in such a way that the participants could intuit how to develop them from their perception of the world generated different and alternative solutions. This is positive because it supports the theoretical approach worked on in this research, which points to the original production by students when faced with the solution of a problem. In the same way, Santa María, Soto, Rojas and Castillo (2021) highlighted the capacity of students for paraphrasing and explain their own world as a daily mental process that uses the lateral thinking for reorganize the established things and reality.

It remains as a synthesis that the students participating in this study were able to enhance their lateral thinking from the freedom that the teacher proposed to them to develop procedures as best suited them, without departing from the topics suggested by the curriculum and that were shown in a suggestive way in the diagramming of each activity. In this same path, Jurado, Piedra, Morocho and Avello (2019) spoke about creative education and its main role when creating educational environments that can be created and developed by themselves. With this it is claimed the importance for the teaching work to consciously include elements of educational neuropsychology as in this case is lateral thinking and its incidence to achieve better results and work from the needs and perspectives of the students, as Santa María, Solis, Flores, Romero and Gálvez (2020) certified when expressing the importance of cognitive neuroscience in the study of higher mental processes and their key role in the classroom.

In conclusion, this research shows the following:

- Lateral thinking does have a positive impact on the free development of activities in English classes.

- The freedom given to students to develop classroom activities makes them feel more comfortable and confident to produce orally or in written way in English.

- Students feel more motivated to participate and work in class when they have to face a greater challenge. In this case, having to propose solutions to problems (in the specific case of the research, to the schemes proposed by the teacher) without pre-established instructions allowed them to better express their results.

- The relationship between achieving an accomplishment or discovering the simplest way to perform a task and the motivation represented by being able to make that individual perspective known was shown to be positive. Students always wanted to know if the way they showed their English production was correct or matched what the teacher had prepared.

- Designing a classroom environment in which all answers can be correct and valid makes it easier for students who have greater difficulties in understanding some topics to feel attracted to reinforce their weaknesses and to put their new knowledge into permanent practice.

- The more detailed the diagram the teacher presented, the closer the answer was to the original procedure. On the other hand, not detailing it so much allowed the students to come up with more variety in the procedures, since they had to fill in those gaps or shortcomings with their own conclusions and elements from their own imagination and experience.

- Some procedures were more detailed than others. Some others were similar but with substantial changes that in the end changed the production of each one. This shows that the way in which each student interprets the world that surrounds them and uses it as a background to perform in English classes allows achieving the variety of results that were obtained with the approach and execution of this research.

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