

CRYSTALLIZED INTELLIGENCE IN EFL
CROSSING THE BOUNDARIES OF COGNITIVE DISABILITY

JULIETH YESENIA CAPERA NIÑO



UNIVERSIDAD LA GRAN COLOMBIA

FACULTAD DE EDUCACIÓN

B.ED. IN ENGLISH

BOGOTA

2020

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

Crystallized Intelligence in EFL Crossing the Boundaries of Cognitive Disability

Julieth Yesenia Capera Niño

**Paper presented as an academic requirement to obtain a B.Ed. in English degree from
Universidad La Gran Colombia**

Monograph Advisor: Yoana Cristina Pinzón



Universidad La Gran Colombia

Facultad de Educación

B.Ed. in English

Bogotá

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

Dedication

To God and my family who have been my main strength to achieve my objectives,
for the values, motivation, and their infinite love.

Acknowledgements

I am deeply grateful to God and my family for their support. Moreover, I am grateful to my professors Yoana Pinzon, Carlos Carrillo and with Sebastian¹, the student involved in this study², who have been fundamental in my own learning process, without these people, it would have been impossible to complete this project.

¹ The name that I used to protect his real name.

² This study was presented and approved in an academic event organized by British Council, named BBELT in Colombia, and carried out the first week of August from 2018. (B.C, 2019), an academic event "The week of investigation UGC" which carried out on the 25th of September from 2018, another one at Libre University carried out on the 25th of October of 2018, and it will be published in a pedagogical book focused on different perspectives to teach English his name is "Sharing experiences in teaching English" directed by the professor and researcher Carlos Carrillo.

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

Content

Abstract	9
Resumen	11
Introduction	12
Research problem	15
1.1 General Objective	19
1.2 Specific Objectives	19
Chapter II: Conceptual framework	33
2.1 Crystallized Intelligence	33
2.2 Cognitive disability	36
2.3 EFL (English as a Foreign Language)	37
2.4 Inclusive education	39
2.5 Curriculum flexibility	41
Chapter III Reference Framework	44
3.1 Crystallized Intelligence and Cognitive disability	44
3.2 Common difficulties in the language area for students with cognitive disability:	45
3.3 Leisure and work	46
3.4 EFL Learning process for people with cognitive disabilities	47

3.5 Crystallized intelligence and EFL	48
3.6 Inclusive education in TEFL	51
3.7 Legal framework	53
Chapter IV	55
4.1 Research design	55
4.2 Participants	57
4.3 Research Stages and Data Collection Tools	58
Chapter V Data and findings	60
5.1 Sebastian's Academic Record	61
5.2 Pre-test	62
5.3 Sebastian's psychological report	64
5.4 English Syllabi	65
5.5 Teachers' Interview	66
5.6 Sebastian's anecdotes	75
Conclusions	80
Further recommendations	83

List of tables

Table 1. Observation journal	15
Table 2. Statistics Diagnosis Manual of Mental disorders	46
Table 3. Sebastian´s difficulties	57
Table 4 Crystallized intelligence categories for EFL	65
Table 5. Lesson plan	67
Table 6. Impact of the use of materials adaptation.	70

List of Figures

Figure 1. People with cognitive disability.	20
Figure 2 FCE exam.	26
Figure 3 Sebastian's notes for Upper-Intermediate English	59
Figure 4 Description of pretest..	62
Figure 5 Activity 1 on the session 8. Own elaboration.	65
Figure 6 Activity 2 on the session 11.	69
Figure 7 Sebastian's texts.	70
Figure 8 Final exam of Advanced English course	72
Figure 9 Pretest and posttest results.	73
Figure 10 FCE exam and Crystallized Intelligence	74

Abstract

This paper refers to a single case study that explored if and how crystallized intelligence-based adapted EFL lessons might help a student with cognitive disability improve his communicative competence using the foreign language. The project was developed during 4 semesters (100 sessions) The 100 sessions were divided into observations: Student's data, communication skills, social skills and affectivity, mobility and self-care, approach to learning, cognitive skills, sensory abilities, reading and writing skills, mathematics skills, academic, social and educational background (30 sessions), literature review and theoretical framework (30 sessions), class activities preparation for the English courses (15 sessions), photography sessions to create teaching materials based on Sebastian's daily activities (8 sessions), preparation of activities related to crystallized intelligence activation (5 sessions), Sebastian's field notes (5 sessions) and the adaptation of FCE Test for Advanced English Language Course (4 sessions).

This document explains how crystallized intelligence might facilitate EFL learning, how the student enhances his linguistic competence when doing different tasks in the English language courses (Intermediate- Upper Intermediate and Advanced English courses). Likewise, the research included qualitative techniques such as observations, field notes, interviews to teachers and students; and quantitative techniques as a pretest and posttest, which were useful to study the student's emotions and his perspective about his own learning experience which is composed by seven emerged categories as knowing my knowledge, deepening my knowledge, learning and enjoying my content, creating my own pedagogical materials, facing my own experiences, EFL my main motivation, and achieving my pedagogical materials. After the analysis, the researcher found that there are strong reasons

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

to believe that crystallized intelligence-based teaching materials not only improve language learning, but also boost learning in more general terms.

Keywords: Crystallized intelligence, cognitive disability, EFL, inclusive education and curriculum flexibility.

Resumen

Este documento hace referencia a un estudio de caso en el que se adaptó e implementó un material de enseñanza basado en inteligencia cristalizada, durante 4 semestres, 100 sesiones, para ayudar a un estudiante con discapacidad cognitiva a mejorar sus habilidades comunicativas en inglés. Las 100 sesiones se dividieron en observaciones: Datos del estudiante, habilidades de comunicación, habilidades sociales y afectivas, movilidad y autocuidado, enfoque del aprendizaje, habilidades cognitivas, habilidades sensoriales, habilidades de lectura y escritura, habilidades matemáticas, antecedentes académicos, sociales y educativos (30 sesiones), revisión de la literatura (30 sesiones), preparación de actividades sobre cursos de inglés (15 sesiones), toma de fotos de Sebastián para actividades cristalizadas (8 sesiones), preparación de actividades cristalizadas (5 sesiones), Notas de campo de Sebastián (5 sesiones) y la adaptación de FCE para el Curso de Inglés Avanzado (4 sesiones).

Este documento explica cómo la inteligencia cristalizada podría facilitar el aprendizaje del inglés como lengua extranjera, cómo el estudiante mejoró su competencia lingüística al realizar diferentes tareas en los cursos de inglés (Intermedio - Intermedio superior y avanzado) Asimismo las técnicas cualitativas de investigación como observaciones, diario de campo, entrevistas a profesores y estudiantes; y las técnicas cuantitativas como la prueba inicial y posterior de Inglés al inicio y final del estudio, las cuales fueron útiles para estudiar las emociones del estudiante y su perspectiva de su propia experiencia de aprendizaje, la cual está compuesta por siete categorías emergentes como conocer mi conocimiento, profundizar mi conocimiento, aprender y disfrutar mi contenido, crear mis propios materiales pedagógicos, enfrentar mis propias experiencias, EFL mi principal motivación y lograr mis

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

objetivos pedagógicos. Después del análisis, el investigador encontró que existen razones para creer que los materiales de enseñanza basados en la inteligencia cristalizados no solo mejoran el aprendizaje de idiomas, sino que también aumentan el aprendizaje en términos más generales.

Palabras claves: Inteligencia cristalizada, discapacidad cognitiva, Inglés, educación inclusiva y flexibilidad curricular.

Introduction

The present research refers to cognitive disability which is defined by Luckasson (1992) as “substantial limitations in the physical, cognitive and psychosocial development, and it is characterized by less than average intellectual functioning” (quoted by Verdugo 1994, p. 1).

The study focuses on a student named Sebastian, who was diagnosed with cognitive disability by Psychologist Carolina Gutierrez (see annex 7), and his struggle learning English as a foreign language. It involved an adaptation process of teaching activities tailored for his special needs by using crystallized intelligence enhancement. Crystallized intelligence is understood as “the ability to acquire new information that has been acquired during lifetime through fluid intelligence and the ability to extract the meaning of the texts” (Intell, 2015, p. 3).

The study is framed in the areas of cognitive science, linguistics, and inclusive education. Cognitive science studies “intelligence and behavior, with a focus on how nervous systems represent, process, and transform information”. (Sattar, 2019, p. 1). On the other hand, inclusive education points out

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

An egalitarian system, where it is possible for people to embrace diversity not only to tolerate it. According to Carrillo teachers should carefully consider the types of strategies and unabridged activities they implement in their classrooms, to include all students in an integrated environment.

(Carrillo & Rodriguez, 2017a, p .1)

One of the main points in this study is to point out that crystallized intelligence can serve as a pedagogical bridge to close the gap between students with special needs and language learning. “Each person has individual strengths, personalities and experiences and disabilities and the right to be part of a quality education in Colombia” (L.1618, art. 67, 2013).

The process of learning and teaching foreign languages, Murcia (2001) “has been a constant need for academic, personal, and economic reasons” (quoted by Capera, Carrillo & Rodriguez, 2018, p. 116). In Colombia, the law 115 of 1994, established by the Ministry of Education, guarantees the rights of people with disabilities in 2013. The Curricular Guidelines for English Teaching, and the Basic Competence Standards for English among others, point out that foreign language guidance needs to be part of the educational experience of Colombian students with disabilities.

To carry out this study, it was important to analyze the micro-curriculum of the academic English courses to identify and modify some linguistic criteria and topics that do not have connection with crystallized teaching, and make modifications in the micro-curriculum for Sebastian, which contributed to his social, academic, emotional, and personal advancement.

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

In this document chapter one presents the importance of describing the problem indicating general and specific objectives articulated with the rationale, the most relevant parts as the difficulties in Language learning, EFL teaching materials and the impact and effectiveness of Crystallized Intelligence in EFL are evidenced in each objective which set the pedagogical process of the student as a meaningful process from crystallized perspective.

Chapter two refers to some previous studies related with crystallized intelligence, education, and inclusive education. Most of these studies are about cases in which crystallized intelligence was used to train the brain of people with cognitive disability in areas different from language learning, such as mathematics. It seems that crystallized intelligence has not been used in experiments or as a strategy to teach language. Anyways, these studies were useful to implement this project and identify some criteria and strategies to carry out in the practicum in a real context in a Colombian university. This chapter also includes the main concepts of cognitive disability, crystallized intelligence, inclusive education, flexible curriculum, and TEFL.

Chapter three establishes the research techniques, tools, participants, and design. This study is a single case study and data collection tools included interviews, observations, medical/psychological diagnosis, teaching materials, lesson plans, artifacts, and student's journal.

In the final chapter, findings are organized in three stages, the first one corresponds to the need analysis, the second one is about findings regarding interviews and documentation, including the references that guided the teaching materials adaptation, and the third one presents the results on the teaching intervention outcome. It also includes

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

seven learning cognitive categories that gave the researcher a great vision about the steps that the authors performed in every single session and that might be useful for future teaching practice to teach language to a person with cognitive disability and to help them to build meaning learning.

Research problem

A group of teachers from Universidad La Gran Colombia concerned about the language learning process of a student with cognitive disability, considering that Sebastian had repeatedly failed English courses, decided to take action and enrolled in a teaching experiment involving the adaptation and implementation of English language teaching materials based on crystallized intelligence theory with the purpose to benefit the EFL learning process of Sebastian. The idea of carrying out this study came up from a need analysis based on three data collection tools, those were 1) The student's psychological records, 2) 30-Session observation journal organized in a form per session, and Sebastian's academic records (Annex 6), including an English language pre-test for Advanced English Level (Annex 12).

Sebastian's psychological diagnosis

The Gran Colombia University does not have a group of psychologists who could help Sebastian with his leaning process, and it I was not able to pay for external clinical support. We did have the orientation by Sebastian's main psychologist from El Bosque University, Carolina Gutierrez de Piñeres, who gave us suggestions to adapt teaching materials for Sebastian's classes. (See annex 7). The student's characterization was based

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

on his clinical record and this psychologist’s suggestions. I did not have access to further information or professional guidance.

There were two medical diagnoses that came from his medical record which pointed out that Sebastian has cognitive disability in a medium level, which became a learning barrier to learn a foreign language when he started his process. (Psychological record, annex 7) This situation became an opportunity to help him not only with his studies, but also with his self-esteem since he was feeling severely affected by his constant failure. According to the psychological report issued by Carolina Gutierrez de Piñeres, a professional psychologist, she concluded that Sebastian has cognitive disability by a series of psychological reports.

Doctor Gutierrez suggested that given Sebastian’s condition, teachers and Sebastian should keep in mind some guidelines to teach people with cognitive disability (See annex 7) *:

- What teacher should do:
 - 1) Explain the instructions of the tasks carefully, simply, and slowly.
 - 2) Repeat the instructions and allow them to remember them.
- What Sebastian should do:
 - 1) Learn by seeing what he is listening or reading, that is why it is important to use learning strategies that favor this type of methodologies.
 - 2) Record the classes so he can review them after class. (This strategy was not part of the project. The researcher used observation notes).

Table 1

Observation journal

Cognitive factors	Psychological factors	Family/Social factors
-------------------	-----------------------	-----------------------

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

<ul style="list-style-type: none"> - Pictures are essential to remember better each of the branches of linguistic. - Education and personal experiences of Sebastian. - Sebastian extracts the meaning of the text with his own photographs easier than if he sees photos in a regular textbook. 	<ul style="list-style-type: none"> - Sebastian felt frustrated because the teachers rejected him, and his partners did not involve him in the class activities. - The scores were important for him and he was constantly failing the English assessment processes. 	<ul style="list-style-type: none"> - Sebastian’s brothers did not support him and his mother neglected his academic tasks. - His family could not afford professional care for him.
---	---	---

Note. Own elaboration*

The second tool is the observation journal, in which 30 sessions of observations were registered (Observation journal, annex 5). The observation form was adapted from diagnostic integral de Necesidades Educativas Especiales, Ley 20.201. Decreto 170/2009. Gobierno de Chile, as shown in the same document. Main points are summarized above.

Sebastian’s Academic Record

Sebastian’s intervention was important because his learning process was slow and did not match academic standards. He was repeating the academic courses too many times, and by the time this document was written, Universidad La Gran Colombia does not have educational service policies to guide students with disabilities nor the teachers during the learning process.

Sebastian felt frustrated, fearful, anxious, and misunderstood because he could not complete his academic courses with the appropriate level (being 3.0 as minimal score), his partners and teachers did not have the best training to help him. This fact was evidenced by having some interviews to the teachers (Teachers interviews, annex 2).

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

Some of Sebastian's teachers' interviews were carried out with one of his professors of English language and some other subjects, named Rodrigo³. This kind of exercise was carried out every Thursday or Friday, taking some personal and academic interviews into account. As professor Carrillo mentions in an article entitled "Acercamiento a la Educación inclusiva; Estrategias metodológicas para fortalecer los procesos de aprendizaje de lengua extranjera en el programa Licenciatura en Inglés de la Universidad La Gran Colombia". "The learning process of students with cognitive disability should be articulated with the foreign language teaching and learning process and activities should be oriented to tackle students' needs" (Carrillo & Rodriguez, 2017, a, p. 2).

Based on all the information above, this study intended to solve the following questions:

What is a possible teaching strategy to help Sebastian improve his foreign language learning process and his motivation?

What does cognitive theory say about teaching and learning for people with medium cognitive disability?

Is it possible to adapt teaching materials to Sebastian's cognitive level, since regular textbooks seem to be not good enough? What characteristics should these teaching materials have?

Can we assess the effectiveness of adapting educational materials to enhance the learning of English as a foreign language in the case of a student diagnosed with cognitive deficits?

³ The name that I used to protect his real name.

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

1.1 General Objective

To assess the effectiveness of adapting educational materials based on crystallized intelligence principles to enhance the learning of English as a foreign language in the case of a student diagnosed with cognitive deficits.

1.2 Specific Objectives

- To identify the student's main difficulties in his language learning process by having a need analysis, including a psychological report, a researcher's observation journal, Sebastian's academic record, and the English course syllabus, among others.
- To establish the theoretical connections between language learning and the learning process of a student with medium cognitive disability by doing bibliographic documentation to adapt EFL teaching materials.
- To examine the impact and effectiveness of the adaptation of EFL teaching materials based on crystallized intelligence, in the learning process of a student with cognitive disability by contrasting pre-test and post-test results.

1.3 Rationale

This research project was carried out to contribute to Sebastian's English learning process at Universidad La Gran Colombia. One of the main impacts of this study is to change the perspective of teaching English to someone with cognitive disability by using crystallized intelligence. Before the intervention, Sebastian was facing academic and social distress due to the difficulties he had to match academic standards and because his self-esteem was affected. It was necessary to think of a teaching strategy to tackle his learning style and special needs. Through this study, professor Rodrigo and me, the researcher, tried

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

to find a proper teaching methodology and adapted teaching materials more adequate to his cognitive skills. The result of such an intervention are shown in this document.

Tutorials increased with professors of English language, three times per week (See annex 13), in order to provide feedback of the English courses, and Sebastian improved his performance and got meaningful results in each test. Likewise, he achieved higher scores at the end of academic English courses, which contributed to Sebastian's general wellness. The process involved some members of the UGC academic community, thus generating consciousness on inclusive education and the special needs some students have. It also made modifications in the micro curriculum of the English program and opened doors for the possibility to implement a more flexible curriculum.

Pedagogical materials were adapted for Sebastian as a pre-service teacher. These new materials proved to be more effective for teaching a person with cognitive disability because they included more personalized texts and images, something different from the content on the regular textbooks. This familiarity with the content helped the student to assimilate and remember the studied points for longer. The materials also contributed (See annexes 1, 15 &16) to grammar and vocabulary understanding and use in context, this was evident in the final exam and during the class observations.

To have a perspective on the importance of this research, it is necessary to consider the graph below, which shows the average of people who have cognitive disability Colombia:

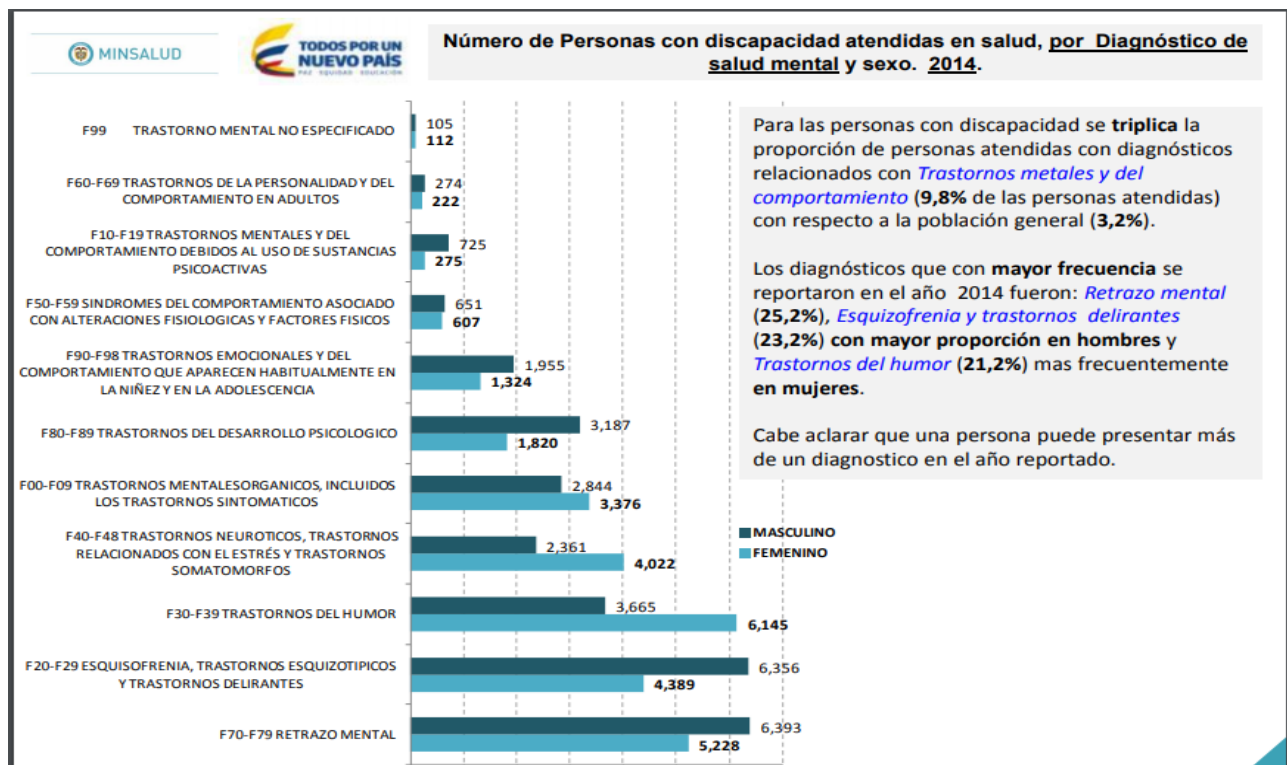


Figure 1. People with cognitive disability. According to the graph, 25,2 % of the total population in Colombia has cognitive disabilities, this community has not had academic opportunities and they have been neglected by government, educational institutions and labor forces. Taken from “Número de personas con discapacidad atendida en salud, por Diagnostico de salud mental, salud y sexo.”. MSPS, SISPRO, RLCPPD, DANE, (2015). <http://www.discapacidadcolombia.com/index.php/estadisticas/185-estadisticas-2015>

1.4 Literature review

This session describes five studies carried out in six countries: Portugal, United States, Colombia, Venezuela, Spain and Cuba, which point out different teaching training sessions focused on some fields of knowledge such as mathematics, crystallized intelligence in academic performance and ways of strengthening the human brain, these studies are connected to this new pedagogical proposal due to these are composed by steps

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

which allowed to give a meaningful light to implement EFL teaching-learning process in a person who has similar characteristics.

This first study was implemented in 2008 in Portugal, it was carried out as an experimental study to analyze the effectiveness of a training program based on people who suffer cognitive disability, and this study had a purpose to strengthen the prospective memory which is in charge of the personal autonomy and social issue. “This kind of study was implemented in two different groups of students who had cognitive disability in Portugal, this study involved 23 people with intellectual disabilities admitted to a public institution for adults with this disability (11 men and 12 women) The ages of the participants were between 19 and 33 years old; one group was the control and the other one was selected to carry out the intervention into a mainstream classroom. For it, the researchers had to use two particular tests to evaluate the process using an adaptation of procedure of the test of Quisco; which evaluated the sustained attention, verbal fluency and a task related to prospective memory, which were supported by Rivermead Behavioral Memory Test (RBMT), and the guide of the main tutor of the group” (Meilán, Salgado, Arana, Carro, & Jenaro, 2008, p. 232).

There were 25 sections, each session was composed by two or three hours where all participants trained sustained attention, memory, orientation, visual-spatial capacity, reading, writing and process related to the brain, the procedure consisted of three particular steps: (1) The evaluation, it identified neuropsychological capacities and the particular characteristics that they had. (2) Application of training cognitive abilities which were

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

based on pictures of famous people and (3) evaluate if there were meaningful results to strengthen the prospective memory reevaluating the before tests already mentioned.

According to the results Meilán et al, (2008):

Two groups of people made the same exercise by turns; they were benefited with these kinds of training programs which not only contribute to the prospective memory, but also the daily life and memory of intentions which can contribute to the personal motivation (p. 232)

The relations of this study to this research in cognitive disability treatment are:

- Focus on daily activities and routines of the participants.
- Identification of pictures of any topic.
- Articulation of pictures with different cognitive processes.
- A verbal fluency task associated with process measurement executive in which the student had to write in two minutes the most words that came to mind.

I took and modified these steps to classes of English in order to identify if these contributed to his learning process, and the results were positive.

Pérez and Cabezas (2007) developed a training program in solving practical problems applied to people with mild and moderate intellectual disabilities. The main objective of the study was to identify the effect of a program designed to improve these skills in these people, involving students between 17 and 36 years old, the experimental group composed by 14 women and 20 men and the control group composed of 24 women and 8 men belong to three training centers of Madrid-Spain. The resources implemented were: personal data questionnaire and an inventory for service planning and individual programming and battery of skills for solving practical problems

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

Pérez and Cabezas (2007) the proposal was composed by 10 didactic units with 5 sessions in each one of them to end in 50 sessions; each unit focuses on a specific work area; this proposal was based on fictional characters that lived in similar situations to the students. Throughout the teaching units the story of a group of young people, coming from various places, who are in a summer camp over a period of time they shared adventures and, of course, problematic situations that must be resolved

In summary, it can be evidenced a meaningful effectiveness of the intervention program in relation to adaptive behavior, affirming that both groups improved significantly, both in the pretest and posttest measures, as well as personal life skills and skills for life.

The relations of this study to this research in cognitive disability treatment are:

- Own personal experiences narrated as teaching-learning stories.
- Solve problematic situations which might be Sebastian's case.
- Adapt the English material to 10 didactical units with 5 sessions and get 50 sessions at the end of the semester.

Martinez, Lourdes and Garcia (2001) carried out an investigation in which the main objective was to check if the mentally handicapped are able to benefit from a training in meta-memory and to determine if they are able to maintain the knowledge acquired after a while, and also seek possible ways to look for some strategies to help the learning process, likewise the objectives of this study were (1) Detect the knowledge that the mentally deficient possess about their memory, (2) Apply a program to increase this knowledge and (3) check the effectiveness of the program.

The program was implemented with 28 people who suffered cognitive disability between 13 and 17 years old in United States, it took into account the percentage of the

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

battery of Meta memory by Belmont and Borkowski in 1988 which worked to select and divide the people into two groups in experimental and control with the purpose of:

- (A) Helping the students to identify and define problems to plan a general strategy,
- (B) Teaching the students to implement effective strategies to solve a problem,
- (C) Helping students to assimilate techniques of self- appraisal and evaluating the personal work.

The program was carried out in 40 sections, each session lasted an hour, and the schedule was applied in four different stages: introduction, teaching of the metacognitive variables of knowledge and control, conceptualization, cognitive strategies of repetition and categorization and finally a combined phase (Martinez et al, 2001, p. 65)

Acosta, (2015), carried out an investigation which sought to extend some pedagogical strategies in order to contribute to the learning and evaluation process of students with educational needs specially the students with cognitive disability.

The procedure took into account 466 boys and girls in a range of 6 and 8 years old who do not have any cognitive disability and 30 children who had cognitive disability in a range of 13 and 16 years old.

“The method involved three different stages, (1) a specific task previously to analyze the students characteristics which was evaluated by a pretest, later, (2) the learners were trained with a similar material of the first stage, (3) the evaluator provided “clues” in different types of ways which helped the learners to solve the task and the behavior was evidenced and recorded at the

same time, after the training session; the standard task was applied again, finding the post-test score” (Acosta, 2015, p. 53)

The final results pointed out that EDEPA (Encuentro sobre la didáctica de la estadística y la probabilidad y el análisis de datos) has evidenced a useful instrument which allows the evaluation of the development through some areas and sub areas identifying people who get cognitive disability; likewise the experimental group obtained better results in the posttest , getting the improvement in the learning process which was evidenced a learning potential training, with the purpose to adjust the academic curriculum according to the results and special needs of the students.

Therefore, some of characteristics of this study were taken and adjusted to foster this proposal:

(A) A specific task previously to analyze Sebastian learning characteristics which was evaluated by a “pretest” later.

(B) Sebastian was trained with a similar material of the first stage, considering topics of English courses.

(C) The evaluator provided “clues” in different types of ways which helped Sebastian to solve the task and the behavior was evidenced and recorded by pictures at the same time, after the training session.

(D) Task was applied again, finding a high grade in the "post-test" score.

U Complete the text with the most appropriate form of the word in brackets.


Cristian's job

Cristian is a (1) teacher (teach) and 2) sings (sing) who was born in Bogota. He is not very good at 3) dealing (deal) with people because he is very shy, he is known as a great hero who is admired by his 4) motivation (motivate) and 5) Dedication (dedicate) to the field of education. As an English teacher he has always been very 6) thankful (thank) with his brilliant students.


He is quite sure he wouldn't like to have an 7) occupation (occupy) that has nothing to do with his B.Ed. in English, 8) Education (educate) or pedagogy, he is not the best English student in Upper-intermediate or Advanced English courses, but he has tried to do his best to achieve his dream, which is to become the best English teacher.

In 9) Addition (add), he thinks that working in business administration or 10) Management (manage) is not really interesting for him, he would rather see himself in a job involving bilingualism or teaching.


PHRASAL VERBS. Select the phrasal with the corresponding image, as in the example.




Take up



Take apart



Take back



Take off

Take back / Take off ✓
Take up / Take apart ✓

3/3

Figure 2. FCE exam. Own elaboration*

(McGrew, 2009; McGrew & Evans, 2004; Kane & Gray, 2005) carried out

An investment theory of Cattell states that fluid intelligence (Gf) is the basis of crystallized intelligence (Gc), as is the acquisition of skills and knowledge possible. This research trying to determine the unique contribution of intelligence, Gf and Gc, on the academic performance of school children {Translated into English} (Ramirez, Torres & Amor, 2016, p. 1)

A sample of 100 children was used as selection criteria in two types of education: children with bad and regular scores school subjects (regular education) and children with mild mental retardation (special education). Intellectual tests were: Intellectual Ability Scale and Verbal Analogy test.

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

Academic tasks were: reading fluency and math fluency. The results showed strong correlations between academic and intellectual variables. (Ramirez, et al, 2016, p. 1)

Children were evaluated in regular and special schools of the Matanzas and Cien Fuegos provinces, Cuba. The sample includes children positive and negative for the disorder of interest: Mental Retardation. The selection criteria in regular education was: children evaluated by the educator with qualification of good and bad in school subjects, essentially in reading, writing and math, the selection criteria in special education were: children with diagnosis of mild mental retardation. {Translated into English} (Ramirez et al., 2016, p. 2)

Intellectual Capacity Scale (ECI): Test designed for evaluation of fluid intelligence in Cuban children between the ages of the 7 and 11 years. It is made up of 36 matrix problems Raven test style. Each of them consists of an incomplete figure that the child must complete, selecting one of six possible alternatives. For each correct answer a point is awarded and a score is collected total in the execution of the test (36 points).

Verbal analogies (AV): Try a classic format A is a B as C is a D. Example "Guitar is a String as Piano is a Key". The child must select the correct answer from four options (D, E, F, G).

The test is composed of 100 items where they are presented mathematical operations of addition, subtraction and multiplication of numbers

between 1 and 9, children must answer correctly all the subsections that they can in a time of 3 minutes. It qualifies adding a point for each correct answer. The sum of the points is divided by 100, which is the total number of test items.

Reading fluency in silence (FIs): It consists in the presentation of a text written in capital letters where spaces between words and punctuation marks (Ex. ALL THE ANIMALS OF THE FORESTS WERE ONE). Homework has Aim to use indicators of reading competence in silence (the word identification, word meaning, word construction, sentence structure, understanding and fluency) as measures of skills of students for accurate word recognition and efficiency (Ramirez et al, 2016, p. 2)

Ramirez et al, (2016) the child's task is to draw a vertical line every time you identify a word in a controlled time of 3 minutes, the task begins with a short training text, in the case of children aged 7 and 8, training is done on the board and then on the sheet, the task score is calculated by adding the total of words correctly identified by the child, the texts were taken from Spanish tests, prepared by the Central Institute of Pedagogical Sciences from Havana, Cuba for the second, third, fourth grades and fifth of primary education.

Process

Ramirez et al, (2016) the intelligence tests were applied first than the academic tests were applied, then reading and math tests were applied collectively by age groups, children are not informed of time they have to perform the test, the researcher indicates the moment

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

to start and finish the task, both tests were applied in a classroom with good lighting and tranquility.

Crystallized Intelligence indicates levels of verbal ability related in part to the school and experience learning cultural as well as a mastery of the information associated with context objects daily and adequate level of conceptualization verbal, language knowledge, training verbal concepts and information flow (Ramirez et al., 2016)

Statistical procedure

1. Correlation analysis between academic and intellectual variables.
2. Hierarchical Regression Analysis, with the objective of determining the contribution of unique intelligence tests to explain academic performance.

Conclusions of this study, first, the crystallized ability has a significant contribution in explaining the reader performance, but not in mathematical performance, the authors explain the predictive affect G_c - reading by the strong relationship between the reading performance with language skills, because they represent an overlap between the cognitive system of reading with the language system.

Decanio, Albano, Llanos, Rojas and Trias (2009) there is another study which with a sample of 736 subjects, boys and girls 7 years old from the following States Venezuelans, from the Western Zone: Táchira, Barinas and West of Portuguesa, and the area Oriental: Anzoátegui, Monagas, South of Aragua and East of Guárico, in this investigation the Brief Test of Kaufman Intelligence (K-BIT) presenting two dimensions: vocabulary and matrices.

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

1. Vocabulary: it is a measure of the verbal ability that requires oral responses.
2. Expressive Vocabulary: applies to all age groups and requires that the person give the name of a represented object graphically.
3. Definitions: applies to subjects 8 years and older, the answer must fit two tracks (a descriptive expression and a word missing some letters, similar to the game "the hanged man").

Expressive Vocabulary: for the subjects of 7 years the base score was 11 points.

Vocabulary Definitions: not applied for this age group.

Matrices: for subjects of 7 years the base score was 10 points.

Results

Crystallized Intelligence according to sex

Expressive vocabulary, it was observed that children and girls presented adequate performance, meeting above the base score (11points) more than 91% of them.

Crystallized Intelligence according to social stratum

It was observed that for the highest ES (ES I + II + III) boys and girls met in more with a score equal to or greater than base score (98.7%). Only 1.3% of them (Decanio et al., 2009, p. 32)

Garibotto, Ramos and Rios (2020) the sample was carried out to 23 students of 609 grades from the school and 13 teachers of the English area of several schools as La Merced

and some from other public schools. Several instruments were implemented: the test of learning styles by Kolb and the test for evaluation of learning, a semi structured interview that has 12 multiple-choice questions, these instruments were applied to students.

The objective of this interpretative research was to identify the different learning styles of sixth grade students between ages of ten and thirteen years of the I.E. La Merced from Mosquera town, in order to design a pedagogic proposal to strengthen the English vocabulary acquisition in inclusive education by students suffering from cognitive impairment, thereby contributing to guarantee their right to education in conditions of quality, fairness and equality (Garibotto et al., 2020, p. 2)

Garibotto et al (2020) another instrument was a survey taken by English teachers in order to know their perspectives and points of views on teaching English in the framework of inclusive education but also the strategies they use or have used for the acquisition of foreign language vocabulary. The result of the research recognizes the Assimilator Style as the most significant learning technique and the Divergent style as the least prominent. On the other hand, we found that the most used strategies by teachers were fun and dynamic, with ICT (Information and Communications Technologies) as multimedia aids, and concrete material.

Taken together, the results of the previous studies demonstrate that it is viable to implement a cognitive training program for Sebastian based on Crystallized Intelligence, Learning and Teaching process in EFL and Cognitive disability. This indicates that

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

Crystallized Intelligence has a close relationship with the inclusion, more specifically with mild mental retardation. This new pedagogical proposal expects to improve the communicative competence, the appropriation of concepts vocabulary, grammar and writing parts and the level of Advanced English course.

Chapter II: Conceptual framework

The current research sets out the definitions of four essential concepts and their implications in EFL teaching and learning process. Those concepts are: 1) Crystallized intelligence, 2) Cognitive Disability, 3) EFL, 4) Inclusive education, and 5) Curriculum flexibility

2.1 Crystallized Intelligence

“Crystallized intelligence came from a British and American Raymond Cattell, a psychologist known for his psychometric research into intrapersonal psychological structure” (Gillis, 2014, p. 2). Cattell developed Crystallized intelligence based on Donald Hebb who was a Canadian psychologist, Cattell adopted Hebb's ideas of intelligence A (Hebbian learning) and B (Phase sequence) and renamed them.

According to Raymond (2011) Cattell used GC to rename Hebb's intelligences G points out general intelligence of a person and C points out culture-free, likewise Cattell states that:

Crystallized ability consists of discriminatory habits long established in a particular field, originally through the operation of fluid ability.

Fluid ability has the character of a purely general ability to discriminate and perceive relations between any fundamentals, new or old. It increases until adolescence and then slowly declines. It is associated with the action of the whole cortex. It is responsible for the intercorrelations, or general factor, found among children's tests and among the speeded or adaptation-requiring tests of adults,

(Quoted by Brown, 2016, p.13)

According to Cattell (1987)

Crystallized intelligence is influenced by cultural experience and education, this ability represents the ability to acquire and reflect through lifelong experience. Likewise, Crystallized Intelligence is the ability to implement culturally approved problem solving methods, and it allows to identify a number of abilities that result from informal and formal education, besides experience motivation (quoted by Meilán et al., 2015)

According to Cattell (1943), the progression of Crystallized Intelligence has been discussed by Raymond Cattell, John Horn and John Carroll, among others. Raymond Cattell explains that the Crystallized Intelligence comes out mainly from two types of intelligences, one of them, is fluid intelligence, which refers to skills needed for advanced mental processes, namely the ability to solve problems. Also, “crystallized intelligence is influenced by cultural experience and education, this intelligence represents the ability to acquire new concepts, new information which has been acquired through lifelong experience” (quoted by Davoudi, 2015, p. 70)

Likewise, Crystallized intelligence “is the ability to implement culturally approved

problem solving methods, and it permits to identify a number of abilities that result from informal and formal education, besides experience” (Baghaei & Tabatabaee, 2015, p. 47) For Cattell, Crystallized intelligence has a close relationship with formal and informal education and their own life experiences which are articulated with individual experience, and which takes multiple factors such as:

Knowledge of the culture

Information and concepts of a specific culture

A store of verbal language-based declarative (knowing what)

Procedural (knowing how)

Knowledge acquired through the investment of other abilities during formal and informal educational and general life experiences Baghaei & Tabatabaee, 2015, p. 47)

These factors were included in the adaptation of the teaching materials in the form of activities and exercises that articulated language content (for example, phrasal verbs or word formation exercises) and Sebastian’s life and individual experiences and daily practices. (See annexes 17 & 18)

The relation between fluid intelligence and crystallized intelligence is clear since the first fosters the second, but this mainly happens during childhood and adolescence.

Crystallized intelligence depends on fluid intelligence in the acquisition of a new concepts, the adaptation of a new situation, and both influence throughout the life cycle. This study focused on crystallized intelligence more than on fluid intelligence because

Sebastian needed to strengthen the learning of English as a foreign language, considering his abilities and concepts already learnt from his failed and pervious English courses. The

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

experiences in his previous courses were useful to foster his crystallized intelligence. No fluid intelligence was analyzed since the concepts and situations he was facing were repeated ones and no new ones, since he was repeating the course for the third time. I was trying to take advantage of his previous courses and in the intervention, the researcher adapted teaching materials so they could be more meaningful for his learning process.

I used crystallized intelligence in this study to foster his previous knowledge acquired by his fluid intelligence in previous English language courses by adapting some content of the textbooks and the final test questions. We tried to use his memories and crystallized intelligence notions so that Sebastian could make even more conceptual lexicon and pragmatic associations.

2.2 Cognitive disability

According to American Association on Mental Retardation (1992):

Cognitive disability is the lack of the procedure in different fields of a human being which work on human development, not only in particular behaviors which present each human being based on cognitive disability level diagnosed, but also different ways of learning a concept; likewise, it is associated with some limitations in adaptive areas skills. (Quoted by Verdugo, 1994, p. 32)

Doing documentation work, some essential definitions and concepts from medicine were found, which start from an area of knowledge as psychology. From the psychological perspective, Sánchez Manzano (1994) points out:

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

The cognitive development is a complex number of higher capacities: perception, attention, memory, reason, etc., which are based on thinking or intelligence, issues which are really important in the academic field in order to address the meaning and implication of learning and teaching process into cognitive disability towards the acquisition of EFL (quoted by Papalia, Wendokos & Duskin, 2010, p.210)

Based on American Association on Mental Retardation (2002) “cognitive disability is characterized by limitations in intellectual functioning and adaptive behavior as manifested in practical, social and conceptual skills, this kind of disability begins before age 18” (Quoted by Verdugo, 1994, p. 33)

2.3 EFL (English as a Foreign Language)

The teaching of foreign languages has evolved from the different methodological approaches that through history have been discussed, following the epistemological constructs that have sought to respond to the need to communicate in a foreign language. However, it is impossible to establish a single method or methodology as an ideal within the educational field. For this reason, it is necessary to recognize the importance of research as a means of clarification regarding the methodologies that may or may not be relevant in a specific context. As a clear example there were not pedagogical proposals or methodologies that respond to Sebastian’s special needs at Universidad La Gran Colombia, something that can be confirmed by checking the major curriculum or the institutional regulations for students.

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

Learning a language is a part of human nature as Chomsky highlights (1986), he mentions the capacity of adapting the code for communication is one of the most exceptional abilities that could be incorporated to someone's knowledge by acquisition or learning. It is an autonomous process that varies regarding the context and the corresponding linguistic input. However, it is also fascinating how the conscious part of learning a language may be possible with a certain number of conditions.

Within the teaching of foreign languages is possible to find different methodologies to teach from the conception of the behaviorist and constructivist paradigms in the foreground; these paradigms have marked the conception of the learning of foreign languages, as well as the teaching methodologies with respect to the role that the teacher and the apprentice have.

According to Vigotsky (1978), although constructivism might lead learners to develop deep cognitive connections towards learning, new knowledge is usually uncertain and the heritage in teaching practices is shaped by the implementation of technologies and methodologies that maintain the traditional scope of teaching.

On the other hand, "Behaviorism prepares men to understand the first principles of their own behavior, should make them aspire to reorder their own lives, should especially make them prepare to educate their children in a healthy way" (Watson, 1998, p. 248), this type of behavioral conceptions falls from the field of psychology in education, where under the control of the stimuli could be predicted the corresponding answers.

On the other hand, contemporary methodological approaches in which memory takes a back seat and the skills of the learner along with their history, their individuality, their consciousness and their competence acquire all the attention, are within the

constructivist paradigm. This is due in large part to the apprentice's recognition as the most important in the teaching-learning process, since it is he who must build his knowledge based on experience, which allows the apprentice to adapt the new information to the learners.

2.4 Inclusive education

Inclusion is a new theoretical concept of pedagogy, which seeks a heterogeneous learning; it focuses on responding to the diversity and different needs of students, ensuring quality education and compliance with human rights. It should be stressed that the World Organization for Human Rights affirms in article 24 of the rights of the population in situation with disability, the right to inclusive education, and also the Colombian law 1618⁴, in article 2 points out:

All people have the same opportunities and the real and effective possibility of accessing, participating, interacting and enjoying a good, service or environment, along with other citizens, without any limitation or restriction due to disability, through concrete actions that help improve the quality of life of people with disabilities. (L. 1618, art. 2, 2013)

Therefore, this pedagogical experience has been an opportunity to break into the different paradigms about special education as rejection or exclusion, in which inclusion is understood as a process of separating the inner social scopes of the community, towards the discussion of that autonomy, addressed and required within society.

⁴ Translated by Yesenia Capera

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

Hence, it is necessary to encounter suitable solutions to set an inclusive context through integration, due to the different types of thinking, without discriminatory sceneries, both negative attitudes and the prior maxim of respecting others to achieve a high-quality education.

In addition, it is meaningful to mention that one of the inclusion goals is to determine diversity as an opportunity of fomenting a democratic education, which must be presented in the EFL learning process. According to Unesco (2005), the inclusive education is a fundamental right for everybody, without matter prevailing learning barriers in mainstream, as well as equality opportunities for the student to be involved in the learning process in order to generate a dynamic approach of responding positively to diversity and of seeing individual differences not as problems, but as opportunities for enriching learning.

Likewise, it is important to address some of the perspectives of educational inclusion, which are important in transforming the thinking and practice of citizens in the face of one of the concerns of the world education system, which are diversity and social inclusion.

The Colombian Ministry of Education, specifies diversity as the inter and multiculturalism that establishes a new paradigm of social organization in which concepts such as social responsibility, active citizenship, empowerment, citizen participation and deliberative (L.1618, art. 2 , 2013) democracy are redefined and invigorate, in the same way, social inclusion is defined as “a process that ensures that all people have the same opportunities, and the real and effective possibility of accessing, participating, relating and enjoying a good, service or environment, together with other citizens”, (L.1618, art. 2 ,

2013) without any limitation or restriction due to disability, through concrete actions that help improve the quality of life of people with disabilities (L.1618, art. 2 , 2013)

That said, diversity and social inclusion go beyond being two concepts defined or established by the Colombian policy as guidelines that must be taken into account by educational institutions, administrators, teachers and students to encourage and consider that we are all different and therefore, it must be investigated with the purpose of improving the academic world and the quality of life of the person with a disability situation.

Similarly, educational inclusion is a fundamental right of any student, and it is necessary to resort to human rights which allow the citizen to live on equal terms with others. Thus, for example, the right to equal opportunities, the right to education, the opportunity to be included in the teaching-learning process, and not on the contrary to be excluded due to having different abilities, written in this way, I wish to underline a definition of inclusion, "inclusion is more than a method ... It is a way of living, a way of living that is related to the values of (Living together) and the acceptance of the differences (the welcome in the different ones)"(Pere, 2003, p. 15)

2.5 Curriculum flexibility

The curriculum of La Gran Colombia University must ensure a quality education both in terms of the level of participation for Sebastian, it must generate clear objectives in order to be achieved, it must achieve these objectives with all students, but also flexible to respond to students with very diverse characteristics. This idea can be supported by Sebastian's interview. He mentioned that The Gran Colombia university does not have the extra learning strategies to help students with special needs, He only get help from some

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

teachers who prepared some tutorials to foster the topics of his studies. (See annex 19 Sebastian's recording)

According to Unesco (2004)

The curriculum from a broad conception encompasses all the learning experiences available to students in their educational communities, taking into account all the knowledge, skills and values that a country wants its children and young people to acquire to enable their development and participation in the different spheres of life. (Quoted by Aristizabal & Melendez, 2007, p. 27)

From this point of view, the curriculum of La Gran Colombia should have two essential conditions in order to generate an inclusive curriculum for Sebastian as well other students, these conditions are 1) relevance and 2) pertinence of an inclusive curriculum.

Relevance promotes the learning of the necessary competences to respond to the demands of today's society and participate actively in it, and pertinence is capable of adapting to the needs and characteristics of the students and of the diverse social and cultural contexts. (Aristizabal & Melendez, 2007, p. 30)

It is important to mention that in the old curriculum for the program of B.Ed. of English was not a requirement to get C1 level. Students had to get B2 level, in the Sebastian's case, he approved the last English Language course for the adaptation of the exam because it was adjusted for his special needs. It is possible to get C1 level for people with mild cognitive disability if the University and the teachers create spaces for adapting materials for single specific case.

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

Likewise, a pertinent curriculum and materials adaptation must be together to make a suitable learning environment for Sebastian who was a particular learner, “the adaptation can include reducing, adding, omitting, and supplementing” (Tomlison, 2011, p. 14)

The material development was a field of study and practical undertaking for Sebastian, this study followed particular steps proposed by Tomlison in order to achieve impact through:

Novelty (Unusual topics, illustrations, and activities materials)

Variety (Breaking up the monotony of a unit routine with an unexpected activity; using many different type of resources)

Attractive presentation (Attractive colors, lots of white space, use of photographs)

Appealing content (Topics of interest to the target learners, topics which offer the possibility of learning something new, engaging stories and universal themes)

Achievable challenge (Tasks which challenge the learners to think)

(Tomlison, 2011, p. 14) (See annexes 1,15,17 & 18)

According to UNESCO / OREALC (2007) “to achieve the development of a relevant and pertinent curriculum it is necessary to ensure equal opportunities; learning is communities” (Quoted by Aristizabal & Melendez, 2007, p. 30)

In Sebastian’s case, the major curriculum was not modified since this was not possible for the researchers. A curriculum modification for students with special needs require the consensus of the whole academic staff. However, the teachers and researchers

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

adapted teaching materials, so we can say that the modifications were made just to a micro-curriculum level. (annexes 1,9 &21)

Chapter III Reference Framework

To carry out this project I have used the theoretical concepts of authors Diane Papalia, Sanchez Manzano, Mahmoud Abdallah cognitive development. Here, I describe how I integrated the concepts to adapt the teaching materials to help the student with cognitive disability. I also adapted the teaching materials having into account Tomlinson's suggestions.

3.1 Crystallized Intelligence and Cognitive disability

The American Association on Mental Retardation (1992) “has defined cognitive disability as substantial limitations in the physical, cognitive, and psychosocial development. It is characterized by less than average intellectual, along with associated limitations in two or more of the following adaptive skill areas” (quoted by El Homrani Hernández & Peñafiel, 2011, p. 117)

- Communication
- Personal care
- Home life
- Social skills
- Community use
- Self-government
- Health and safety

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

- Academic functional skills

According to Papalia et al, (2010) human development is composed of three main areas: physical, cognitive and psychosocial, which are the object of individual study, these are interrelated areas and each of them is affected by the others, taking this into account one of the biggest difficulties of Sebastian is found in cognitive development and this is the main issue into the learning and teaching process. It identified a close relationship between cognitive disability and crystallized intelligence which strengthen some language areas that cognitive disability establishes as the lower (pragmatics and conceptual lexicon) by using pictures of the real experience of the pre-service teacher supported by Crystallized intelligence which seems to be influenced by cultural and education experience, it represents the ability to acquire and think from new information that has been acquired lifetime through fluid intelligence and the ability to extract the meaning of the texts.

3.2 Common difficulties in the language area for students with cognitive disability:

Prelinguistic communication (Delay in the development of communicative gestures and communicative interaction)

Phonology and articulation (Delay in phonological development and delay in the mental representation of sounds)

Conceptual lexicon (it's one of the best developed):

The number of words is equivalent to his mental age.

They perform categorizations but their levels of hierarchy and their relationships between categories are less complete.

Morphology (strongly affected) difficulties in understanding verbal times properly

Syntax (Difficulties in production as in comprehension) produce simple sentences, little frequency of compounds.

Pragmatics Strong point, people with mental disabilities can hold a conversation, but there are some difficulties to produce and understand indirect speech acts.

The English materials of the courses Intermediate, Upper-intermediate and Advanced English courses were adjusted with the real experience of the student (including student's pictures doing the activities/actions to be taught), English topics, and cognitive disability difficulties related to the above-mentioned language area were addressed. Based on the previous concepts and Sebastian's learning process I decided to work on conceptual lexicon and pragmatics, these were the main branches to develop in every single session. Conceptual lexicon and pragmatics were developed to a higher degree compared to the other concepts in this study, since they are language skills articulated with learning in school and they have a direct application in daily life. Based on the findings, Rodrigo and me adjusted the contents of English courses of Intermediate, Upper and Advanced courses through pictures related to his real experience in his lifetime, this facilitated the adaptation of teaching materials for Sebastian, each session was focused on cognitive development, language development, social and emotional development per week.

3.3 Leisure and work

According to the diagnosis of the psychologists Melissa Monroy and Carolina Gutierrez, Sebastian's cognitive deficit is set in CI: 72, which highlights a low range in reason related to personal and school activities, difficulties in concentration, memory and in executing functions; this last one is defined as the most complex functions of human, as well as the main work of participating in control taking, regulation and efficiency of human

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

behavior. Likewise, as it might be perceived; Sebastian does not have the same opportunities in a mainstream classroom, which has been a common weakness in his EFL learning process, and also presented as a learning barrier as well as an exclusion problem. Another aspect to point out is how essential is to work on his writing skills, due to his clear ideas statements that are related to his own experiences, which can be understood in a foreign language, because of that; it is indispensable to develop more specifically cohesion and transition of ideas within syntax level.

3.4 EFL Learning process for people with cognitive disabilities

Teachers must not teach a topic with regular standards in a heterogeneous class, teachers must meet the needs of students with special needs as Sebastian, who has cognitive disability, then recognize new approaches to make changes in the way of teaching.

There are three methods to teach students with special needs, specifically students with cognitive disability:

1. Explicit teaching, the purpose of explicit teaching is to provide guided instruction in the basic understanding or given skills. Students profit from learning through practice, collaboration, repetition, developmental play, and activities. Explicit instruction consists of: Setting the scene for learning, a clear explanation of what to do, the process of modelling and providing multiple opportunities for practice (Abdallah, 2015, p. 46)
2. Multi-sensory teaching, multi-sensory teaching programs are designed to enable learners to grasp knowledge using not one of their

senses or channels, but as many as possible. This method refers to simultaneously using visual, auditory, and kinesthetic-tactile techniques to enhance memory and learning (Abdallah. 2015, p. 47)

3. Meta-cognitive or meta-linguistic can help students to learn how to take control of their own learning by defining learning goals and monitoring their process (Abdallah. 2015, p. 47)

Based on the previous methods, none of them worked on a case as Sebastian because in Sebastian's learning process there was not an explicit teaching from his teachers because they neglected him, did not support him by using adequate technologies, and there was not monitoring of his process in a mainstream classroom. In the case of students with cognitive disability learning a foreign language there is not much previous studies, but there are studies supporting the correlation between fluid and crystallized intelligence and the cognitive abilities required for foreign language reading comprehension.

3.5 Crystallized intelligence and EFL

Most of the studies talk about using crystallized intelligence to help students improve mathematical skills or to train the brain to better remember information. In the case of Sebastian, I started by modifying the micro-curriculum for the English courses based on crystallized intelligence notions, in an attempt to help him develop and take advantage of cognitive skills that the teachers were not having into account, such as:

- Crystallized intelligence increases with age
- Crystallized intelligence prioritizes prior learning
- Crystallized intelligence considers the student's past experiences
- Crystallized intelligence is based on facts

- Crystallized intelligence works on the meaning of texts

It was also central to recognize what the different levels of cognitive disability Sebastian had. I identified each level characteristics and implemented a pedagogical proposal based on Sebastian’s special needs, who has mild mental retardation. According to the DSM-IV cognitive disability is composed by four different levels:

Table 2

Statistics Diagnosis Manual of Mental disorders

Level	Description	CI/Rank
Mild	<ul style="list-style-type: none"> - They are people who acquire language late, although they are capable of having a conversation and, therefore, of expressing themselves in everyday life. - The greatest difficulties arise in school activities, especially in reading and writing. 	Between 50-55 and 70
Moderate	<ul style="list-style-type: none"> - People with moderate mental retardation show slowness in the development of understanding and use of language, having a limited domain in this area. - School advances are limited, and they learn only the elementary for reading, writing and calculation. They have difficulty in personal care. 	Between 35-40 and 50-55
Severe	<ul style="list-style-type: none"> - People associated with other disorders with little or no level of language development, generally requiring an indirect history. - People have marked motor deficits, or the presence of other deficiencies that give clinical evidence of damage or abnormality of the development of the Central Nervous 	Between 20-25 and 35-40

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

System.

Deep	- Patients in this group have very limited capacity to take care of their basic needs, and require permanent help and supervision.	Below 20-25
	- They show no ability to understand instructions or recognize them and act accordingly. His nonverbal communication is very rudimentary; they show a very restricted or totally non-existent mobility, they do not control sphincters.	

Note. Own elaboration.

According to Sebastian's diagnosis and the chart above, Sebastian's cognitive disability is located in the IQ/ rank between 50-55 and 70. Thus, when adapting the teaching materials to tackle Sebastian's difficulties, it was a priority to adapt the English language contents of the courses.

In one of the adapted contents, it was taken into account the personal, academic and daily routines of Sebastian with the purpose of modifying the learning activities or grammar content established in Advanced English Language Course Texts, annex 1&16).

On the other hand, crystallized intelligence points out that there is a general intelligence and culture-free which must be articulated with the experience of people and their prior learning. Sebastian's experience transformed using pictures in a real context as cognitive disability demands the uses of pictures for people who have cognitive disability, likewise the importance that pragmatics has in the use of the language in English as a foreign language for Sebastian.

Here, there are some common characteristics of the relation of Crystallized intelligence and cognitive disability in EFL

Knowledge of the culture (Sebastian's culture)

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

Information and concepts of a specific culture (La Gran Colombia university and his major)

A store of verbal language-based declarative (knowing what)

Procedural (knowing how)

Knowledge acquired through the investment of other abilities during formal and informal educational and general life experiences (Baghaei & Tabatabaee, 2015, p. 47)

Hence, there is a final relation that summarizes in the following formula in EFL:

Crystallized Intelligence (Cultural and education experience) + Cognitive disability (Strong area languages) + (Own experience photography) = Crossing the Boundaries of Cognitive Disability in EFL.

The micro-curriculum of the major at La Gran Colombia University changed because there were two important concepts: relevance and pertinence. Likewise, the way of evaluating Sebastian must include pictures and stories about his daily routines and past experiences (See annex 1.) in order to achieve special standards and contribute with his academic performance based on his special needs.

3.6 Inclusive education in TEFL

There are some students who might have specific needs, as Sebastian, who has cognitive disability. He has the right to learn English as a Foreign Language with the same opportunities, but different standards, the micro-curriculum must be modified not only for him, but also for other students like him, the normal teaching must change and make adjustments in the mainstream classroom.

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

- 1) “Teachers of English should adjust their teaching, meet their students’ special needs, and focus on special education as the education of physically or mentally handicapped children whose needs cannot be met in an ordinary classroom.”

(Abdallah, 2015, p. 47)

According to Mahmoud (2000), five methods have been used for teaching students with cognitive disability” (Quoted by Abdallah, 2015, p. 19):

- 2) Aaron’s discrepancy model (1995) “depends on the teacher noticing that the student’s achievements are noticeably below what is expected, the student receives special educational services for a specific learning difficulty” (Quoted by Abdallah, 2015, p. 19)

- 2) Sternberg’s method is called Response to intervention (1999). “It identifies children who are having difficulties in school in their first or second year after starting school, they then receive additional assistance such as participating in a reading remediation program” (Quoted by Abdallah, 2015, p. 20)

- 3) Inclusion. In this approach students with special educational needs spend all, or at least more than half educational resources, “it requires substantial modification of the general curriculum, most schools use it only for selected students with mild to moderate special needs” (Abdallah, 2015, p. 20)

- 4) “Mainstreaming refers to the practice of educating students with special needs in classes with other regular students during specific time periods based on their skills” (Abdallah, 2015, p. 21)

- 5) “Segregation. It is a separate classroom or special school exclusively for students with special needs, in this model, students with special needs spend no time in classes with other regular students” (Abdallah. 2015, p. 21)

In other words, Sebastian was in a mainstreaming method because he did not have the enough support's teachers, Sebastian was taking classes with regular students who neglected, thus it was necessary some modification of the micro-curriculum and create a good environment and comply with the requirements that inclusion establishes at La Universidad La Gran Colombia.

3.7 Legal framework

"Crystallized Intelligence in EFL: Crossing the Boundaries of Cognitive Disability" must take into account El Congreso de la Republica de Colombia in order to support its concepts; and one of the purposes which seek out this in higher special education is to work on equality of opportunities for everybody, Non-discrimination based on disability, equal opportunities and accessibility. (L. 1306, art. 3, 2009)

Likewise, it is essential to make important modifications in the pedagogical material and the micro-curriculum of B.Ed. of English of La Gran Colombia University due to the learning-teaching process in EFL cannot be evaluated with the same requirements or demands towards regular students,⁵ "the pedagogical technical references should contain inclusion and accessibility standards" (L.1618, art. 11, 2013)

As the Reglamento estudiantil of La Universidad La Gran Colombia, mentions in the chapter IV, article 67: The University offers, in agreement with the pertinent legal dispositions, the university welfare service through the Faculty of Education Sciences, in order to promote the integral formation of all the members of the university community,

⁵ Translated by Yesenia C

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

through sports programs, cultural, recreational, artistic aesthetic, spiritual, medical, psychological and human development.

Likewise, based on Sebastian's comments he took some sessions of psychology getting more dates, but without significant results to propose his style of learning and nobody looked for strategies to help him.

As a conclusion, to close this part there were meaningful results not only for him and the research junior, but also a step to contribute to the Proyecto educativo institucional at Universidad La Gran Colombia.

The term political field in this study plays an important role, due to some Colombian laws supporting this kind of population who have cognitive disabilities, but they do not receive necessary pedagogical tools to carry out studies in Colombia, as a clear example.

The political field of the university is not guaranteeing the appropriate right to Sebastian with the same opportunities and more attention for his learning process, and on the opposite from theory of the student regulations which establishes the University are not accomplishing.

Raising in this way, it is important to present some of the benefits that are determined for this population as living together, the design, execution, monitoring, and evaluation of their plans of the congress of the republic trough in statutory law, programs and projects are ensured include a different approach that ensures that people with disabilities benefit on equal terms and in terms of equality with the other people of the respective plan, program or project .According to article 5, “all people with some kind of disability are being protected by the Colombian state, accessing all the services it offers,

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

such as a service to education, health, social protection, among others” (L. 1618, art. 5, 2013)

Hence, educational inclusion is an education committed to social change, social justice and equality of students with special needs, and the Colombian law is an essential source to back up Education in general terms, as a clear example Sebastian’s case at Universidad La Gran Colombia, which cannot go on with the same standards, pedagogical proposals and ways of evaluating the learning process of EFL.

Chapter IV

4.1 Research design

This is a qualitative study because “it is an approach that examines how individuals perceive and experience the phenomena that surround them, deepening their points of view, interpretations and meanings” (Hernandez, Fernandez & Baptista, 2014, p. 358)

Thus this study is a qualitative study as the main reference with a single case study which is focused on the actions and social life on Sebastian, the systematic observation and analysis of the inclusion phenomenon is evident in the development of this project, it deepens in his personal world, how he can interpret the social, academic and personal situations, and the intentions involved in this, in order to look for new meanings to understanding, meaning and action following the evidence of the educative context and the interpretation of his behavior.

The research design has the characteristics of a single case study, this type of single case study is used in applied fields of psychology, education, and human behavior;

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

this is focused on single-subject design because these designs are sensitive to individual organism differences vs. group designs which are sensitive to averages of groups. (Bell, 2012, p. 1)

This study is focused on Reversal design involving repeated measurement of behavior in a given setting during three consecutive phases (ABC) baseline, intervention, and return to baseline.

IN ABA design, there are three measurement periods: baseline (A), during intervention (B), and following the removal of intervention (A). Specifically, the targeted condition is repeatedly measured during a baseline period before the intervention is introduced (A). Once a consistent pattern of baseline responses has been established, the intervention is introduced and the condition is again repeatedly measured (B). Next, treatment stops but the measurement of the condition continues for a period of time (A) (Bell, 2012, p. 2)

In this study, I decided to add one letter more, the letter C which refers to the final product and result (Post-test), from this letter the intervention can't be introduced again because Sebastian should always be in this letter C, he cannot follow the same method of classes of his partners, and the final design of this research is ABC. "Variations include extending the ABA design with repeated reversals (ABAB) and including multiple treatments" (ABCABC) (Bell, 2012, p. 3)

This research is focused on a case study because the learning process of Sebastian had to follow a pedagogical strategy since his academic performance did not have the same rhythm as other students of the program. Sebastian, who has cognitive disability, used to

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

repeat the English subjects more than twice and this was the main problem that we had to tackle. When we identified his special needs, we decided to establish steps in the process of learning the foreign language for this student who has cognitive disability.

It was necessary to implement an action plan that encompasses the internalization of the norm, background and related theory, observation of the phenomenon, interpersonal intervention, academic intervention, and reflection on the cycle, in order to identify the learning barriers and tackle them, this single case study was carried out because the researcher wanted to analyze one case during different research phases.

4.2 Participants

The participant in this study is a student named Sebastian with some specific characteristics he is almost to finish his studies in B.Ed. In English at Universidad La Gran Colombia and he would wish to become the best teacher of English, he lives with his twins' brother who is 22 years old and his parents in the south of Bogota in a low social stratum, in Lucero Bajo neighborhood (Ciudad Bolivar). He attended 5 or 6 schools in his learning process, his partners used to bother him because he did not have the same characteristics to learn or he had some difficulties expressing his thoughts and words.

His learning process was difficult and even more difficult was when he had to learn English as a part of his career as a teacher, he mentioned that to learn a language is really hard, but with the academic help of some teachers he approved the English Language Courses.

According to the proposal, the pre-service student carried out some English courses in the V, VI and VII semesters to identify if the student needs some personal and academic tutorials and then starting with the research.

Two students in the B.A in English Program, at Universidad La Gran Colombia, were currently working with two full time professors and researchers who seek to enhance inclusive environments for bilingual education within EFL mainstream classrooms. The main interest of the researchers is to help the group of ten participants with disabilities to pursue their studies and to develop the competencies a class requires. (Carrillo & Rodriguez, 2017 a, p. 1)

4.3 Research Stages and Data Collection Tools

First, Sebastian was informed about this kind of research, the objectives and purposes taking into account his voluntary participation. The student accepted and carried out some personal questions in order to collect information, this study is divided into three stages presented below:

Stage 1: Need Analysis

In this stage I used 7 different data collection tools to identify the student's main difficulties in his language learning process. The first was a researcher's observation journal (annex 5), the form registered information about Sebastian's communicative, social, affective, motor, and cognitive skills. The second was a review of the English course syllabi (annex 21), made to anticipate class activities and tasks and help the student to prepare them in advance. The third was a psychological report (annex 7) to understand Sebastian's conditions and to obtain guidance to help him in academic issues; and also, an

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

English Language Pre-test (annex 9) to know what parts of the exam were more difficult for him and the reasons for this (Annex 17). This first stage had two main objectives: 1) to identify student's difficulties and 2) to create rapport with the student, since Sebastian was having socialization issues and felt afraid and frustrated regarding his relationship with the teachers and classmates (See annexes 2 and 3).

Stage 2: Adaptation of Teaching Materials

In this stage I used an interview applied to the teacher working with Sebastian in the English courses, Rodrigo, who was working on cognitive development in children with cognitive disability (see annex 14). This interview results together with Sebastian's psychological report led me to find relationships between crystallized intelligence and learning. In this stage I established theoretical connections between crystallized intelligence and language development among people with cognitive disability. After that, I also documented on Crystallized intelligence, cognitive disability, and language learning to define an intervention route and to adapt the teaching materials that might help Sebastian (annexes 1 ,9, 15 & 16)

Stage 3: Intervention and intervention assessment (Stage C in the single case study)

In this stage I used anecdotes and records (see annexes 8, 19, and 22) to examine the impact and effectiveness of the adaptation of EFL teaching materials based on crystallized intelligence, in the learning process of a student with cognitive disability. On the other hand, I contrasted pre-test and post-test results to see changes in the way Sebastian

approached the test and to examine if cognitive, social, or affective skills improved (see annex 9 and 12).

Chapter V Data and findings

This chapter is divided into 3 stages. The first one presents the data and findings of the stage one corresponding to the need analysis and phase A where also rapport was created between the researcher and Sebastian. The second one explains the connections I found between crystallized intelligence and the process of adaptation of ELT materials for a student with cognitive disability, and the last one examines the impact of the teaching intervention.

Data analysis of stage 1

By examining the observation journal (during 30 sessions), and Sebastian’s psychological report, I was able to determine his main difficulties and consider some of the ways he could learn better (see annex 5) in order to adapt the teaching materials and activities. Main observed difficulties are summarized below:

Table 3

Sebastian’s Main Difficulties

Cognitive factors	Psychological factors	Family/Social factors
<ul style="list-style-type: none"> - Sebastian does not understand complex word conceptualizations or definitions. - In many cases, the English courses are taught by using a textbook with stories and texts that are not part of students’ daily experiences, thus the content is not meaningful for the student. - Attention span difficulty. 	<ul style="list-style-type: none"> - Sebastian felt frustrated because the teachers rejected him, and his partners did not involve him in the class activities. - The scores were important for him and he was constantly failing the English assessment processes, which was highly demotivating. 	<ul style="list-style-type: none"> - Sebastian’s brothers did not support him and his mother neglected his academic tasks. - His family could not afford professional care for him. - Development of social factors as shyness and little social interaction.

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

<ul style="list-style-type: none"> - Low academic performance. - Difficulties in understanding two tasks at once. 		
---	--	--

*Note. Taken from the psychological report by Dr. Gutiérrez**

5.1 Sebastian's Academic Record

Sebastian was repeating the academic courses more than twice (Academic record, annex 13) , and by the time this document was written, Universidad La Gran Colombia had educational service policies to guide regular students and students with disabilities, but they do not have specific guidelines to follow up the learning process of students with learning disabilities. Sebastian used to have meetings with the psychological service of the university, but there was not a close monitoring. Sebastian felt frustrated, fearful, anxious, and misunderstood because he could not complete his academic courses with the appropriate level (being 3.0 as minimal score), his partners and teachers did not have the training to help him. This fact was evidenced by having some interviews with the teachers (See annex 2).

Sebastian did not have high scores in English courses, he failed courses, even though he attended personalized tutorials. He wrote some reflections on his learning process during his Upper-Intermediate class, one of the most difficult ones for him.

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

My reflection about my Upper Intermediate English classes

In this semester in my classes at upper intermediate Inglés I've learned several times the issues with my former teachers I could not understand, because his methodology did not agree with my learning style, and also I did not return to classes because I saw that the requirement within that level was very high and so I prevented keep learning, had to skip some subjects in English previous semesters because the tutorials that some teachers afforded me were not enough and due to ignorance tapeworm services that gave me the university had only psychology service.

*Figure 3. Sebastian's notes for Upper-Intermediate English. Own elaboration**

Sebastian never achieved high scores because he did not feel comfortable with the English class content and his teachers, they did not know about his learning style as he mentioned, thus his scores were a central point to get frustration (See annex 13).

5.2 Pre-test

It was important to consider Sebastian's suggestions about FCE (See annex 17) exam in order to know what parts of the exam were more difficult for him and the reasons for this. I read them and I only chose specific parts of the exam for him (See annex 9) and the use of dictionary to complete the exam.

Sebastian presented a sample of FCE (First Certificate in English) (annex 9), this exam was taken at the beginning of the tutorial sessions that the researcher had with him. This exam was made up by four sections: 1) Reading & Use of English, 2) Writing, 3) Listening, and 4) Speaking. Sebastian took this test because it was a requirement to pass Advanced English level and it was necessary to train him and help him to get familiar with its characteristics. On the other hand, the test helped as a source of information on the main difficulties he had.

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

Reading & Use of English

The Reading and Use of English was the second of the 4 parts of the First Certificate exam for Sebastian. It had the first 2 sections and a mixture of various types of texts and multiple-choice questions. The first part, multiple choice cloze, a text with multiple choice questions, each question has 4 answer options. The second one, a text with spaces that he had to fill in with the correct word.

Writing

The writing part was the second of the 4 parts of the First Certificate exam for Sebastian, it only had the first writing part, Sebastian had to write a story expressing his opinion on the title and making use of the ideas presented. He had to add a third idea related to the title. The story was a topic of general interest. (See annex 20)

Listening

The listening part was the first one of the 4 parts of the First Certificate exam for Sebastian. It had the first 2 sections. The first part, 8 short excerpts from monologues or conversations between various people. There is a multiple-choice question for each extract. He had to choose the correct answer. The second one was a monologue (which can be entered by a presenter) that lasts approximately 3 minutes. He had to complete the sentences with the missing information.

The speaking part was the last part of the 4 parts of the First Certificate exam for Sebastian. It had the first 2 sections. The first part, conversation with the examiner, he had to offer information about himself. The second one, the examiner gave him 2 photos and

asked him to talk about them, he had to speak for 1 minute without interruption. (Pretest, see annex 12)

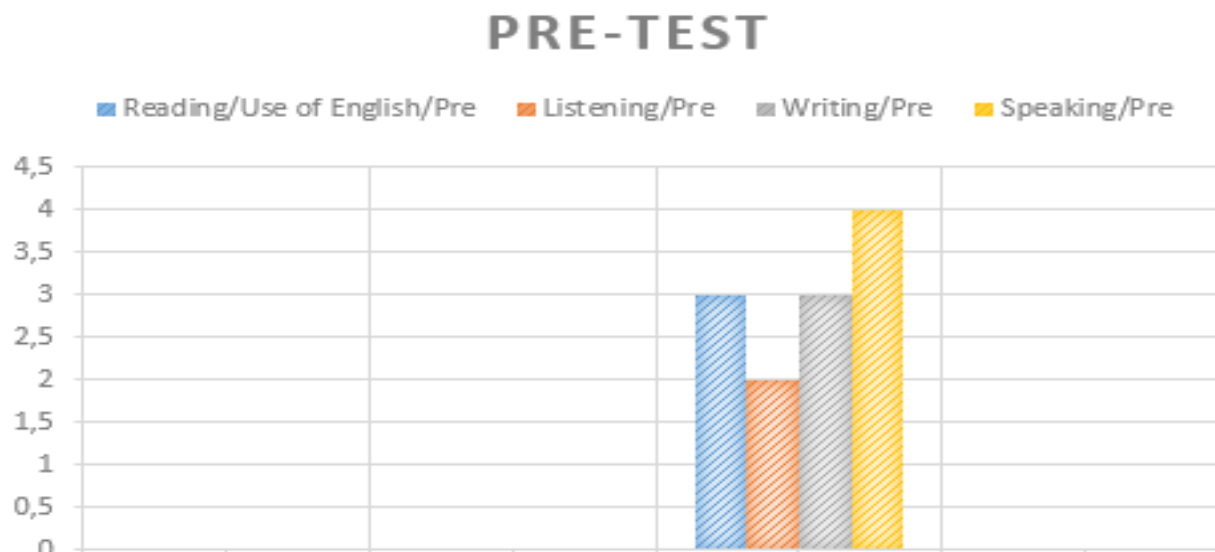


Figure 4. Description of pretest. This figure demonstrates the elements of a prototypical figure. A general note to a figure appears first and contains information needed to understand the figure. The general scores obtained by Sebastian were below four in a scale from 1 to 10 in the four skills. In the writing skill it was in 3% because he presented a low level of vocabulary, he mixed the verbal tenses and wrote in English and Spanish at the same time. He did not answer the main question of the exam and he used the dictionary even though he was in Advanced Level. The speaking skill makes 4% because he did not pay attention to the questions that the examiner asked, and the repetition was the main characteristic of this part of the exam. He made mistakes in advanced structures to describe the pictures and the pronunciation was like Spanish in some words. In listening and reading skills he got 2% and 3% because he did not use the dictionary in these parts of the exam, he paid attention to the partners' behavior which made the exam even more difficult. Own elaboration*

5.3 Sebastian's psychological report

There were two medical diagnoses that came from his medical record which pointed out that Sebastian has cognitive disability in a medium level, which became a learning barrier to learn a foreign language when he started his process. (See annex 7) This situation became an opportunity to help him not only with his studies, but also with his self-esteem since he was feeling severely affected by his constant failure. According to the

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

psychological report issued by Carolina Gutierrez de Piñeres, a professional psychologist, she concluded that Sebastian has cognitive disability by a series of psychological tests.

Doctor Gutierrez suggested that given Sebastian's condition, teachers and Sebastian should keep in mind some guidelines to teach people with cognitive disability:

- What teacher should do:
 - 3) Explain the instructions of the tasks carefully, simply, and slowly.
 - 4) Repeat the instructions and allow them to remember them.
- What Sebastian should do:
 - 3) Learn by seeing what he is listening or reading, that is why it is important to use learning strategies that favor this type of methodologies.
 - 4) Record the classes so he can review them after class.

5.4 English Syllabi

There were three syllabi, two of them (Intermediate and Upper-Intermediate) were considered to help Sebastian with the contents and the specific topics that he had to study in those English Language Courses (see annex 15 The third syllabus (Advanced English Level) was the one modified by Sebastian and me with the activities including Crystallized intelligence teaching strategies (See annex 1&16). Those modifications did not change the course topics, here it shows the name of the unit, grammar, vocabulary, tasks, and language live, which are based on the course topic established in the syllabus. The syllabus contemplated a final test by the end of the course. During the intervention, this test was de FCE test which evaluated B2 language level. This test will also be modified later, as shown in stage 3.

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

Data analysis of stage 2

In this stage I integrated what I learnt about the difficulties Sebastian was facing, the data I gathered from the professor's interviews and the theoretical references about crystallized intelligence and cognitive skills in order to find the best possible teaching strategies and to adapt the teaching materials that best could help the student.

5.5 Teachers' Interview

The main interest of this interview was to identify some learning strategies to teach English to Sebastian who has cognitive disability, and to try to develop his skills in the tutorial sessions that we had. According to professor Rodrigo's interview, there was

A student in sixth semester, with an IQ of 55, diagnosed with a low cognitive deficit, also recognized as Intellectual Disability, whose EFL learning process have been affected. Rodrigo had looked for ways to strengthen his communicative skills in the target language to accomplish the objectives of the English course. Sebastian had been studying at UGC for 3 years, but he had not been able to accomplish the requirements of the English courses, in part, because, when expressing his ideas, he makes prolonged pauses that hinder the message he's trying to convey (Carrillo & Rodriguez, 2017, b, p. 2)

Rodrigo decided to have tutorials once a week in order to support him with the English class content and make reflections about Sebastian's learning process with him (Field notes, see annex 3). Likewise, Rodrigo took advantage of being professor of Sebastian in his semester and implemented individual and different tasks for him, in Pragmatics class and Intermediate English level, which Sebastian successfully completed.

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

Rodrigo and Sebastian's lessons involved personal orientations and tests that worked on study topics and contributed to Sebastian's process. Thus, I decided to implement Rodrigo's idea and I adjusted the activities to the English class content and then Sebastian made reflections about them on pieces of paper (see annex 3) which worked as a key to adapt learning and teaching materials that were designed taking into account the student's needs and the educational context in which he was involved. These orientations were based on some pedagogical suggestions from Rodrigo.

5.6 Relations between crystallized intelligence and language development in people with cognitive disability

As I mentioned in the theoretical framework, I used some guidelines to adapt the activities for Sebastian, they were two:

- **Intentionality:** One of the main functions is to transform the real situation of Sebastian for intentional learning, namely to catch up the attention in order to experiment the pedagogical materials instead of checking them and complete the grammar exercises without getting the intention to learn something.
- **Transcendence:** Learning must transcend from the perspective or experience of life of Sebastian, it must pass through different stages which will determine if the learning process is going in the right way or the opposite one, those stages are:
 - **Identifying the problem:** It was necessary to look for his fluid intelligence in the previous English Language Courses in order to identify his difficulties in the topics established in Advanced English syllabus and then foster them based on the four characteristic of crystallized intelligence (Procedural – knowing how)

- Taking part of the process: In this stage, it was necessary to review the psychological report, suggestions and photographs about his daily routine, narratives and field of Sebastian in order to know Sebastian's knowledge on culture which is the first characteristic of crystallized intelligence. (See adaptation on the materials, annex 15). For example, in the image below we can see an imaginary story about his experience of repeating the FCE exam.

READING

A Read the back cover of a pre-service teacher. Then cover it and look at the photographs. Can you remember who the people are?

Who's Cristian?

He's a pre-service teacher



The mysterious Exam

Teacher Cristian arrived at about 9.00 am. He ¹ was a short man with a cute weakness. Steven, Laura, Claudia and Alberto ² were his students at Liceo Julio Cesar Garcia school, they were in the classroom. The teacher ³ came in.

When Mr Cristian ⁴ got to the English classroom, a student ⁵ called Ramonsito, he was very upset with him because he didn't approve the English final exam, and he didn't know why he ⁶ lost the exam, he ⁷ thought. He ⁸ felt that a partner changed the exams. Somebody in this classroom changed it. He looked at his students one by one, but nobody ⁹ spoke.

Mrs Cristian, I want to talk to you first.

Come into the library with me, please.

Steven followed the pre-service teacher into the library and they ¹⁰ sat down.

What did you do after the English final class?

When we finished the exam Claudia ¹¹ told me let's wait for Ramonsito and change his exam for the mine because I need to approve the course, she ¹² said. So they did that when the pre-service teacher ¹³ had to go out to talk to his coordinator.

Did you change the exam then?

No, We didn't. We couldn't do it because the teacher got in the classroom at that moment.

What time did you try to change the exam?

About quarter to twelve.

Was your exam complete?



Figure 5. Activity 1 on the session 8. Own elaboration*

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

The teaching materials adaptation was based on the above guidelines, relating Sebastian's experiences and his own context with the language that he was studying. From the theoretical principles from Brown and Nation (1997), the teacher's interview, the psychological report and my own observations, I came up with a list of factors that should be taken into account to help Sebastian in his learning process, each of these, was also named as a learning category:

Table 4

Crystallized intelligence categories for EFL

- 1) Sebastian needs to be familiar with the language items and content (Knowing my knowledge)
- 2) He studies the language items until he understands the purposes of the topics without losing the original meanings of the language items (Deeping in my knowledge)
- 3) He understands the practice and learning with motivation (Learning and enjoying my contents)
- 4) Sebastian needs help from the teachers to adjust and control the pedagogical structure of Intermediate, Upper-intermediate, and Advanced English class content. (Creating/adapting my own pedagogical materials)
- 5) He maintains a conversation in the foreign language in real communication based on his own experiences (facing up my own experiences)
- 6) The teacher needs to provide the EFL learner the possibility to choose the topic and it works better if the topic is related to something that happened in his life (Choose my best choice)
- 7) Finally, the teacher presents the adapted materials for Sebastian (Achieving my pedagogical goal)

Note. Own elaboration*

I will now explain each of the Crystallized Intelligence categories for English as a Foreign Language Learning. As I mentioned, I named the categories oriented to the student, however, the teachers are also involved in the whole process:

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

1) **Knowing my knowledge**

Knowing my knowledge is the first step of crystallized intelligence of the session in which Sebastian must know language items and content before studying them, in order to become familiar with it, the student will just check it once, twice or the necessary number of times. This step is a result of the necessity that the student must know and study the topics before starting the lesson, this works to make the student learn the content of the specific unit and then make extra lesson plans and the creation of new materials for him, in order to implement them during the semester (Lessons plans, annex 14).

The impact of this stage in the learning process of Sebastian was meaningful because he felt as a part of the process as I mentioned before, and he felt confident when responding to the exercises not only in a regular class, but also with tutorials with the researcher.

Table 5

Lesson plan

Note. Own elaboration*

DESCRIPCIÓN DE LA ACTIVIDAD	JUSTIFICACIÓN	RECURSOS	TIEMPO ESTIMADO
Al principio se establecerán las normas que se llevarán a cabo durante la actividad. En la actividad, se dará un formato correspondiente al FCE por medio del cual es posible evaluar al estudiante de inglés y determinar su nivel en la lengua extranjera. Durante el desarrollo de la actividad del FCE, se brindará un apoyo por parte de los docentes (Yesenia y Alejandro) para aquellas inquietudes que tenga el estudiante acerca de la realización del instrumento. Además se evaluará el nivel de speaking del estudiante por medio de la descripción de unas imágenes.	Según indica Cambridge English University (2015) "Este examen corresponde con el nivel B2 del Marco Común Europeo de Referencia para las Lenguas (MCER), un nivel intermedio alto de Inglés...abarca las cuatro destrezas lingüísticas (Comprensión Escrita, Expresión Escrita, Comprensión Oral y Expresión Oral), así como conocimientos de gramática y vocabulario." De esta manera podemos determinar el resultado del FCE basado en los ítems que establece Cambridge University. Así mismo explican Alfonso, García, Pérez, Martínez (1998) "...el nuevo rol que adquiere el profesor en ese proceso. Éste ya no se limita a ser el mero suministrador de información, sino que también toma parte activa o comparte con el alumno su proceso de construcción del conocimiento..." (pág 258) siendo de esta manera que el	- Prueba FCE - Grabadora - Hojas con imágenes - Lápiz - Borrador - Hojas	El tiempo estimado para dicha actividad será aproximadamente 1 hora y 30 minutos.

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

2) Deepening my knowledge

This second stage of crystallized intelligence is about the information and concepts of a specific culture, in this case is British culture, which is the one established by textbook (*English File*). The student studied the purpose of each topic without losing the original concepts or ideas of the textbook content which was related with some images of his real-life experiences through the photographs and his narratives.

The impact of this stage is that Sebastian felt as the protagonist of the adapted activities based on the original topic of the textbook, because he studied English with his own pictures and he articulated the meaning of the topic with the action that he was actually doing.

Journal entry, 16th of October of 2016, page 23

The student did not understand the meaning of the words (semantics), for this reason it was indispensable to take pictures of his daily routines and articulated them with the words that the teaching unit had. This way the learning process got better results.

organizar PHRASAL VERBS. Select the phrasal with the corresponding image, as in the example.

Take up

Take apart

Take back

Take off

Take back ✓

Take off ✓

Take up

Take apart ✓

3/3

Figure 6. Activity 2 on the session 11. Own elaboration*

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

3) Learning and enjoying my content

This step is really important because it took into account motivation as an important tool in the academic process; it is an academic step in which Sebastian may understand the theory and the practice of his professional practice based on the English textbook content. He knew about the third characteristic of crystallized intelligence (knowing what), because he felt frustrated and he did not know about his fortress in learning process until he started enjoying the topics knowing what to do in the future classes because he had already learnt and understood the topic. For example, just explaining him the theory (topics) was not enough since he does not understand in the same way as regular students do; taking this into account, we decided to have extra tutorial sessions with him and motivated him by using phrases such as: *“you can pass the exam if you take the training to take it”*, *“take pictures to study the vocabulary”*, *“attend the tutorial sessions”*, *“do homework.”*

4) Creating/adapting my own pedagogical materials

This is the four characteristic of crystallized intelligence (knowing how) since which were really useful to identify the special needs of the student in order to adapt new materials based on the Upper-intermediate and Advanced English textbooks and using the FCE exam structure.

This was a result of the previous units (the guidelines of each one) and at the end of the process he completed some texts with some activities and corrections which worked to approve the final test.



Figure 7. Sebastian's texts. Own elaboration*

The impact of this stage is the opportunity to involve Sebastian in the process to adapt his activities and knowing how we used his daily pictures to learn something new as I mentioned before to live and learn together without matter the differences of people.

Finally, the stages five, six and seven are based on the fifth characteristic of crystallized intelligence which is the knowledge acquired through the investment of other abilities during formal and informal educational and general life experiences which made that Sebastian felt comfortable with what he was learning.

5) Facing my own experiences

Sebastian had to face his learning barriers through the new pedagogical materials based on his own experiences in order to achieve an appropriate level of English

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

according to his special needs, which had allowed him to maintain a conversation with the similar languages and contents in real communication.

6) Choosing my best option

It is essential that Sebastian with cognitive disability could select the English topic, for example, something that was happening in his life or something he is familiar with, thus strengthening not only the learning and teaching process, but also having educational inclusion into the mainstream classroom.

7) Achieving my pedagogical goals

Finally, this stage was focused on the pedagogical goals of the student, one of them was to approve Advanced English level which was supported with new pedagogical strategies and the modification of the FCE exam, likewise the learning process was presented by him at the end of the semester.

The impact of these last three stages was to establish a pedagogical route in order to organize the information or the knowledge that Sebastian had to study, the opportunity to previously give him the instructions of the tasks, carefully and in a simple and slow way. Likewise, he could repeat the instructions and it allowed Sebastian to easily remember them.

Data analysis of stage 3

In this stage I used anecdotes and records to examine the impact and effectiveness of the adaptation, likewise I compared the pre –test and post -test results. As we can notice below, the results in the post-test improved compared to the pre-test since Sebastian answered more questions correctly. This was possible thanks to the activities and

personalized session in previous courses such as Intermediate and Upper intermediate English and personalized test at the end of the semester of Advanced English course.

5.6 Sebastian’s anecdotes

I used Sebastian’s anecdotes and some minutes of Sebastian’s recording to create short stories about his dreams, daily life, and university context in order to help him with the conceptual lexicon and pragmatics of the English Language Course with the adaptation of crystallized intelligence notions and the contents established by English syllabus of Advanced Level (See annex 1, 12 & 21).

Main points on the way we tried to tackle Sebastian’s difficulties are summarized below:

Table 6

Impact of the use of materials adaptation.

Cognitive factors	Psychological factors	Family/Social factors
<ul style="list-style-type: none"> - Images/photos are essential to remember linguistic features such as the use of words in (pragmatics) and lexis (vocabulary) - Sebastian extracts the meaning of the text with his own photographs easier than if he sees photos in a regular textbook. - Sebastian learns better if he can associate the new knowledge with his personal experiences. 	<ul style="list-style-type: none"> -The educational community got involved in Sebastian’s learning process to create an inclusive environment in the mainstream classroom. Some teachers decided to use some of the adapted teaching materials and adapted exams. 	<p>I did not focus on this aspect; thus, I do not have changes to report o results regarding this point.</p>

Note. Own elaboration*

Sebastian’s process is grounded in personal autonomy, this evidenced taking some interviews with his principal professor and made interviews to Sebastian, as well as accessibility related to his learning style which is Crystallized Intelligence diagnosed by

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

Carolina Gutierrez, with the objective of fostering inclusive education into a mainstream classroom of the university, as a result, Sebastian got the same opportunity as other pre-service teachers.

The results of interviews worked to strengthen the relationship between the English teachers and Sebastian in a mainstream classroom, the way of teaching and evaluating must be different, the results of the interviews were important to implement teachers meeting at Universidad La Gran Colombia. (See annex 2)

Here there are some examples of reformulated questions that demonstrates the meaningful results when the test was adapted to crystallized intelligence principles:

4. The Cristian's **dream** means....
- A. A challenge for his life
 - B. To be the best English teacher
 - C. To be different
 - D. Help to his students of Liceo Julio Cesar Garcia
5. An antonym of the word **SMART** could be....
- A. Bright
 - B. Silly
 - C. Intelligent
 - D. Wise
6. The expression "**once upon time**" belongs to...
- A. Future tense
 - B. Present tense
 - C. Present progressive
 - D. Past simple

7
7

Figure 8. Final exam of Advanced English course. Own elaboration*

Here there is a graph on the pretest and posttest results. There are meaningful differences in the results when making the comparison. For instance, he scored higher in writing, speaking, reading and use of English in the posttest, being adjusted with the description of the FCE for b2 student, which almost has the same parts and characteristics, but they are modified with own personal stories and pictures of Sebastian, so that he can understand better the information in the exam. (See annex 21)

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

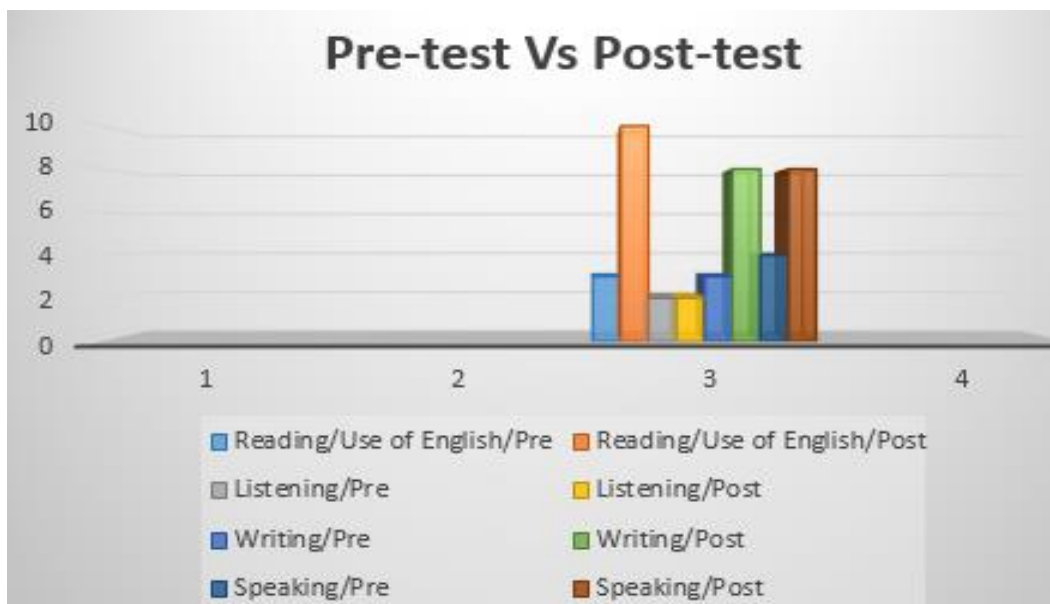


Figure 9. Pretest and posttest results. Own elaboration*

The four skills were evaluated being reading and use of English the highest percentage result, this part was made up with two parts 1) reading part with multiple choice related to his professional dreams and 2) reading word formation, a text related to Sebastian's job (Test solved, annex 9)

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

K9K

Open with ▾

UNIVERSIDAD
La Gran Colombia
Facultad Ciencias de la Educación


FACULTAD DE CIENCIAS DE LA EDUCACIÓN
EVALUACIÓN FINAL 2017-I

NOMBRE: Cristian Camilo Oviedo C. CÓDIGO: 1020914017
PROGRAMA O UNIDAD DE APOYO: Licenciatura de la Educación
CURSO ACADÉMICO: Advanced English
PROFESOR: Yvanna Fajardo FECHA: 16/06/17

PREGUNTAS DE SELECCIÓN MÚLTIPLE CON ÚNICA RESPUESTA-TIPO I
Este tipo de preguntas consta de un enunciado o planteamiento de la pregunta y cuatro opciones o posibilidades de respuesta identificadas con las letras A, B, C y D, de las cuales se debe señalar la que se considere correcta, rellinando el óvalo que corresponda en la tabla de respuestas.

READING PART

Written: $\frac{20}{25} = 4.0$
Speaking = 4.0
Final = 4.0



Cristian's dream

Once upon time, there was a young boy named Cristian, a boy who had wonderful dreams, he had a brilliant weakness highlighted among others as motivation, dedication and responsibility to be one of the best English students in upper-intermediate and Advanced English courses, he had the mother's and his twin's support, they lived with him in the South of Bogota city.

His mother and twin brother were pleased and good tempered. They treated Cristian very kindly, her mother supported him doing the best effort to help him with his studies at La Gran Colombia University, Cristian wanted to be an English teacher, he enjoyed teaching, he longed for sharing his knowledge with people like him, he thought a teacher is helping others, he wanted the school to be a place where he had the advantage of becoming himself.

One day, he started teaching English to children in a mainstream classroom of Licco Julio Cesar Garcia school, in May of 2016, but all things were going wrong because he felt nervous having smart students, so he depressed and he didn't want to continue, but he found support in his teachers who helped him to continue, and then he decided to continue trying and trying until he achieved the goal to have the possibility to teach other people like him.

Now, that boy is reading this text, this boy is the main character of the story, he has gotten over the different obstacles, he was and he will be his own challenge, this boy has learned to face up hard situations, but he wants to achieve his objective which is to be the best teacher in the world.

Figure 10. FCE exam and Crystallized Intelligence. Own elaboration*

The writing and speaking part increased meaningfully compared to the pre-test. The post-test was adjusted by one part, he had to organize the sequence of a story according to his own pictures and write a story by using narrative tenses. This instruction was the same as the speaking part, and in the listening part the results did not change because they were not adapted as the rest of the parts in the exam. We used the regular audios of FCE.

Sebastian improved his social and communication skills with his partners and professors (See annexes 14 & 22), which indicates a significant step in the context of an EFL classroom, and so, it gets a better academic environment where emotions play a serious role, which works in integral and influential factors in all human beings. According

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

to Zembylas (2004)” they are not only personal dispositions, but also social or cultural constructions, influenced by interpersonal relationships and systems of social values” (P.197)

Higher education must implement and think about pedagogical strategies which benefit students with special needs, similarly it is necessary to adjust the curriculum to those pedagogical needs and be part of the inclusion of living and learning together, the UGC must create more learning spaces for adapting or creating teaching materials for people with special needs as Sebastian .

Therefore, it is important to elicit language performance over traditional approaches scopes to facilitate the academic achievement of people with disabilities from the B.Ed. in English at Universidad La Gran Colombia.

The professors must be trained to attend this kind of cases to establish an action plan and deepen in the knowledge of the particularities of the student, likewise curriculum modification demands more time than allocated for planning work. For this reason, it is necessary that university institutions incorporate within the Inclusion policies, tools, times, and necessary people that guarantee a greater accompaniment in these cases.

The results obtained from this study indicated that Crystallized Intelligence in adapting teaching materials is an effective alternative to help Sebastian, this was evidenced during four semesters which demonstrated that Gran Colombia University demands inclusive classrooms, and the University needs to adapt additional support for this population.

Conclusions

People who have cognitive disabilities can acquire two or more languages, both simultaneously, if they have the opportunity to interact with people, use proper materials, and teachers willing and trained to help them. The learning process of a foreign language (in this case, English) does not impair the development of the first language (Spanish). The learning process in Spanish continues to grow even though the learning process in English begins if there is good stimulation of Spanish at home and a proper academic environment for the foreign language.

Inclusion needs to be promoted in the English classroom as a key aspect in this society. People with cognitive disability must receive support in the learning process not only language learning support from the family, but also from the academic and social community. People with cognitive and some other disabilities have been neglected for a long time by the governments and academic communities. Therefore, I expect this study somehow can contribute to implementing some changes in the curriculum and in the teaching practices at La Gran Colombia.

The relationship between the teachers and students can be better in a mainstream classroom, if the way of teaching and evaluating is different, the teachers must know the special needs of students in order to help them without excuses.

The results obtained from this study indicated that Crystallized Intelligence in adapting teaching materials is an effective alternative to help students with cognitive disability, this was evidenced during four semesters which demonstrated that the

images/photos are essential to remember linguistic features such as the use of words in (pragmatics) and lexis (vocabulary). The learning process is better if the students can associate the new knowledge with the personal experiences. It could investigate more on the basis of crystallized intelligence, cognitive development of the human being and constructivism.

I recommend crystallized intelligence in the learning and teaching process of a foreign language for regular students and students with cognitive disabilities because most of the teaching materials are adapted to European culture, and they do not consider the real context of students.

It was complicated to adjust the audios and the text in the teaching materials because I did not take courses for designing materials for people with special needs and the adaptation of these materials were rudimentary.

This research project also contributed to my professional training in the following aspects:

- Development of creating pedagogical strategies to people with cognitive disability in the acquisition of EFL.
- To learn different pedagogical concepts and articulate them with the real experience of the students.
- To better understand students' emotional situation and improve learning environments by considering inclusive education.

I was not well prepared to face this kind of study case because in my teacher training sessions, I never received classes orienting me to help students with cognitive disability. Neither the personnel at the University knew how to help Sebastian. Teachers are not trained to cope with learning disabilities nor have the time or the training to adapt teaching

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

materials to tailor students with special needs. Therefore, I suggest creating a course where new pre-service teachers learn general aspects on how to teach people with disabilities and how to adapt the micro-curriculum to offer them the possibility to learn and to enjoy the time they spend in an academic community.

In the time I was working on this project, I was able to participate in academic events and here are some of the academic products of this process:

- 1) Three pedagogical talks at Universidad Libre, Universidad La Gran Colombia, and British Council.
- 2) An article called “Crystallized Intelligence to enhance language learning a pre-service teacher with cognitive disability” in the book *Sharing Experiences in English Language Teaching*, published in 2018.

Further recommendations

- 3) A teacher must not refuse to work with a person who has a cognitive disability with the excuse that he does not have the proper training to teach him.
- 4) The educational community must be accessible to people with cognitive disability to provide different ways of support and decent education in life.
- 5) The support of the family must be considered, and the importance of making them participants in all the processes carried out with the student.
- 6) The faculty of Education must create a course for adapting teaching materials for students with special needs.

References

- Abdallah, M. (2015). *TESOLI-TEFL for students with special needs for EFL Student Teachers*. Retrieved from <https://files.eric.ed.gov/fulltext/ED557723.pdf>
- Acosta, A. (2015). Programa de entrenamiento cognitivo de la función ejecutiva en el componente de planeación en adultos del centro de entrenamiento para discapacitados mentales Edisme, de la sociedad de San Vicente de Paul de Medellín (Tesis de maestría) Universidad de San Buenaventura, Medellín, Colombia.
- Aristizabal, L. & Melendéz, M. (2007). Diseño metodológico para la enseñanza del inglés en niños y niñas que cursan el grado segundo de educación especial del colegio Villemar El Carmen. (Trabajo de grado) Universidad Libre, Bogotá, Colombia.
- Baghaei, P. & Tabatabaee, M. (2015). The C-test: An Integrative Measure of Crystallized Intelligence, *Journal of Intelligence*, 3. 46-58. Retrieved from <https://doi.org/10.3390/jintelligence3020046>
- Bell, J. (2012). Design options for home visiting evaluation. *Technical Assistance Provision for MIECHV Grantees*. 1 - 3. Retrieved from <https://url2.cl/J7zyj>
- Brown, R. (2016). Hebb and Catell: The Genesis of the Theory of Fluid and Crystallized Intelligence. *Frontiers in Human Neuroscience*, 10 (606), 1-11. Retrieved from <https://doi.org/10.3389/fnhum.2016.00606>

- Brown, R. & Nation, P. (1997). Teaching speaking: suggestions for the classroom. Kyoto City University of Arts Victoria University. 11-16. Retrieved from <https://url2.cl/EFA8h>
- Capera, J. Carrillo, C. & Rodríguez, J. (2018). “Crystallized intelligence to enhance language learning in a pre-service teacher with cognitive disability”. ILTA. in *Sharing Experiences in English Language Teaching*. (p.p 113-145) Bogota, Colombia.
- Carrillo, C. & Rodríguez, G. (2017a). Acercamiento a la Educación inclusiva; Estrategias Metodológicas para fortalecer los procesos de aprendizaje de lengua extranjera en el programa de Licenciatura en Inglés de la Universidad La Gran Colombia. Tipo de producto: Producción técnica - Presentación de trabajo - Ponencia
- Carrillo, C. & Rodriguez, G. (2017b). Curricular adjustment strategies for EFL students with Mild Intellectual Disability. *ITBE Link*. 45 (1) 1-5 Retrieved from https://www.itbe.org/v_newsletters/article_77883849.htm
- Chomsky, M. (1986). *Knowledge of Language its Nature, origin and use*. Retrieved from <https://url2.cl/pxYRI>
- Davoudi, M. (2015). Use of fluid and Crystallized Intelligence Theory to Enhance Prediction of Learning Foreign Language Grammar. *International Journal of Linguistics*. 7 (6). 69-77. Retrieved from <https://doi.org/10.5296/ijl.v7i6.8435>
- Decanio, M. Albano, C. Llanos, M. Rojas, J & Trias, L. (2009). Inteligencias Cristalizada y Fluida en una muestra de niños de 7 años de edad. *Acta científica estudiantil*.

*Psychological report and academic guidance by Dr. Gutiérrez. Translation is mine.

7 (3), 166-172. Retrieved from

<https://www.medigraphic.com/pdfs/estudiantil/ace-2009/ace093h.pdf>

El Homrani, M. Hernández, F. & Peñafiel, M. (2011). *Bases pedagógicas para una Educación Inclusiva*. Granada: Ediciones Adeo.

Garibotto, V. C, Ramos, N. Y. & Ríos, C. (2020). Una propuesta para el desarrollo del vocabulario en inglés en el Marco de la educación inclusiva. *Revista Educación Y Ciudad*, (39), 1-13. Retrieved from

<https://doi.org/10.36737/01230425.n39.2020.2344>

Gillis, J. (2014). *Psychology's Secret Genius: The Lives and Works of Raymond B. Cattell*. Amazon Kindle Edition

Hernández, R. Fernández, C. & Batista, P. (2014). *Metodología de la investigación*.

Retrieved from <https://url2.cl/DxCeP>

Intell, J. (2015). The C-Test; An Integrative Measure of Crystallized Intelligence.

Journal of intelligence. 3(2), 46-58. Retrieved from

<https://doi.org/10.3390/jintelligence3020046>

Law 1618/13, February 27, 2013. Ministerio de Salud. [Minsalud] (Colombia). 10.06.2017

Retrieved from

<https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/ride/de/ps/documento-balance-1618-2013-240517.pdf>

Law 115/94, Abril, 1994 Ministerio de Educación. [MEN] (Colombia). 10.06.2017

Retrieved from <https://url2.cl/s34Xn>

Law 1306/09, Junio 05, 2009. Ministerio de Salud. [Minsalud] (Colombia). 10.06.2017

Retrieved from

<https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/DE/DIJ/Ley%201306%20de%202009.pdf>

Martinez, P. Lourdes, M. & Garcia, E. (2001). Programa para la mejora de la meta memoria en deficientes mentales medios y ligeros. *Psicología Educativa*.7. (1) 63-74.

Retrieved from <https://www.researchgate.net/publication/39145672>

Meilán,, J. Salgado, V. Arana, J. Carro, J. & Jenaro, C. (2008). Entrenamiento cognitivo y mejora de la memoria prospectiva en jóvenes con retraso mental leve.

Revista De Investigación Educativa. 26 (1), 227-245. Retrieved from

<https://revistas.um.es/rie/article/view/94191>

Orru, S. (2003). Reuven Feuerstein y la Teoría de la Modificabilidad cognitiva estructural.

Revista de educación. 33-54. Octavio Bastos, Brasil.

Papalia, E. Wendokos, S. & Duskin. (2010). *Psicología del desarrollo Humano de la*

infancia a la adolescencia. Retrieved from [http://salud.mendoza.gov.ar/wp-](http://salud.mendoza.gov.ar/wp-content/uploads/sites/16/2017/03/Psicologia-del-Desarrollo-PAPALIA-2009.pdf)

[content/uploads/sites/16/2017/03/Psicologia-del-Desarrollo-PAPALIA-2009.pdf](http://salud.mendoza.gov.ar/wp-content/uploads/sites/16/2017/03/Psicologia-del-Desarrollo-PAPALIA-2009.pdf)

Pere, M. (2003). *Aprender juntos alumnos diferentes*. Retrieved from

<https://justificaturespuesta.com/wp-content/uploads/2017/01/Aprender-juntos-alumnos-diferentes.-Muestra-gratis.pdf>

- Perez, L. & Cabezas, D. (2007). Programa de entrenamiento en solución de problemas prácticos aplicado a personas con discapacidad intelectual. *psicothema* (19). 4 578-584. Retrieved from <http://www.psicothema.com/pdf/3400.pdf>
- Ramírez, Y. Torres, R. & Amor, V. (2006). Contribucion única de la inteligencia fluida y cristalizada en el rendimiento académico. *Revista Chilena de Neuropsicología*. 11(2). 1-5. Retrieved from <http://doi:10.5839/rcnp.2016.11.02.01>
- Reglamento estudiantil consejo académico (2015). diciembre 18, 2015. Retrieved from https://www.ugc.edu.co/sede/bogota/documentos/ministerio/reglamento_estudiantill.pdf
- Sattar, B. (2019). "Cognition and the future of information security," *2019 International Conference on Advanced Science and Engineering (ICOASE)*, Zakho - Duhok, Iraq, 2019, pp. 1-1. Retrieved from <http://doi:10.1109/ICOASE.2019.8723784>.
- Tomlinson, B. (2011). *Material development in Languaje Teaching*. 2nd Ed. Cambridge University Press
- Unesco (2005). *Guidelines for inclusion: Ensuring Access to Education for All*. Retrieved from http://www.ibe.unesco.org/sites/default/files/Guidelines_for_Inclusion_UNESCO_2006.pdf
- Verdugo, M. (1994). El Cambio de paradigma en la concepción del retraso mental; la nueva definición de la AAMR. En Salamanca, M. (Ed). *El Cambio de paradigma*

en la concepción del retraso mental; la nueva definición de la AAMR. (pp. 5-24) Retrieved from <https://www.researchgate.net/publication/255644031>

Vigotsky, L. (1978). *Pensamiento y Lenguaje*. Buenos Aires. Argentina. La pleyade.

Watson, J. (1998). *Behaviorism*. Rouletge 1st edition. New York.

Zembylas, M. & Michaelides, P. (2004). The sound of silence in pedagogy. *Educational Theory*. 54. 193-210. Retrieved from <https://doi.org/10.1111/j.1741-5446.2004.00014.x>

Annexes

Link: https://drive.google.com/open?id=16vU6uU0zWm8W6xuSt_H0cYNNfy_CsnxP