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**The Implementation of the Essential Thinking Skills  
in Examinations by Master One Didactics Students  
in the Department of English at MMUTO:  
A Corpus-Based Study.**

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## **Dedications**

to my loving parents, for their endless guidance and support

to my dear sister Ania and brother Syphax

to my uncles and aunts especially Wahiba for their help and encouragement

to my grand-mothers and regretful grand-fathers

to all my family members

all my friends who shared their inspiring pieces of advice

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## Abstract

The present research is intended to examine the extent to which Master one Didactics students in the Department of English at MMUTO implement the essential thinking skills in their exam papers in the module of 'EFL Teaching and Testing'. It also seeks to find out the most implemented essential thinking skills. Our research is guided by Barbara Presseisen's Taxonomy of essential thinking skills (1991) from a constructivist perspective. To collect data, we have examined a sample of twenty-five (25) exam papers in the module of 'EFL Teaching and Testing'. For our analysis, we have adopted a mixed-method approach. Indeed, the SPSS was used to quantify the distribution of each category of the essential thinking skills in the students' exam essays. In addition, the findings have been interpreted using the qualitative content analysis. The findings indicate that the students' essays align with the theoretical framework of Presseisen's Taxonomy of the essential thinking skills in the book entitled 'Developing Minds; A Resource Book of Teaching Thinking by Costa, Arthur. L (1991). However, it was observed that not all thinking skills categories received equal emphasis. In fact, qualification and relationships stand out as the mostly stressed followed by transformations skill, then causation and lastly the classification skill.

**Key words:** Essential Thinking Skills, Presseisen Taxonomy, Exam Papers, Constructivism, Master one Didactics Students.

## List of Abbreviations

- CCEA: Council for the Curriculum, Examinations and Assessment
- EFL: English as a Foreign Language
- HP: Hypothesis
- MMUTO: Mouloud Mammeri University of Tizi-ouzou
- OCR: Optical Character Recognition
- Q: Question
- SPSS: Statistical Packages for Social Sciences

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# General Introduction

### Statement of the problem

In twenty centuries, there was a high interest in incorporating essential thinking skills in educational field for three reasons. According to French and Rhoder (2011), the primary reason is that students do not think effectively and they do not succeed in mastering abstract levels which are ‘analysis’, ‘synthesis’ and ‘evaluation’. In contrast, they perform only concrete levels which include ‘general knowledge’ and ‘understanding’. The second one is that teachers do not raise the awareness of teaching thinking skills rather they just focus on teaching “factual knowledge”. The last reason emphasizes the evolving of research in the field, specifically in terms of teaching thinking skills. It is suggested that the field is developed with researchers not only building upon previous studies but also exploring new directions and employing innovative methodologies. This ongoing research helps and ensures that the field of teaching thinking remains relevant and continues to advance, offering new insights and approaches for enhancing teaching and learning (p. 5). Additionally, teaching and learning approaches give priority to the reading and writing skills, but they neglect the most sophisticated aspects which are the essential thinking skills (Chipman& Segal,1985, p. 1).

As examinations have always been an integral part of academic life, it is essential for students to have essential thinking skills to excel in them. It is up to students to implement essential thinking skills in their academic output, especially in examinations. These skills can be a challenging task for students to ensure their performance. Indeed, students who possess essential thinking skills are better equipped to tackle exam questions.

After the emergence of student-centered class, the essential thinking skills become paramount and vital for students to develop them in their courses because they encourage students to think logically and analytically. In this vein, Nunan (1988) claims “*since learners*

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*are heavily involved in the decision-making process about the content of the curriculum and how it is delivered, the curriculum is a collaborative effort between teachers and students”* (p.2). Therefore, this process helps students to synthesize information from multiple sources and use it to find out an answer in a coherent and valid manner, solve problems, make decisions, and to communicate effectively.

Essential thinking skills are an essential process for students to acquire even though it is not an easy task. To develop these skills; students should work on reading and writing skills and be engaged in discussions and debates. As a result, they have the opportunity to think from various perspectives and to use the existing information that is stored in the mind (Shraw *et al.*,2011, p. 3). Generally speaking, the essential thinking skills play an important role in EFL classes because they empower students to critically evaluate arguments, interpret information, express their thoughts clearly and persuasively, and develop effective solutions to a wide range of problems (Heong *et al.*, 2011, p. 121).

Throughout several studies, it is argued that there are four dimensions of thinking: first, thinking is goal-directed with one or different purposes. Second, thinking is intentional, it is frequently done consciously with the aim of articulating a problem, finding a solution, assessing pertinent data and deciding on a plan of action. Third, thinking is not automated rather than the information is processing with the cognitive system. The last dimension is that thinking comes with reflectivity and constructivity in building new information (cited in King & Kitchener, 1994, p. 22).

Essential thinking skills has become a necessary process for students to succeed in their exams. This field of study has drawn the attention of many researchers who are interested in conducting research about essential thinking skills, such as the work of De Bono

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(1983) entitled *Plus, Minus, Interesting: weighing the pros and cons of a decision*. The author found that decision making is an approach that helps students to think critically and weigh the positive and negative points of different options. In addition, Presseisen (1984) contributed in improving cognitive skills and creativity in his book entitled *Thinking skills; meaning, models and material*. Costa and Presseisen (1991) wrote a book about *Developing Minds: A resource book for teaching thinking*, likely explores strategies and resources for educators to foster critical and creative thinking skills in students helping them to become effective thinkers. Moreover, Stephen Johnson (2010) pointed at the ways of teaching thinking skills, this work has important implications for classroom efforts to improve students' thinking. The last study is conducted by Sid-Idris Nedjma and Thighilt Ferhat Karima (2016) at the Department of English of MMUTO who have tackled *The assessment of essential thinking skills in at the crossroads textbook: an evaluation*. In fact, they came up with the findings that higher order thinking skills mainly transformations skill is more focused. Despite these different studies, we are motivated to fill in the gap by exploring the extent to which master one Didactics students implement the essential thinking skills in their examination papers. Hence, our research will hold significance as it will take place in a different setting and context.

### **Aims and significance of the study**

This research aims to demonstrate the importance of the essential thinking skills in examinations. Our focus is to analyze the answers of master one didactics students in their exam papers. Thus, our overall aim is the analysis of the essential thinking skills in the examinations taken by the students. To achieve this aim, two objectives motivate our study. The first objective is to check the extent to which Master one students of Didactics specialization in the Department of English at MMUTO implement the essential thinking

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skills in their examination papers. The second individual objective is to determine which skill is mostly implemented by the students.

Since the field of education in Algeria is based on the competency-based approach (Bellour, 2017, p. 57), Master one Didactics students have to master the essential thinking skills because the latter not only help students to perform better in exams, but also they prepare them for success in their academic and professional lives. Additionally, essential thinking skills equip students with the ability to break down complex problems into smaller ones and making it easier for them to find out the effective solutions.

### **Research questions and hypotheses**

Q1: To what extent do master one students of Didactics implement the essential thinking skills in their examination papers?

Q2: What would be the mostly implemented essential thinking skills by Master one Didactics students in their examination papers?

The two following hypotheses are suggested to the first research question and the third hypothesis is for the second research question.

Hp1: Master one students implement essential thinking in their examination papers to a high extent.

Hp2: Master one students implement essential thinking in their examination papers to a low extent.

Hp3: Classification and transformations skills would be the mostly implemented essential thinking skills by Master one Didactics students in their examination papers.

### **Research techniques and methodology**

Our work presents the implementation of the essential thinking skills in examinations in the Department of English MMUTO with Master one students of Didactics. As our study is a corpus based, we analyze the exam answers that are categorized using a table which links each exam paper to the skills of essential thinking. For this purpose, this study requires using Presseissen Taxonomy (1991) as a theoretical framework in order to fulfill the gap and achieve our goal. We choose to use the mixed-method combining qualitative method to interpret the analysis and quantitative method to calculate the percentages.

### **Structure of the dissertation**

The traditional simple model is followed in our dissertation. The latter involves the General introduction, four chapters and a general conclusion. The first chapter is called “Literature review” where the theoretical framework and the definitions of different concepts are included. The second chapter is named the “Research design and methodology” which introduces the data collection and analysis procedures. The third chapter is labeled the “Results”, and it presents the findings of the research. The fourth chapter is the “Discussion”, this one gathers the explanation and the interpretation of the results, and it is the chapter in which the research questions are answered. At the end, the General conclusion provides a whole summary of the dissertation and suggestions about investigation the field of the essential thinking skills.

# Chapter I: Literature Review

## Introduction

The present chapter is designed to review the literature about the essential thinking skills in teaching and learning. The chapter sheds light on a set of definitions and explanations set by scholars about the essential thinking skills. Five sections make up the chapter; the first presents the main concepts of cognitivism while the second deals with a Three-Level Model of cognitive processing. Section three introduces the meaning of constructivism. As to section four, it is designed to tackle the process of thinking and thinking skills including its importance and types. The last section is set to: (a) explain the essential thinking skills and its categories, (b) tackle the relationship between constructivism and the essential thinking skills, and (c) highlight the link that lies between EFL teaching and learning and the essential thinking skills.

### 1. Cognitivism

The origin of cognitivism goes back to the late 1950s and early 1960s; it came as a reaction to behaviorism. The most well-known cognitive theorists are Jean Piaget (1896-1980) and Jerome Bruner (1915-2016). In cognitivism, the importance of mental processes in learning is emphasized. These processes include ‘thinking’, ‘remembering’, ‘perceiving’, ‘interpreting’, ‘reasoning’, and ‘problem solving’. (Clark, 2018, p.176). Anderson (2005) also defines cognitivism as a psychological perspective that focuses on the examination of the cognitive process, including attention, language use, perception, problem solving, memory, and thinking (p.1). In addition, Siegler et al. (2015) states the fact that “*the advancement of cognitive abilities is gradual process that encompasses the attainment of more complicated cognitive skills such as recognition, concentration, retention, communication, and analytical thinking*” (p. 1). The latter affirms that the way people acquire these cognitive abilities is

through a combination of innate processes and environmental experiences. As a result, individuals are able to adapt to new situations, learn new skills, and solve complex problems by acquiring increasingly sophisticated cognitive abilities. In addition, cognitive psychology is defined as *“the systematic exploration of mental processes, encompassing perception, thinking, recall, and logical deduction”* (Sternberg, 2018, p.4).

These definitions clarify that cognitivism is a branch of psychology that emphasizes the scientific study of mental processes such as perception, thought, memory, and reasoning. These mental processes refer to the ways in which we acquire, process, store, and use information in the environment. Moreover, Ertmer and Newby (1994) say that cognitive theories center on the conceptualization of student’s learning processes and tackle concerns regarding how the mind obtains, arranges, retains, and retrieves information. (p.58). In other terms, *“the brain can be perceived as mechanism for processing data that encodes, conserves, and recover information”* (Anderson,2015, p.6). This quotation suggests that the human mind can be viewed as a system that processes information similar to how a computer processes data. The mind takes the information through our senses, encodes it into our memory system, stores it, and retrieves it when needed. First, encoding involves converting information into a format that can be stored in memory such as: converting sensory input into neural signals that can be process by the brain. Second, storage provides retaining that encoded information over time potentially for the rest of our lives. Third, retrieval is accessing stored information when for instance needed, as when we are trying to remember a phone number or a name.

## **2. A three-level model of cognitivism**

This model is based on a lot of study and literature such as the work of Kitchener entitled *Cognition, Metacognition, and Epistemic cognition: A Three-Level Model of*

*Cognitive Processing* (1983). The three levels of cognitive processing include: ‘cognition’, ‘metacognition’, and ‘epistemic cognition’.

## 2.1 Cognition

According to Bayne (2017), cognition encompasses all the processes, whether explicit or implicit, that incorporate the gathering, retaining, recalling, and handling of information (p.609). Similarly, Kihlstorm (2018) shares that cognition covers the methods through which information is obtained, retained, and utilized, including ‘sensing’, ‘learning’, ‘recollection’, and ‘reasoning’. In addition, the term ‘cognition’ describes the mental processes involved in learning, remembering, and applying information (Sternberg & Sternberg, 2012, p.4). As the same point of view, Lindsey (2016) argues that cognition enables individuals to perceive, think, reason, and retain information (p.58). A group of mental operations and activities that are used for “*perception, recollection, thought, and comprehension are collectively referred to as cognition*” (Willingham, 2007, p.4).

There are different studies about the concept of cognition in the field of psychology and education. It is claimed that cognition is the process of acquiring knowledge, perceiving, thinking, remembering, reasoning, and understanding. The first process refers to learning and obtaining new information through various sensory inputs. The second one, which is perceiving, is recognizing information through the five senses (sight, hearing, touch, taste, and smell). Thinking is the third process in cognition; it involves processing information and generating ideas or solutions to problems while remembering is the storage and retrieval of information from long term memory; it allows individuals to get access to a stored information when it is needed, for example; when we are trying to remember a phone number or a name of someone. Cognition also involves reasoning which means drawing conclusions or making decisions using available information; it consists of: logic, critical thinking, and

problem solving. Last but not least, understanding points out the ability to interpret and make sense of information and ideas by taking into account the comprehension of language as stated by Elgin (2007) that understanding is mainly about how your mind connects with and makes sense of a group of information that fits well together (p. 4).

In short, cognition encompasses a wide range of mental processes and activities that are essential for everyday functioning and learning. It enables individuals to understand and interact with the world around them.

## 2.2 Metacognition

It is used daily, more or less consciously, and developing it is one of the best ways to improve the quality of our learning. Metacognition is a notion that the American psychologist John H. Flavell used in his work in the 1970's. For Flavell, metacognition is defined as 'cognition about cognition' or 'thinking about thinking'. This concept is used in psychology and education to describe the process of thinking about one's own thinking (Flavell,1976, pp.231-235). Indeed, metacognition is the fact of being conscious of and comprehending one's own cognitive processes (Pintrich,2002, pp. 219, 225). Besides, Bransford et al. (2000) argue that "*one of the main ways that we become aware of our own learning strengths and weaknesses is through metacognition*" (p.56). This quote indicates the importance of developing our metacognitive skills. As a result, the ability to better understand how we learn, and what strategies work best for us in order to achieve our goals. In addition, Brown (1980) suggests that metacognition-conscious awareness begins to develop in a certain field (cited in Presseisen, 1985, p.13). Furthermore, "*metacognition indicates the capacity to observe and control one's own thought processes and to employ this knowledge to direct actions*" (Bransford & Brown, 1978, p.9). In other words, metacognition is the ability to think about

your own thinking. It allows you to recognize when you are struggling with a problem, to identify your strengths and weaknesses and to adjust your approach accordingly.

All in all, metacognition is valuable in that it helps individuals become more effective learners, problem-solvers, and decision-makers. It can be summarized as the ability to reflect on one's cognitive processes, allowing us to identify our mistakes and successes, understand their origin, and achieve our goals.

### **2.3 Epistemic cognition**

Epistemic came from the Greek term 'episteme' which means knowledge, what is known, or the method of knowing (Kitchener,2011, p. 92). As he provides in his previous research that epistemic cognition concerns the reflection on the restrictions of knowledge, the assurance of knowledge, and the principles for knowing (Kitchener,1983, p. 222). On the other hand, King and Kitchener (2004) suggest that epistemic cognition requires the methods by which people comprehend, assess, and apply information, as well as the procedures that result in knowledge construction (p.380). In fact, Hofer and Pintrich (2002) assume that "*the process involved in creating knowledge, understanding how knowledge is created, and evaluating the reliability and accuracy of knowledge are referred to as an epistemic cognition*" (p. 357). The researchers show the way that a person thinks about knowledge and how they come to know things. Understanding this notion is crucial for comprehending how individuals engage with and assess information, arrive at decisions, and tackle problem-solving tasks. For instance, those with elevated level of epistemic cognition tend to exhibit critical thinking, questioning established assumptions, and actively pursuing evidence to make convictions. Furthermore, they tend to display adaptability in their thought processes and receptiveness to cover new viewpoints. Purta and Azvedo (2015) state "*it is essential to emphasize that epistemic cognition seeks to shape people's beliefs regarding the nature of*

*knowledge and their own abilities to acquire information”* (cited in Kelly, 2016, p. 186).

Overall, epistemic cognition is described as a set of mental processes that empower individuals with the intellectual tools and abilities needed to navigate rapidly changing and information-rich society. By developing a deep understanding of knowledge and learning processes, Individuals can become more effective learners, critical thinkers and informed citizens.

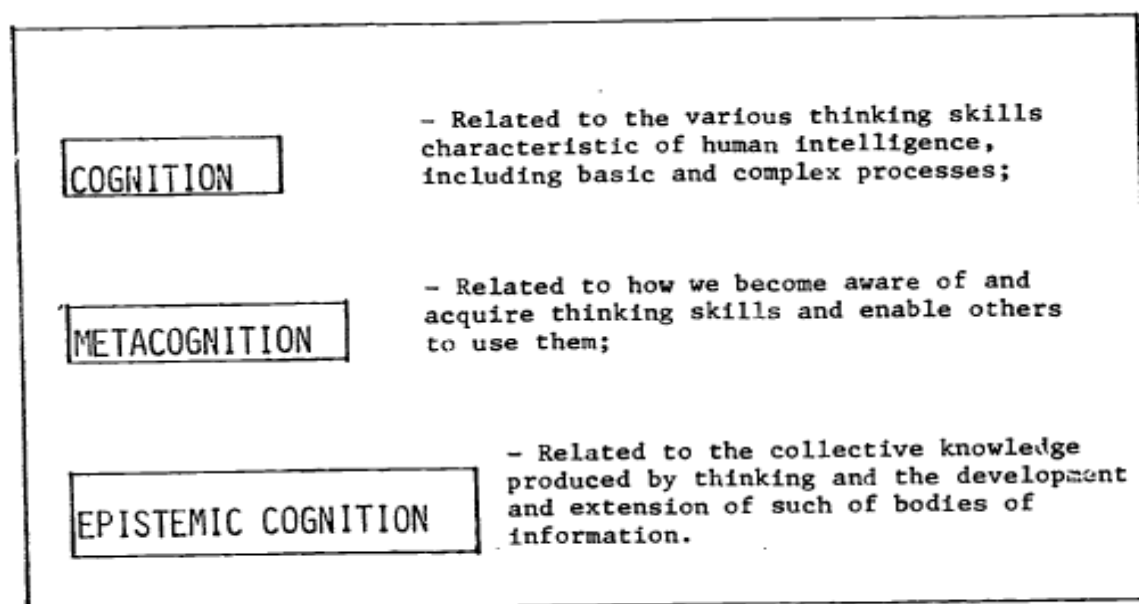


Figure 4: A Tri-Level Model of Thinking

(Presseisen, 1985, p. 20)

### 3. Constructivism

The adoption of constructivism as an approach to teaching and learning has indeed been a significant change in the field of education (Kibui, 2012, p. 17). It emerged as one of the most dominant forces in education in the last five years as a reaction to cognitivism approach (Powell et al., 1985, p.1). It is seen from two different angles, namely the individual constructivism proposed by John Piaget in 1967 and the social constructivism by Vygotsky in 1978.

Although constructivism is seen as complex, it is widely discussed in education as a highly effective method for teaching and learning. Lock (1947) explains that constructivism is the process of combining existing concepts to form more advanced ones (p. 65). Essentially, constructivism involves linking different ideas, recognizing patterns, and restructuring existing knowledge to accommodate new information. Etmer and Newby (2013) share a similar perspective, emphasizing that constructivism revolves around a learner-centered approach where individuals construct their own understanding and knowledge by combining new information with what they already know and have experienced. As their quote suggests, *“according to constructivism, students actively build their knowledge by drawing from their prior learning and experiences”* (p. 53). A successful classroom relies on a constructivist theory.

It is believed that students must build their own understanding independently and collectively. Each student possesses a set of ideas and abilities that they must use to develop knowledge and tackle environmental issues. The responsibility of the community, student, and educator is to create an atmosphere that presents challenges, encourages growth, and provides support to motivate in the construction of knowledge.

(Cited in Gail and Brader-Araje, 2002 p.10)

Thus, the constructivist theory of learning suggests that learners are not passive recipients of knowledge, but instead they construct their understanding by themselves based on their previous knowledge and experiences. According to this theory, learning is not simply a process of receiving information from the teacher or a text book, but rather it provides the learners active participation in making sense of the information they encounter. In fact,

The fundamental concepts of this strategy are that learners can merely comprehend new circumstances based on their current comprehension.

Education encompasses a dynamic operation in which learners build meaning by associating original ideas with their pre-existing knowledge.

(Naylor & Keogh, 1999, p.93)

Essentially, this quotation suggests that learners approach learning by building upon what they already know. When encountering new information or experiences, individuals make sense of them by connecting them to their prior knowledge and experiences. This process enables learners to understand and interpret the world around them.

In practical terms, constructivist classrooms are more student-centered and the learning revolve around their interests and questions. Teachers play a guiding role in learning by organizing group activities, fostering collaborative discussions, and facilitating interactive experiences. Students are encouraged to establish their previous knowledge and construct new understanding based on the lessons taught.

#### **4. Thinking**

The present and the forthcoming world necessitates that every student needs to be encouraged to evolve into proficient and adept thinkers. As we are human beings, we have to be able to think in order to solve problems, acquire new knowledge, comprehend concepts, and make sense of our experiences (Segal *et al.*, 1985, p.4).

Despite defining the term ‘thinking’, which is a complex concept, numerous scholars and intellectuals have made attempts to shed light on it from various perspectives. Piaget, for instance, contends that thinking is an active procedure where students engage in discussions and interactions with their surrounding environment in order to develop their cognitive abilities. In this regard, Vygotsky posits that the development of thinking occurs within the context of society (cited in McGregor, 2007, p. 10). These two scholars hold differing views

on the nature of the thinking process. In one hand, Piaget suggests that through thinking, learners can construct understanding by drawing upon their experiences and engagement with their surroundings. On the other hand, Vygotsky's proposition centers on the idea that individuals build and nurture their thinking through their everyday life experiences and interactions.

Furthermore, according to Presseisen (1991), "*the majority of individuals believe that thinking is a cognitive activity, a mental effort that results in knowledge acquisition*" (p. 56). In other words, thinking is not constrained to a certain strategy or technique. It includes a variety of mental processes such as information analysis, evaluation, and application. Sthuhlman (2008) quotes "*thinking is an internal brain process that combines new knowledge with the existing one in order to make senses of data*" (p. 1). According to this quotation, thinking can be taught as a dynamic, ongoing mental process in which new information is assimilated, integrated, and resulted in the acquisition of new one. Aside from that, Mosely et al. (2005) suggest that "*thinking encompasses the generation and the use of mental representations to handle information*" (p. 15). This goal may be helpful for the learners; it enables them to interact with information, develops relationships, and then come up with solutions. For instance, while solving a mathematical problem, the learner mentally models the problem statement, modifies it using mathematical concepts and processes, and finds a solution. Similar to this, when a student considers a notion or an idea, he/she builds mental models or frameworks that help in his/her understanding and deliberation of that specific issue. According to Dewey (1916), "*... regarding students' mental development, the school's primary role is to assist them in improving their thinking abilities*" (p. 152). It is noticed that one of the main objectives of education is the development of thinking, and that schools play a crucial role in enhancing students' cognitive abilities.

### 4.1 Thinking skills

A skill is the capacity to use knowledge in implementation or presentation efficiently and flexibly. The theory of a skill has explored mainly in the educational field due to the application of the concept of ‘thinking skills’ (Hart, 1978, p. 660). The latter is expressed in various ways; Frenchman and Rhoder (1996) defines thinking skills as a mental process that allow people to change information in ways that improve their comprehension, assessment, or presumption of it (p. 3). An educational psychologist Benjamin Bloom (1956) explains that thinking skills are a set of cognitive activities that permit individuals to analyze information, form opinions, and find solutions (p. 78). Thus, thinking skills is an important process that enable learners to accomplish several tasks which incorporate; processing information, comparing, contrasting, evaluating, and making inferences from information. Thinking skills provides both theoretical and practical strategies and activities in teaching and learning process to incorporate them into their instructions. Furthermore, Mc Guinness (1998) advocates for keeping the term ‘thinking skills’ as it is.

...The notion of thinking as a skill remains influential in theory and education. First, it shifts the focus of thought in the lengthy philosophical argument over the nature of knowledge from ‘knowing that’ to ‘knowing how’. Second, much of what we know about developing skills may be used to improving thinking... (pp. 4-5).

The statement suggests that considering thinking as a skill holds significance from not only theoretical standpoint, but also the pedagogical one. It emphasizes that thinking should be viewed as a capacity related to knowing how to think, rather than just focusing on knowing specific information or facts (knowing that). This perspective aligns with the ongoing philosophical debate about the nature of knowledge. Furthermore, Marom et al. (1987) underscore this point, reframing thinking skills as a means to make informed and effective

choices: *“in a rapidly changing society, where a wide range of options and an abundance of both individual and collective decision-making, thinking skills serve as an essential asset for making informed choices and sound decisions”* (p. 216). This quote suggests that thinking skills play a vital role a rapidly changing world, evaluating multiple options, and making wise preferences and selections that can have a significant impact on communities. They provide individuals with the cognitive abilities necessary to effectively engage with the complexities of the modern world and contribute to their personal and collective well-being.

## **4.2 The importance of thinking skills in education and in EFL teaching and learning**

In the 21<sup>st</sup> century, thinking skills have widely arisen in the academic discipline in EFL teaching and learning. Thinking skills is a crucial concept that allows learners to handle information, retrieve data, use knowledge in diverse circumstances. At an advanced stage, this may encompass problem solving and decision making which are both useful in the learning and the teaching process. Smith and Johnson (2019) affirm

I have discovered that the significance of processing proficient thinking skills cannot be exaggerated. Nowadays, the world becomes complicated, so having the capacity to process, assess, and synthesize information is essential. If individuals are not skillful thinkers, they may face difficulties in making wise judgement, resolving issues successfully, and navigating challenges that develop in personal and professional surroundings.

(p.47)

This quote emphasizes the importance of thinking skills in various aspects of life. It suggests that without these skills, individuals may struggle to handle the complexities and speed of the modern world. The ability to think critically and systematically is highlighted as vital for

making informed decision, addressing problems efficiently, and successfully directing through personal and professional situations.

According to Fisher (2003), *“the main purpose of education is to impart critical, creative and competent thinking abilities to students”* (p. 6). He asserts the need of teaching cognitive abilities. Likewise, he claims that teaching critical thinking and reasoning is paramount in increasing standards across the curriculum, especially for the most fundamental subjects (Fisher, 2003, p. 8). Many psychologists play a part in improving the EFL students’ thinking abilities, among them: Bruner, Vygotsky, Gardener, Sternberg, etc. *“Their accomplishments and those of others have placed us in a more advantageous position today to devise perceptive strategies for enhancing students’ cognitive abilities than was the situation in the previous cycle of trends”* (Swartz & Perkins, 1991, p. 7). This passage presents the importance of recognizing and building upon the achievements of others and past efforts to inform and shape our present strategies for developing EFL students’ intellectual abilities. It indicates that the lessons learned and the progress made in the past have provided valuable insights and improved our capacity to plan intelligent approaches in the present. Despite advocating for the implementation of interventions focused on thinking skills in schools, the review ultimately reached the following conclusion: *“However, it is unable to provide specific suggestions because it is unclear to what extent the advantages stem from particular program elements, their execution, or the resulting improvements in teaching and learning”* (Higgins *et al.*, 2005, p. 38). This means that the teachers cannot integrate the thinking skills in schools since the curriculum change from one generation to another.

Sternberg (1987) summarizes the aim of thinking skills in the following points:

- Improve students’ thinking skills overall and in specific fields.

- To assist students in learning how to maximize their strengths and minimize their lacks of thinking abilities.
- Encouraging students to reach their full potential. (p. 182)

Broadly speaking, students who implement the thinking skills in examination have the opportunity to develop their cognitive abilities and self-awareness; in other words, students are able to acquire, process, store, and use information from their environment as they can recognize and understand one's own thought.

Finally, Robinson (1985) notes that: *"although the necessity of cognitive growth has gained extensive attention, the results of evaluation measuring advanced cognitive abilities have revealed a pressing significance for students to enhance their competencies and mindsets pertaining to proficient thinking"* (p. 13). In other words, even though the importance of cognitive development is acknowledged and valued, students' performance in terms of advanced thinking abilities, such as 'critical thinking', 'problem solving', and 'analytical skills' has shown that there is still a crucial need for EFL students to cultivate and improve these skills. Furthermore, it promotes the effectiveness of the thinking skills and attitudes among EFL students which serve to enhance their performance in tasks and challenges.

### **4.3 Types of thinking skills**

Since thinking skills is a wide range topic, it is divided into six main types: 'analytical', 'creative', 'critical', 'logical', 'divergent and convergent' thinking. These types of thinking skills are introduced by many authors, among them; Elder and Richards in (2007), McGuinness (2014), and Bloom (1956) emphasize the role of analytical thinking in students' learning, highlighting its essential nature for comprehending information effectively in diverse contexts. Virgini (2015), Tarlinto (2003) and Richards (2013) provide a deep

explanation of the concept of creative thinking skills, underscoring its significance in education and various sectors. Critical thinking is mainly presented by Banning (2006) and Sternberg (1987) providing definitions of the process of critical thinking, emphasizing its important role in enhancing cognitive processes and achieving successful outcomes. For logical thinking, Jawad and Ban Hassan (2021), Kuchkarova and Ganiyeva (2023) who stress the importance of justifying answers with evidence by promoting logical reasoning skills. Finally, divergent and convergent thinking are developed by Duck (1981) and Kneller (1971); they suggest that a combination of both divergent and convergent thinking can lead to creative solutions that are practical. Even though the distinctions between the mentioned types of thinking are not easily noticed methods, this does not mean that thinking can be exclusively limited to one of these types. Engaging in any form of thought entails employing different concepts of these various types of thinking skills (Glevy, 2006, p. 293).

### **4.3.1 Analytical thinking**

The process of analytical thinking skills is essential for all students. Elder and Richards (2007) encourage learners to use their skills by stating *“these competencies are necessary for comprehending any substantial amount of information in a challenging manner”* (p. 4). These two researchers show clearly the importance of incorporating analytical skills in the aim of improving the EFL students’ approach. McGuinness (2014) argues in his studies that *“there is no single form of thinking skills that qualifies as analysis”* (p. 8). That is to say analytical thinking is not a uniform mental process that can be applied in the same way to all types of problems. For example, scientific analysis may involve data interpretation and hypothesis testing, while literary analysis may focus on textual interpretation and literary devices. Additionally, Bloom (1956) explains:

The focus on analysis is on breaking down piece of information into its component elements and identifying the connections between them as well as how they are organized. It may also be aimed at the methods and tools to develop communication's conclusion or to convey its meaning (p. 144).

This quote explains the focus of analysis on the techniques and devices used to convey meaning or establish a conclusion in the communication which help the individual to communicate effectively. These techniques can include rhetorical devices, narrative structure, persuasive data, or any other element that enhances the expression or the impact of the material.

### **4.3.2 Creative thinking**

The term 'creative thinking' can be described as the complete range of mental activities used by people in response to a particular object, problem, or situation (Birgili, 2015, p. 2). In the same context, Tarlinton (2003) asserts that to create is to arrange in a new pattern or structure, or to combine elements into a coherent or useful whole. Students are required to create an original product as part of the creative objectives (p. 231). This signifies that students have to produce a new and innovative product relying on their understanding and skills. Young and Balli (2014) add that students attempt to offer a concrete and original design, produce several theories, find solutions to issues through learning and uncovering new processes (cited in Birgili, 2015, p. 2).

Due to the importance that creativity gains, it is highly requested in different areas as Richards (2013) affirms:

There is currently widespread discourse on the topic of creativity, which is being motivated in the companies and institutions to enhance their competitiveness, as well as the shift towards education that is centered on learning rather than testing in educational institutions. Ministries of education around the world have motivated schools to prioritize the

integration of creativity into their curriculum across all disciplines, as it is believed to have far-reaching implications (p. 1).

In his statement, Richards argues that creativity becomes prevalent in today's society. He attributes this increased focus on creativity to two main factors: the growing demand for organizations and the substitution of educational approaches from test-driven teaching by learner-centered teaching.

### 4.3.3 Critical thinking

The concept of critical thinking is frequently used in various areas of education (Richards, 2007, cited in Dendaouin & Achour, 2017, p. 5). Researchers provide many definitions of the term 'critical thinking' but actually there is no an exact explanation. Among these definitions, critical thinking can be described as a type of reflective thought focused on examination and assessment of current communication, information, and arguments, with a particular emphasis on employing logic and reason (Heard *et al.*, 2020, p. 2). Primarily, critical thinking is a valuable skill that helps students to become more independent thinkers, enabling them to make better decisions, solve problems effectively, promote a deeper understanding of complex issues, and engage in more meaningful and constructive discussions. Additionally, according to Banning (2006), critical thinking involves comparing, contrasting, and assessing the information presented as well as focusing on the information that will be used to form judgments and reach decisions (Behar-Horenstein & Niu, 2011, p. 26). Likewise, following Sternberg (1987), critical thinking can be defined as "*the strategies, techniques, and mental construct reveal that individuals utilize internally to devise solutions, make decisions, and assimilate new concepts*" (p. 3). Moreover, critical thinking is "*the use of psychological methods and approaches which increase the chance of accomplishing an effective outcome*" (Halpern, 1998, p. 450). In fact, critical thinking is an important cognitive

process that enables people to handle challenging circumstances, evaluate the accuracy and reliability of information, and creates arguments that incorporate facts, eventually resulting in more successful and effective outcomes.

#### **4.3.4 Logical thinking**

It is believed that logical thinking is a cognitive process that a student uses to comprehend the causes and variables of a particular problem. It is a methodical way to achieve results by recognizing certain assumptions, and it involves a learner's mental effort with the goal of reaching an answer or solving a problem (Jawad & Ban Hassan, 2021, p. 199). In fact, logical thinking is the ability to reason, make sense of information, and draw conclusions in a systematic and rational way. It involves using evidence, facts, and clear thinking to solve problems, make decisions, and understand complex situations. Essentially, it is about thinking in a way that follows a logical and structured process, helping students to reach well-founded answers or solutions. In addition, O'ljayevna and Chavkatovna (2020) state that logical thinking includes exploring various potential solutions and providing students with explanations and evidence to support their answers when the teacher asks them to justify and demonstrate the accuracy of their judgement (p. 237). This means that logical thinking is a process that involves different possible solutions to a problem, and it encourages students to not only give answers but also provide explanations to their responses. Broadly speaking, logical thinking is about teaching students to think critically and support their conclusions with logical reasoning and evidence.

#### **4.3.5 Divergent and convergent thinking**

In line with Duck (1981), divergent and convergent thinking are two contrasting cognitive strategies for addressing problems and questions. Kneller (1971) indicates that

divergent thinking looks for several viewpoints and various solutions to issues and challenges. Contrarily, convergent thinking makes the assumption that every question has a single correct response and every issue has a single solution (cited in McAuliffe, 2016, p. 3). However, these two concepts are interrelated.

Despite the potential differences in meaning between convergence and divergence, psychologists tend to consider them as closely related concepts. Some psychologists, especially those of the United States, maintain to associate divergence with creativity while viewing convergence as lacking in creativity (Fanning, 1977, p. 41).

This quotation highlights that originality can emerge from the combination of both divergent and convergent thinking. These two latter can lead to creative solutions that are both unique and practical.

## 5. Essential thinking skills

Thinking skills are classified into two levels of complexity; basic level (Essential thinking skills) and complex one (critical thinking skills) (French & Rhoder, 2011, p. 19). Although there are ambiguous borders between the categories in Presseisen's taxonomy of essential thinking skills, it appears to be organized by a complexity principle (Moseley *et al.*, 2005, p. 97). As per Presseisen (1991), the taxonomy of essential thinking skills must contain a minimum of five cognitive categories of thinking skills. These categories include '*qualification*', '*classification*', '*relationships*', '*transformations*', and '*causation*' (p. 58).

### a. Qualification

The essence of qualification is portraying the distinctive quality of the notion or principle that comprises in learning (Presseisen, 1985, p. 29). This definition describes the primary function of a particular skill, emphasizing its role in providing clear definitions and

establishing key aspects or characteristics of a subject. Hence, qualification refers to as ‘definitional’ including its focus on determining the meaning of something. Qualification is essential for effective learning because it relies on having a precise understanding of the object or concept being thought. For example, when asked to define the term ‘linguistics’, student may provide the following definition: *linguistics is the scientific study of language and its structure*. Student gives an exact and a clear definition of linguistics and identifies the two key concepts involved which are language and the structure of it.

### **b. Classification**

Costa and Presseisen (1991) define classification as “*grouping entities, occurrences or individuals based on their shared components, aspects or features, and assigning a name to each cluster to convey those fundamental qualities*” (p. 373). That is to say, classification is a fundamental cognitive process that involves recognizing shared characteristics, naming those shared qualities, and using these categories to improve the understanding, communication and decision-making across a wide range of fields. For instance, in phonetics, the teacher asks students to classify a group of words according to their sounds (/t/, /d/, /ed/). By following the classification skill, students are able to organize information, recognize patterns and similarities, and convey meaningful distinction between different groups.

### **c. Relationships**

“*Relationships involves the capacity to recognize patterns in different actions*” (Costa & Presseisen, 1991, p. 376). That is to say, this latter focuses on determining the link and the connection between different entities. In order to reach this skill, Presseisen (1991) goes through the concept of “*examining, combining or making logical inferences*” (p. 58). Relationships refers to examining and understanding the components that exist within the

relationships, identifying the patterns and key principles from different sources and applying general principles and reasoning to specific situations to make inferences. A concrete example is the fact of determining the relationship between cognitivism and constructivism between economics and marketing.

#### **d. Transformations**

It is the ability to transform. It incorporates “*establishing connections between existing and new attributes and generating interpretations*” (Costa & Presseisen, 1991, p. 376). In other words, transformations skill is constructing meaning by relating known to unknown characteristics. When applying the transformations skill, individuals take their existing understanding or knowledge and use it as a foundation to comprehend and interpret unfamiliar information. For example, a teacher may ask the students to transform the following sentence from active to passive voice: *Picasso was painting Guernica at that time* (active voice), while; ‘*Guernica was being painted by Picasso at that time*’ is the passive voice. Another example is the transformation from direct to indirect speech; she said, *He works in a bank*. (Direct speech), *she said that he worked in a bank* (indirect speech). In fact, this skill allows individuals to expand their knowledge to new situations.

#### **e. Causation**

Presseisen (1991) clarifies that causation pertains to the act of “*determining the relationship between cause and effect and conducting evaluation*” (p. 58). The provided definition highlights that causation not only involves identifying a cause-and-effect relationship but also entails making evaluations or assessments. As a concrete example; *should governments have the power to regulate content on the internet? Justify your answer?* A student justifies his/ her answer by providing arguments. In brief, causation is essential for

understanding connections, making predictions, and evaluating responsibility in various fields of study.

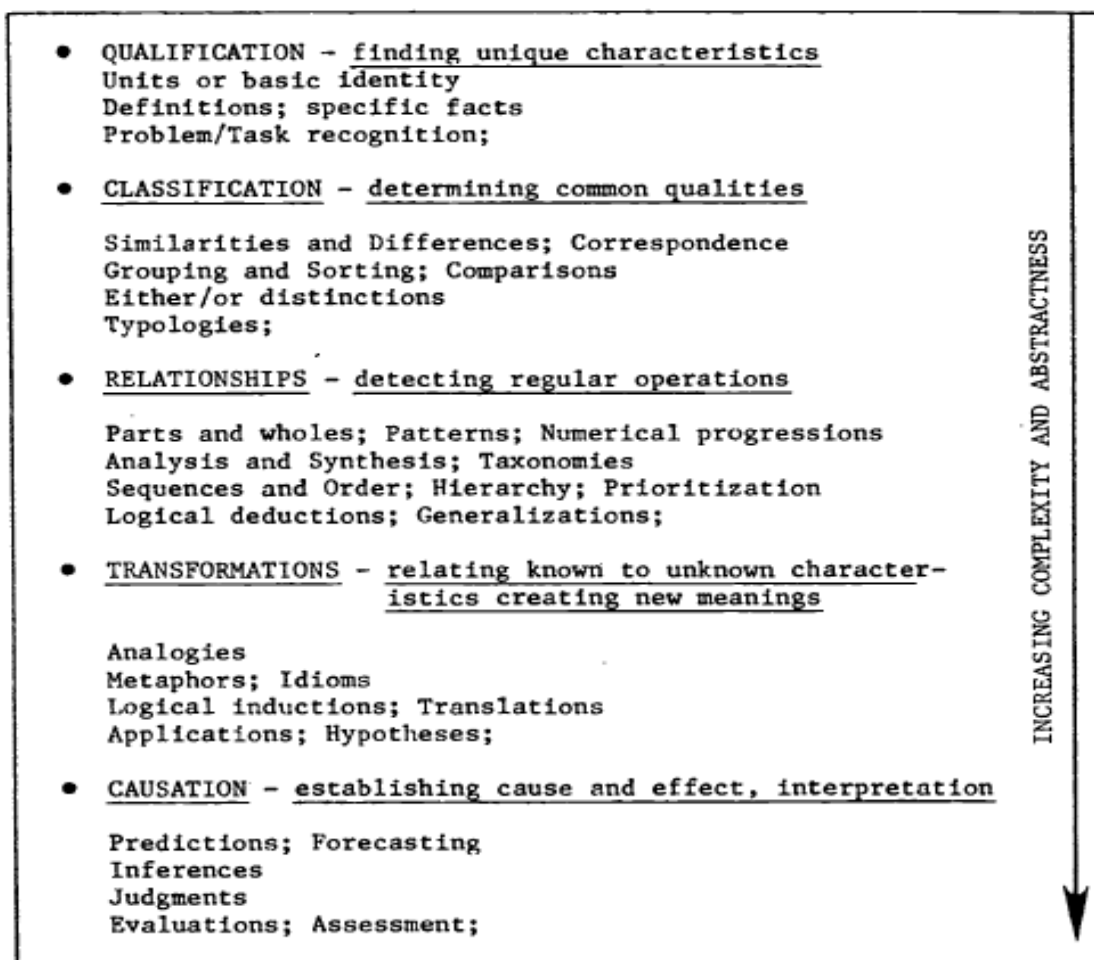


Figure 5: A Model of Essential Thinking Skills:  
Basic Processes

(Presseisen, 1985, p. 23)

## 6. Constructivism and the essential thinking skills

Constructivist approaches to education often incorporate and promote essential thinking skills. Glaserfeld (1989) said that “*thoughts are active constructs of meaning rather than passive reflections of reality*” (p. 162). According to this perspective, individuals’ thoughts are not determined only by external stimuli or objective reality. Instead, they are influenced by subjective interpretations, prior knowledge, beliefs, experiences, and cognitive

processes. The mind constructs actively the meaning by organizing and processing coming information in light of existing mental frameworks. In addition, *“for learning to be effective, learners must be given relevant and difficult tasks to solve”* (Fox, 2001 quoted from Aimeur, 2011, p. 18). It is noticed that constructivism and essential thinking skills are interconnected; they seek to develop the cognitive abilities which include problem-solving, decision-making, and break down complex situations into smaller ones through active learning.

## **7. EFL teaching and learning and the essential thinking skills**

### **7.1 Examination**

Examination is a component of a broader evaluation system that analyzes both the quantitative and qualitative elements of the human intellect. It indicates the transformations happening in various areas (cognitive, emotional, and physical) of an individual's character due to organized teaching (Tamil, 2021, p. 5). For Davis (1999), exams are not recall tests where students are expected to write all what they have learned about a particular subject (p. 1). Hence, exams should assess not only what students have learned but also their ability to comprehend, synthesize, and apply that knowledge effectively. It aligns with the idea that exams should measure high order thinking skills, such as analysis, evaluation, and problem-solving, rather than just analyzing information implicitly.

### **7.2 The implementation of the essential thinking skills**

According to Presseisen (1985), the first and the most important stage in planning an effort to enhance students' cognitive performance is to establish a program design for teaching thinking skills. In order to make that design a reality, competent individuals must be involved in three areas of implementation phase; classroom instruction, assessment, and materials' development (p. 66). In classroom instruction, the current movement places a strong emphasis

on teaching these skills directly. Beyer (1983) created a direct thinking skills education sequence that consists of the following; present the skill, clarify it, illustrate it, then use it, and finally evaluate it (p. 46). As an example, a teacher starts by introducing the concept of essential thinking skills, giving a definition, providing examples, giving to students a task to practice at the end, the teacher assesses their performance.

The present thinking skills which include ‘qualification’, ‘classification’, ‘relationships’, ‘transformations’, and ‘causation’ advocate for evaluating the advancement of students, instead of just examining it. The primary focus is on evaluative diagnosis, which involves determining the student's progress, thought process, and more crucially, the rationale behind it (Presseisen, 1985, p. 76). In the context of essential thinking skills, diagnostic assessment aims to uncover the specific cognitive processes and strategies that students are employing when engaging with tasks or solving problems. It focuses on evaluating students’ performance and determining the level of mastery they have achieved in essential thinking skills. Next, it involves how students tackle tasks, generate ideas, and use evidence to support arguments. Finally, the most important aspect of diagnostic assessment in this skill is understanding the reasons behind students’ performance and thinking processes.

The materials development promoting essential thinking skills aims to achieve both the teacher's professional independence and the student's increasing autonomy in learning (Presseisen, 1985, p.79). In designing a curriculum Hunkins (1985) cites Scheffler's list of six materials, which can be used by staff leaders who are engaging on thinking. First is the principle of economy, which seeks whether the learner can achieve maximum self-sufficiency in the most cost-effective manner by using the selected materials. Significance refers to linking the materials with the main emphasis of teaching thinking and select the specific skills that are intended to be developed. Validity takes the center stage; it focuses on the authenticity of the content in the materials and how well they align with the objectives of the

lessons or unit being taught. Simultaneously, the factor of interest gains prominence, evaluating the credibility of the materials capturing the students' interest and promoting their active participation. Learnability is another material that plays an important role in determining whether the materials are appropriate for the particular students who will be experiencing the curriculum, considering their learning needs and abilities. Finally, feasibility emerges as a crucial criterion which examines the effectiveness of materials used within the available time, funding resources, and with the staff members who are currently available.

In summary, when relating these six teaching materials with the implementation of essential thinking skills in exam papers, the teacher should ensure that the exam questions are concise, clear and relevant to the main content and objectives of the course, emphasizing the key areas of the essential thinking skills. In addition, teachers have to make sure that the exam questions authentically reflect real-life situations or problems where the essential thinking skills are applicable. Next, they have to review the exam content to confirm that it aligns with the broader educational goals and objectives of the course or curriculum. It is up to the teacher to use the real-life examples or case studies in order to attract students' curiosity and motivate them to think about the issues presented. Moreover, the exam questions should be neither too easy nor too difficult for the students attempting to answer them. To provide a successful and an effective exam, the teacher should take into consideration the time frame, so students have sufficient time to engage with the questions thoughtfully. Finally, incorporating these criteria into exam papers help teachers to create assessments that effectively evaluate and promote essential thinking skills in students.

### **7.3 Assessment**

Assessment is *“an essential component of instruction... effective assessment in class is suitable to current learning”* (Carr & Harris, 2001, p. 35). This definition underscores the role

of assessment as an integral part of instructions. It emphasizes the importance of effective assessment methods and highlights the need for assessments to be directly relevant to the learning goals. In another work, Palomba et al. (1999) define assessment as “*the methodical gathering, review, and use of information concerning educational programs carried out with the intention of enhancing learning and evolution*” (p. 4). It aims at improving and developing learning as it involves systematically looking at how teachers are working and making adjustments to make them better. Huba and Freed (2000) argue that:

to gain a precise understanding of students’ knowledge, awareness, and their ability to apply what they have learned through their educational experiences, assessment involves gathering data from diverse sources. This process concludes when the assessment results are put into practice to improve subsequent learning (p. 8).

The provided definitions show that assessment involves not only collecting data, but also utilizing information in order to make informed decisions and improvements. Indeed, assessments offer opportunities for students to receive feedback on their thinking skills. This feedback helps them to understand their strengths and weaknesses and provides guidance on how to improve their thinking abilities. Assessment is an integral part in examinations mainly in evaluating the essential thinking skills. Teachers ensure that students are exposed and encouraged to apply these skills, and they provide a way to measure and improve students’ competence in essential thinking.

### **Conclusion**

In this chapter, a set of important ideas connected to our research, about the implementation of the essential thinking skills in examinations, the case study of master one Didactics students in the Department of English at MMUTO, have been covered. Thus, we have presented some clarifications of different perspectives which are related to our topic, including cognitivism, cognition, metacognition, epistemic cognition, and constructivism.

## Chapter I \_\_\_\_\_ Literature Review

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Additionally, we have given various definitions of thinking and its types. At the end, the Presseissen Taxonomy (1991) has been presented and explained as the theoretical framework that involves the five categories of the essential thinking skills which are: ‘qualification’, ‘classification’, ‘relationships’, ‘transformations’ and ‘causation’.

# Chapter II: Research Design and Methodology

## Introduction

This chapter is methodological. It aims to describe the research design used in our work which is the implementation of the essential thinking skills in the examinations in the Department of English at MMUTO. The chapter is divided into two sections: the ‘data collection procedures’ is the first section which describes the corpus including participants, setting, tools and instruments used to gather data. The second section is ‘data analysis procedures’ which consists of qualitative and quantitative methods known as mixed-method. The latter is used to analyze and interpret the obtained data.

### 1. Data collection procedures

#### 1.2 Corpus of the study

In modern linguistics, a corpus is described as a collection of language that has naturally taken place. SinClair (1996) characterizes a corpus “*as a collection of texts deliberately selected and organized based on specific criteria to function as a reflection of the language*” (cited in Mc Enery *et al.*, 2006, p. 4). This quotation emphasizes that the corpus is not just a random assortment of texts, but a purposefully constructed collection. It serves as a valuable tool for understanding and studying a language in a systematic and an empirical manner.

The corpus used in our research incorporates selected exam papers of twenty-five (25) Master one students in the field of Didactics. The analysis is conducted in the module of ‘EFL Teaching and Testing’ submitted in 2020/2021 in the Department of English at MMUTO. This module is adequate and suitable for students to use their essential thinking skills. On June 12<sup>th</sup>, 2023, with authorization from the head of the Department, students' exam papers

were taken. They have been examined confidentially in accordance with our study's conceptual framework.

## **2. Data analysis procedure**

Our research has been conducted through a mixed-method, incorporating both quantitative and qualitative methods. A mixed-method can be defined as “*research in which the investigator collects and assesses data, combines the findings, and makes conclusions based on both quantitative and qualitative methods within a single study*” (Tashakkori & Creswell, 2007, p. 4). Quantitative data are expressed in numerical values and can be quantified. This kind of information is typically obtained through surveys and experiments. Conversely, qualitative data investigates into a more profound comprehension and the interpretation of the significance context of a specific phenomenon. Furthermore, it is important to notice that both quantitative and qualitative research methods based on different ways of thinking about the basic nature of reality (Vishnevsky & Beanlands, 2004, p. 234).

The quantitative is used to gather numerical data, it involves the use of statistics or numerical data to measure and describe phenomena in the world (Stockemer ,2019, p. 8). Moreover, through the employing of statistics, quantitative methods enable us to not just provide numerical explanations of occurrences but also to identify and analyze connections between two or more variables (p. 8). While the qualitative method, is a term that encompasses a wide range of research approaches originating from various disciplines such as anthropology, sociology, philosophy, social psychology, and linguistics (Moriarty, 2011, p. 2). This highlights that the qualitative research techniques are not limited to a single discipline but can be employed across a various area of study, making them adaptable and flexible for exploring different research questions and topics. The goal of qualitative research is to clarify the phenomenon of interests (Vishnevsky & Beanlands, 2004, p. 234). So, the qualitative

method is employed to analyze the answers provided by students in their exam papers in order to enhance our research. Snape and Spencer (2003) affirm that qualitative method is typically centered on the exploration of social significance by depicting and portraying the participants' social reality through interpretation (cited in Moriarty, 2011, p. 3).

To sum up, quantitative and qualitative research methodologies represent distinct approaches to research, each method has its unique strengths, weaknesses, and applications. Despite variations in data collection and analysis, these methods are not mutually exclusive. In practice, researchers frequently combine both quantitative and qualitative methods in order to reach their goals. As it is confirmed by Johnson and his colleagues (2007), quoting that *“researchers use both quantitative and qualitative research to achieve a comprehensive and in-depth understanding, in order to validate their findings”* (p. 123).

### **3. Data collection analysis**

#### **3.1 Descriptive statistics (quantitative data)**

Descriptive statistics are essentially techniques that do exactly what their name suggests; they provide analysis that summarize and describe data, making it more accessible and comprehensible (Conner *et al.*, 2017, p. 52). This means that descriptive statistics are methods that explain data and making it easier to understand. They provide insights into a dataset by offering concise observations and overviews, helping us recognize patterns. Moreover, Vergura et al. (2007) contribute in defining descriptive statistics as a field that is valuable for gathering, organizing, and examining a defined dataset, referred to as a population; it involves fitting an appropriate descriptive model or distribution type to this set of data (p. 1). Broadly speaking, descriptive statistics play a fundamental role in data analysis. They enable researchers to understand data by summarizing and presenting information in

comprehensible manner. Through the organization and visual representation of data, descriptive statistics assist students in reaching meaningful conclusions and informed decisions.

In order to check the extent to which Master one Didactics students implement the essential thinking skills and to determine the mostly implemented skill, we have to calculate the percentages of students' exam papers by using the SPSS program (Statistical Package for the Social Sciences). Nie and his colleagues (1970) define SPSS as a software application that possesses the capability for advanced statistical analysis and data management systems within a graphical interface (cited in Nasution *et al.*, 2017, p. 7).

### **3.2 Content analysis (qualitative data)**

One of the several research techniques used to examine text data is qualitative content analysis. Webber (1990) explains that qualitative content analysis involves more than just counting words; it encompasses a deeper process of analysis and it involves a comprehensive evaluation of language, aiming to categorize significant volumes of text into manageable groups that convey similar meanings (cited in Hsieh & Shannon, 2005, p. 1278). In simple terms, qualitative content analysis is a structured method for examining codes and categories to identify patterns, themes, and meanings. This approach helps researchers extract valuable insights from qualitative sources. Krippendorff (1989) defines content analysis as a research technique for drawing obtainable and reliable conclusions from content to their setting. It aims to convey knowledge, new perspectives, a representation of the facts, and a useful action plan (p. 403). This definition shows that content analysis is a systematic method that examines the content to provide illustrating details, an accurate and comprehensive account of what being communicated, without falsifying or biasing information. Qualitative content analysis can be a valuable tool in implementing the essential thinking skills practically in

examinations. Since the qualitative content analysis is based on the identification of categories, our theme requires to classify the essential thinking skills into the main five categories which are: ‘qualification’, ‘classification’, ‘relationships’, ‘transformations’, and ‘causation’.

In addition, qualitative content analysis is a systematic way of understanding the meaning in qualitative materials by organizing their components into specific categories. This method involves coding the materials and focuses on describing and interpreting the meanings within the content (cited in Shreier, 2012, p. 12). Thus, qualitative content analysis consists of breaking down qualitative data into particular classifications that capture the essential meanings presented in the material. This method allows researchers to analyze and interpret the data in a structured manner, facilitating a deep understanding of the underlying concepts, themes, and interpretations embedded within the qualitative content.

### **Conclusion**

This chapter has thrown light on the research design of our research. In the first side, we have presented the data collection procedures that have outlined the description of our corpus where the participants, the instruments, and the setting under study have been identified. In the other side, we have exposed the method used to collect data which is the quantitative method; that is the descriptive statistical analysis using the SPSS program to count the percentages of students in implementing the essential thinking skills in exam papers. Then, in order to interpret the content analysis, we have used the qualitative method.

# Chapter III: Results

## Introduction

The current chapter presents the results of our study regarding the implementation of the essential thinking skills in examinations which are intended for Master one Didactics students in the Department of English at MMUTO. For the purpose of conducting our analysis, we have analyzed twenty-five (25) examination papers. The findings are presented and displayed in tables and pie charts.

### 1. Presentation of the main essential thinking skills

Our analysis is based on Presseisen's taxonomy (1991) of the essential thinking skills. In fact, our aim is to know whether the students have implemented in their examinations writing essays the five essential thinking skills consisting of 'qualification', 'classification', 'relationships', 'transformations', and 'causation' or they have not.

The papers	<b>The Essential Thinking Skills</b>				
	Qualification	Classification	Relationships	Transformations	Causation
Paper A	Social cognitive theory emphasizes the importance of learning from models by	The same method can be applied on lecturers, news anchors, actors, journalists and	This theory can be applied more precisely in EFL teaching and learning	They try to reproduce the word in the same way by imitating the model	... because it opens more opportunities to travel, pursue higher education and

	observing them.	other models			gives them a chance to better jobs.
Paper B	Piaget stated “knowledge is a copy, copy of reality”	Constructive structures are divided into two important attributes; radical constructivism and social constructivism.	Radical constructivism is very similar to Piaget’s theory	The learners construct new knowledge and new experiences build upon the prior experiences without any external intervention.	That car is being faster because it is in front of us.
Paper C	Social cognitive theory refers to psychological model of behavior that emerged primarily from the work of Albert Bandura	Social cognitive theory deals with two major concepts which refers to modeling and the outcome expectations.	Learning occurs mainly in social context acquisition of social behavior.	The learner keeps in mind the information and reducing or transforming the observed to lot use, then production.	No example.

PaperD	Social cognitive theory is a psychological model behavior that emerged by the work of Albert Bandura in (1977-1986).	It is based on two assumptions; observation and Bandura's social cognitive theory.	Bandura's social cognitive theory can be applied in the field of EFL teaching and learning.	What he/she has learned before and this can realize through repetition and reinforcement, the third one is motor production.	Bandura also argues that they can learn by themselves what is called self-reflection and regulation.
PaperE	Constructivism is a theory of learning which is based on the fact that the learner constructs his own knowledge through experiencing the world.	This theory is divided into two important types: the social constructivism and radical constructivism.	This type has many similarities to Piaget's constructivist theory which stresses the importance of the individual work of the learner.	The learner must construct his own knowledge by himself, to create his background.	Teachers also should motivate their students by giving them the chance to express their thoughts and criticize freely.

Paper F	Piaget stated “I think human knowledge is essentially active”	No example.	Piaget’s cognitive constructivism can allow learners be actively in valued in their learning, making them competent and self-autonomous	To know is to transform reality in order to understand how a certain matter is brought about.	So, students will have the opportunity to know their points of view
Paper G	Constructivism is a learning theory, and refers to the process of building and creating new knowledge by using our background knowledge and cognitive capacities	He developed three concepts: assimilation, accommodation, and equilibration	Piaget influenced constructivism through his theory of cognitive development.	to construct knowledge, learners can use the process of assimilation and accommodation	No example
Paper H	Social cognitive theory refers to the psychological	... for EFL teaching in terms of self-	Bandura’s social cognitive theory has deep	Students would be productive	This concept has to do with critical

	model of behavior	regulation, goal setting, self-judgment, and self-creation.	instructions for EFL teaching and learning.		thinking, by criticizing, evaluating, observing their knowledge
Paper I	Learning is the acquisition of knowledge	No example	SCT was an effective theory in the field of EFL teaching/learning.	The next step of their concept is production	As a result, he/she will be responsible to assess his/herself
Paper J	SCT emerged due to the work of Albert Bandura. It is a psychological model of behaviors	SCT is based on five elements	SCT can be applied in the field of EFL teaching/learning	Students try to reproduce what they have retained.	No example
Paper K	SCT is a psychological theory that grew out of the work of Albert Bandura	... which is divided into three sub-processes including; self-observation, self-criticism, and self-reaction	Bandura's social cognitive theory made a great contribution in teaching process more precisely EFL teaching	If a specific behavior is formed, they are inactively formed from student's past experience	No example

Paper L	SCT is a psychological model that emerged from the work of Albert Bandura.	... by giving importance to six components	Bandura's social cognitive theory can be applied in the field of EFL teaching and learning	At the end of the year, students will be able to communicate in English.	For this reason, the teacher should develop on student's self-observation.
Paper M	The three define us that human needs to be mature explanatory	Equilibration is divided into two elements: assimilation fitting the experience stage language and accommodation	Piaget theory study the relation between human and culture, society	Assimilation and accommodation	No example
Paper N	Constructivism is an epistemological, pedagogical theory.	This theory has four main implications: understand cognitive development, keep student active, incongruity, provide social	The application of these implications is really important for an effective teaching	Create their knowledge through experiences and their background	Teachers benefit when they know at which level their students are functioning because they shouldn't operate all the

		interaction			students at the same level
Paper O	Bandura's social cognitive theory is one of the methods that can be ...	No example	... that can be applied in the field of EFL teaching and learning	After memorizing, the learner should reproduce what he has acquired	No example
Paper P	Among these theories we find Albert Bandura's social cognitive theory	No example	Social cognitive theory plays a huge role in the domain of EFL	No example	Learners need to be motivated because without motivation nothing will push them to make efforts
Paper Q	No example	It has five major functions	Vygotsky's constructivist theory has a deep implication for EFL teaching	School agencies thus help to transform learners' cognitive development	... thus, help to transform...

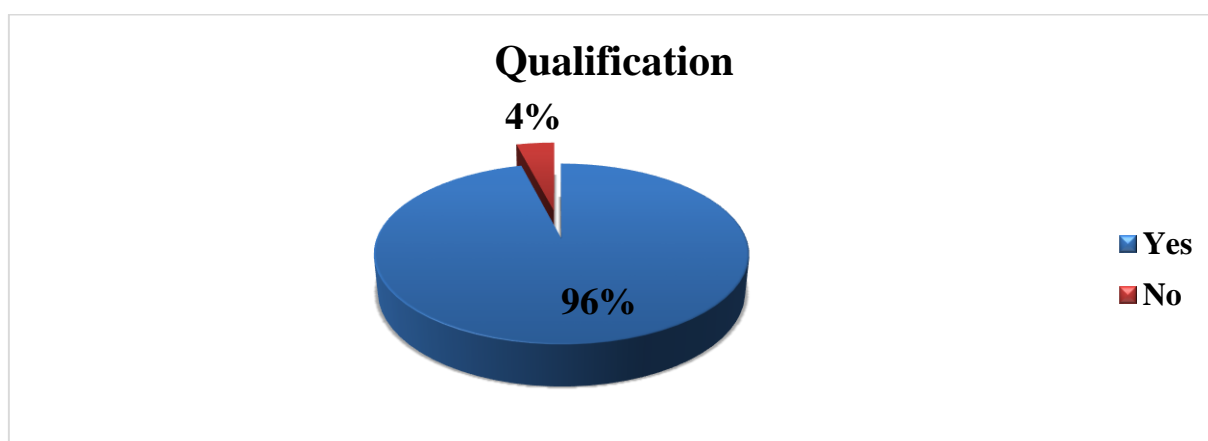
Paper R	According to Piaget, learning is a cognitive activity	No example	Piaget's constructivist theory has deep implication for EFL teaching	Individuals actively incorporate new information and experiences into the information already stored in memory	Because the conflict won't be too great for them
Paper S	Constructivism is an epistemological theory	No example	This theory has deep implications which are very important	to build and create knowledge and meaning, we use our experiences and background	Piaget constructivist theory argues that the creation of knowledge takes place in the learner's mind
Paper T	SCT is a psychological model of behavior	No example	SCT can be applied in the field of EFL teaching/learning	The learner should listen to the teacher and then perform that	...then make self-observation, self-judgement,

				behavior	then at the end self-reaction.
Paper U	Vygotsky's constructivist theory unfolds in the social constructivism theories of learning and teaching	No example	It has deep implications for EFL teaching	constructs... relying on their own prior knowledge and experiences	No example
Paper V	Bandura's social cognitive theory is one of the various theories applied in the field of EFL teaching/learning	No example	No example	No example	No example
Paper W	In general constructivism is a theory that says learners construct or build their own knowledge and understanding rather taking information	No example	Constructivist theory is a theory that advances major position on human development, which has a deep implication	In order to transfer their knowledge to their experiences	Because it gives them the opportunity to develop their cognitives

	passively		for EFL teaching/learning		
Paper X	Jean Piaget is a Swiss psychologist who developed a theory called cognitive development	He is able to distinguish things, think, reason, and decide	Piaget's constructivist theory has deep implications for EFL teaching	The learner will be able to learn new languages and assimilate new information once he reaches the stages	No example
Paper Y	Piaget's constructivist theory is a learning theory that focuses on students' cognitive abilities	Classifying them according to it	The implications of Piaget's theory are very useful in education	People who go to EFL private schools to ameliorate their level in English will first have a test in order to know their current level	Caused by the misinterpretation of words

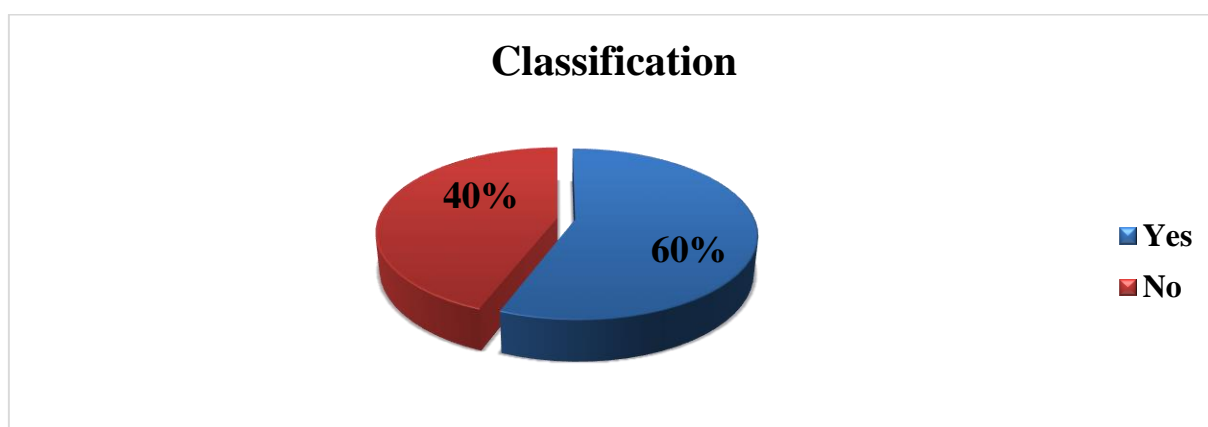
**Table 1: The Examples of the Essential Thinking Skills in Exam Papers**

The table above demonstrates the examples of the essential thinking skills which are categorized into five skills; ‘qualification’, ‘classification’, ‘relationships’, ‘transformations’, and ‘causation’. The essential thinking skills are commonly found in the exam papers of Master one students of the Didactics specialization in the module of ‘EFL Teaching and Testing’. The twenty-five (25) exam papers are named in the form of alphabet letters (paper A, paper B...).



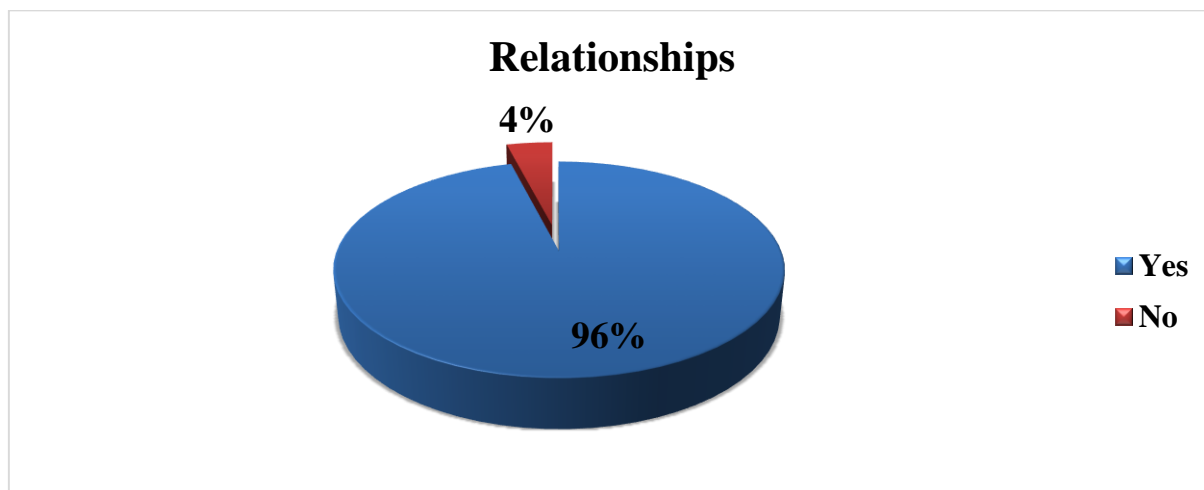
**Pie Chart 1: Students' Implementation of the 'Qualification' Skill in their Examination Papers**

Pie chart 1 shows that the majority of master one students (96%) have used the qualification skill in their exam papers. Only (4%) of the students have not used the 'qualification skill' as one of the essential thinking skills.



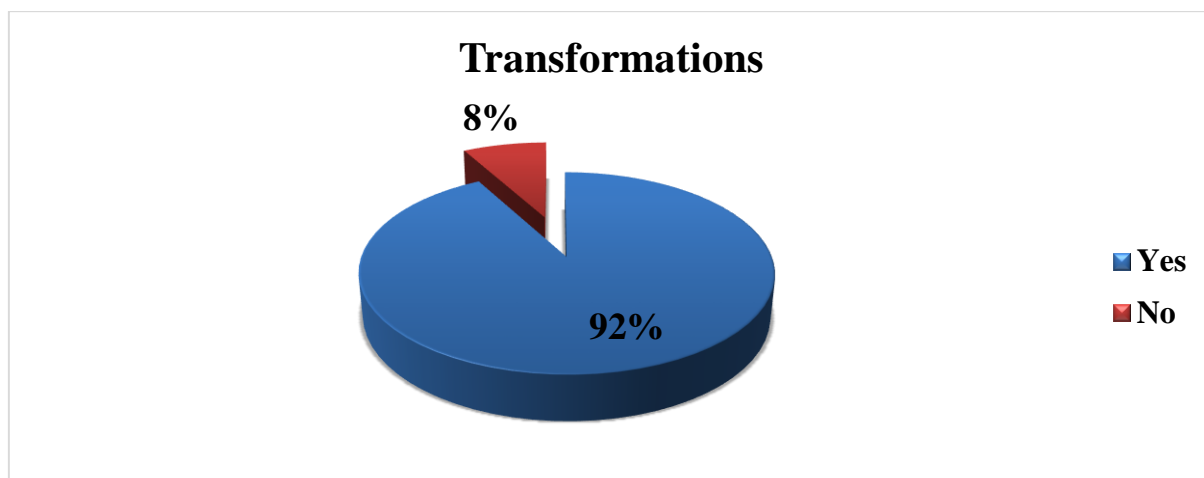
**Pie Chart 2: Students' Implementation of the 'Classification' Skill in their Examination Papers**

Pie chart 2 illustrates the distribution of students' implementation of classification skill of the essential thinking skills in their examinations. According to the data, (60%) of students have been actively engaged in implementing 'classification skill'. While, (40%) of them have not employed the skill.



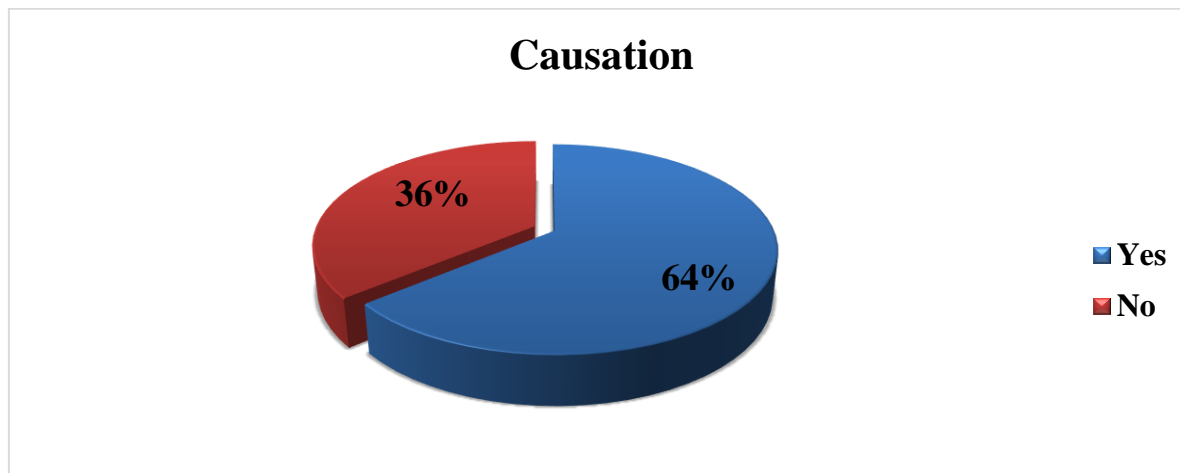
**Pie Chart 3: Students' Implementation of the 'Relationships' Skill in their Examination Papers**

The findings displayed in the diagram reveal that an overwhelming majority of the students presenting (96%) incorporate 'relationships skill' into their examination papers. However, (4%) the students have not included the 'relationships skill' of the component of the essential thinking skills in their exam responses.



**Pie Chart 4: Students' Implementation of the 'Transformations' Skill in their Examination Papers**

It can be seen from pie chart 4 that the larger portion (92%) of students have applied 'transformation skill' in their exam papers, whereas the smaller portion which represents (8%) have not applied the skill.



**Pie Chart 5: Students' Implementation of the 'Causation' Skill in their Examination Papers**

The results clearly depict that (64%) of the students have successfully implemented the 'causation skill', but the remaining (36%) have not yet incorporated this skill.

### Conclusion

The present chapter has displayed the findings obtained after analyzing the twenty-five (25) examination papers of Master one Didactics students in the module of 'EFL Teaching and Testing', in the Department of English at MMUTO. The results have been presented using one table which exposes the examples of the essential thinking skills in exam papers and pie charts which show the percentages of students who implement the 'qualification', 'classification', 'relationships', 'transformations' and 'causation' skills with blue color; whereas, the red color presents the students who have not implemented the essential thinking skills. The findings will be interpreted and explored in the coming chapter.

# Chapter IV: Discussion

## Introduction

The present chapter examines the findings obtained from the analysis of twenty-five (25) exam papers. Our analysis concerns Master one Didactics students of the academic year 2020/2021, exam papers in the module of 'EFL Teaching and Testing'. To accomplish this aim, we have structured this chapter into five sections. The first section examines the presence of Presseisen's essential thinking skills in the students' essays. The second section addresses the distribution of the essential thinking skills within the essays. We have we have classified the categories of the essential thinking skills by exploring which skills receive emphasis and which ones are overlooked in the third section. The last section shows how the five categories of essential thinking skills are interrelated with the constructivist approach.

### 1. The presence of the essential thinking skills in exam papers

The findings chapter of the research suggest that the five essential thinking skills categories outlined in the Presseisen's taxonomy are presented in the students' exam papers. These skills include 'qualification', 'classification', 'relationships', 'transformations' and 'causation'. The purpose is to analyze these skills across a total of twenty-five (25) essays. When examining the actual distribution of the essential thinking skills within the essays, it becomes evident that there is a variation from the results chapter.

### 2. The distribution of the essential thinking skills

#### 2.1 Qualification

From the previous chapter, the application of qualification skill in exam papers is impressively advanced, with (96%) of students indicating a high level of mastery in this specific category of the Presseisen's taxonomy. This overwhelming percentage shows the

competence of the majority of students when it comes to implement the qualification skill in their written essays. However, a small minority, comprising only (4%) of the students, appear to neglect applying this essential skill. Thus, they may need additional support or improvement in this particular aspect of their academic work.

The qualification skill is generally applied at the introductions of the essays. For example, one of the students defines the concept of social cognitive theory as “*a psychological model of behavior that emerged primarily from the work of Albert Bandura, Piaget’s constructivist theory refers to the process of building and creating new knowledge by using our background knowledge and cognitive capacities*”. Another student describes the work of Vygotsky’s constructivist theory stating that “*it unfolds in the social constructivism theories of learning and teaching*”. Additionally, students describe the problem that they would like to solve at the end of the essay. It is important to present the whole concept, and then provide the details in order to fulfill the answer, as Marry (1988) believes that learning moves from whole to components (pp. 404-405). In addition, the qualification skill is the process of highlighting what makes something unique or notable among other similar things.

In this vein, it appears that the qualification skill is almost used by master one students in answering questions in their exams. Qualification skill is one of Presseisen categories of the essential thinking skills; it provides the identification of distinctive qualities of “object, concept, or statement” (Presseisen, 1991, p. 376). This hints to the description of the problem and defining the concept. In other words, the qualification skill describes how information is recognized and defined. Specially, one must understand the purpose of the activity and all of its fundamental components in order to comprehend it. It has been revealed that the essays of Master one students in the module of ‘EFL Teaching and Testing’ are full of the qualification skill (papers A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, R, S, T, U, V, W, X, Y); they have

used enough definitions and clarifications in order to provide a deep understanding about the topic.

Here are some examples of qualification skill which have written by Master one students in their essays (see pp. 36- 45).

Master one students have well demonstrated the qualification skill in their essays. The students have effectively applied their skills in citing relevant academic sources, such as the mention of *Albert Bandura's work on social cognitive theory*; they have given concise and precise definitions and have clarified key terms.

## 2.2 Classification

The findings obtained from the analyzed corpus indicate that classification is stressed by the students in their essays. Indeed, among the twenty-five (25) essays, the 'classification' skill is incorporated in fifteen (15) essays. This process of 'classification' category indicates discovering common characteristics, organizing, and categorizing data, and drawing similarities and differences (Presseisen, 1991, p.58). The classification skill enables students to 'classify', 'categorize', 'analyze', 'compare', 'distinguish', 'contrast', differentiate information, and to group things together based on their shared features, properties, or characteristics where students give that cluster a name that conveys those important details (Costa & Presseisen, 1991, p. 373). In practical terms, Master one students break down a complex dataset into manageable groups based on shared characteristics. This allows them to reach a clearer understanding of data's structure and provides a foundation for drawing a meaningful insight.

In the context of the 'EFL Teaching and Testing module', it is worth noting that a significant portion, specifically (40%) of Master one students, seem to encounter difficulties

when attempting to apply the classification skill. Conversely, the remaining (60%) of students proficiently employ the classification skill when writing their responses on their examination papers. These students demonstrate a strong ability to categorize and organize their thoughts, ensuring their answers are structured and coherent, ultimately contributing to their academic success in this particular skill. These results underscore the importance of addressing the challenges faced by those struggling with the classification skill, while also recognizing the competence of the majority who effectively utilize this skill during their exam papers. A few instances demonstrated by master one students in implementing the classification skill (see pp. 36- 45).

Through the students' statements, it seems that various techniques have been employed to classify and group related concepts, theories, and components. They have skillfully "*categorized assumptions associated with specific theories, such as Bandura's social cognitive theory*" and "*Piaget's assumptions regarding mental processes*". As they have listed and grouped the implications and the functions of theories, some of them, have adeptly identified sub-processes within a broader concept, and dividing elements into types. This organization enhances clarity and facilitates the comparison of related concepts.

### **2.3 Relationships**

From the precedent chapter, the prevalence of the relationships skill within students' essays is notably high, constituting approximately (96%) of the content. Nevertheless, there is a small group of students, totaling (4%), who do not use the relationships skill in their essays. When examining the distribution of percentages among various skills categories, it is evident that both qualification and relationships skills are equally prominent, having the highest prevalence in the students' essays. This indicates that these two skills are emphasized or well-

established in most students' essays, underscoring their importance within the assessment or the evaluation context.

It seems that the 'relationships skill' is largely employed by Master one students in writing their essays. On the basis of our analysis, we have found that only one student has not applied the relationships category. As a result, the majority of students perform well this type of the essential thinking skills. According to Presseisen (1991), relationships involve finding patterns in two or more activities, such as those that are geographic, temporal, causal, permanent, syllogistic, and mathematical (p. 376). This refers to the connections or associations between different things. It can involve how one thing affects or influences another, or how they are related in some meaningful way, for example, the "*relationship between Bandura's cognitive theory and EFL teaching and learning Piaget's*" or "*social constructivist theory has deep implications for EFL teaching*". Presseisen highlights the idea of understanding various types of connections or patterns between different concepts. This understanding allows students to make sense of the world around them, predict outcomes, and draw meaningful conclusions based on the relationships they detect.

See the page 36 until 45 where we have mentioned the examples of the relationships skill the exam papers.

Master students implement strongly the relationships skill in their essays by establishing the connections between theories and concepts with the EFL teaching and learning. Students have underscored the practical implication of these theories, particularly in the context of EFL recognizing the profound impact they have on the teaching and learning processes. Their essays reveal a keen understanding of how these theories, specifically Piaget's focus on the relationship between human cognition and culture, and Bandura's emphasis on observational learning and its applicability in the teaching of English, contribute significantly to the pedagogical practices in the EFL domain.

## 2.4 Transformations

The results of a corpus analysis show that students generally emphasize transformations in their essays, the ‘transformations’ skill is used with twenty-three (23) of the twenty-five (25) essays. From this, it can be deduced that the students employ transformations to make their concepts more valid and explicit. Especially, since transformations skill is building meaning by linking known to unknown features (Presseisen, 1991, p.58). It involves existing knowledge, concepts, or experiences (background) and using them to produce, create or perform a new one. In another expression, transformations skill is to take what you already know and use it as a foundation for understanding and making sense of new situations. This process is crucial for higher order thinking since it facilitates learning, critical thinking, creativity, solving problems by enabling students to draw connections, synthesize insights, derive significant outcomes based on the engagement between known to unknown.

Michra and Kotecha (2015) affirm that higher order thinking skills encompass three distinct dimensions; the ability to apply acquired knowledge to practical real-life situations known as transfer (1), the capacity for critical analysis (2) and proficiency in effectively solving problems (3) (p. 2). Additionally, Robinson (2011) agrees, that although the significance of cognitive development is widely acknowledged, students’ performance in assessments of advanced thinking skills underscores the essential requirement for students to cultivate the competencies and mindsets necessary for effective thinking (p. 13). In summary, it is insufficient for students to only acquire knowledge; they must also nurture the abilities and mindsets that empower effective thinking (p. 13). All in all, it is not enough for students to simply absorb facts and information, they must also develop the skills and attitudes that enable them to think effectively, as it is asserted by Presseisen (1991) that “*the fundamental*

*concept underlying the current thinking skills movement is the idea that students have the capacity to enhance their thinking abilities through focused instruction in schools” (p. 17).*

Broadly speaking, the transformations skill is linking well-known to obscure characteristics and generating new meanings (Presseisen, 1991, p.376). This linking of known and unknown allows us to create new meanings and insights; as a consequence, enhancing our understanding of the subject matter. It is a way of expanding our knowledge and making the unfamiliar more accessible by building on what we already know. Therefore, we notice that ‘transformations skill’ has a relation with the concept of creativity as Katami (2001) describes creative thinking as *“the process of transforming familiar knowledge into unfamiliar concepts, and changing the known into unknown”* (Cited in Al-Momani & Al-Dlalah, 2018, P. 126).

It is obvious to see from the findings chapter the number of percentages of students who implement the transformations skill which encompasses (92%). As a consequence, most of students have performed in transformations skill. Nonetheless, it is important to mention that a small portion of students, making up (8%) of the entire group do not integrate transformations category of the essential thinking skills outlined in the Presseisen’s taxonomy into their written essays. Even it is a low percentage, but it is crucial for students to ensure their ability to acquire and apply transformations skill effectively. As Al-Jarrah et al. (2018) emphasize the importance of connecting learning to prior knowledge to facilitate meaningful and effective learning experiences (p. 208). Likely, knowledge must not only be described, but it must also offer more detailed explanations of how information is transformed (Smith *et al.*, 1993, cited in Janice & Gale, 1998, p. 110). Some illustrations of transformations skill from master one students’ essays are found in pages 36-45.

Such findings indicate that Students assimilate and accommodate knowledge in writing their essays by highlighting the importance of their active roles. We note that after memorizing, students aim to reproduce what they have acquired in order to demonstrate their comprehensions. However, it is not only about memorization, but also about actively using one's experiences and background to construct a personal knowledge.

## 2.5 Causation

An analysis of a such a finding indicates that the students generally implement the causation skill in their exam papers. Among twenty-five (25) papers, sixteen (16) of them practise that skill. The benefit of causation skill is very important; it allows students to identify cause and effect. Presseisen and Costa (1991) affirm that this category is the process or action that causes or contributes to an outcome (p. 373). In simpler terms, causation is the mechanism or action through which an event (cause) influences the occurrence of another event (effect). It is a way of explaining how things are connected and how changes in one thing can lead to changes in another. Since it is based on the occurrence or circumstance caused by some other condition or event; the consequence brought about by the preceding situation (p. 373).

In short, the process of cause and effect is a procedure of analyzing events to understand why they happen and what happens as a result. Students are asked to argue, justify, criticize, evaluate, judge, and assess their answers which means they develop their critical and logical thinking. *“Both skills (critical and logical) primarily revolve around the examination and evaluation of arguments”* (Cleave, 2016, p. 1). Additionally, Richards and Elder (2007) state that *“critical thinking is a skill of examining and assessing thoughts with the aim of enhancing them”* (p. 4). It is better for master one students to use the causation skill in their exam papers in order to write persuasive essays.

The findings within this research work shed light on the performance of master one didactics when it comes to causation skill, revealing that it is estimated at (64%). However, a specific group of students, amounting to (36%) tackle difficulties in effectively executing this particular skill due to the lack of understanding. This observation suggests that these students may not fully grasp the complexities of causation, potentially indicating a need for more comprehensive understanding and practice. In order to achieve a complete and a well-justified answer, it is evident that these students require further guidance and practice in enhancing their success in implementing these essential thinking skills. We have picked some examples from the results chapter (see pp. 36-45).

The examples provided from the results chapter illustrate the use of causation skill among students. They are not only shown an understanding of cause and effect but also suggests the ability to make informed judgments. The examples emphasize the importance of fostering such abilities in education, as they equip students with knowledge and with the capability to analyze, judge, criticize the information.

### **3. The categorization of the essential thinking skills in exam papers**

Thinking skills are instruments that assist students in going beyond the simple assimilation of knowledge, enabling them to enhance their comprehension, generate concepts, create innovative solutions, make choices, and effectively manage their progress through planning, monitoring, and assessment (CCEA, 2007, p. 2). Based on the data analysis, it has been observed that the arrangement of the five essential thinking skills can be organized in a specific order. The first position is occupied jointly by the qualification and the relationships skill indicating that these two skills are most frequently demonstrated or emphasized in the data. Students appear to excel in these areas or exhibit strong comprehension of them.

Following closely, is the transformations skill taking the second position. This suggests that it is not as prevalent as qualification and relationships, transformations remains a significant focus within the data, with students showing a high level of proficiency in this skill.

Next, the causation skill holds the third place. Even though this skill is less focused in the data compared to the others, it is essential for students to implement it in order to achieve well-developed essays. It enables them not only identifying and explaining the cause and effect but also enhancing students' ability to provide in-depth analysis and insights and to make valid decisions. Ennis (1985) and Moore (2010) suggest that in order to arrive at successful decisions, it is essential to gain comprehensive understanding of the issues or circumstances that necessitate decision; this understanding serves as the foundation for establishing criteria to evaluate decision (cited in Heard, 2020, p. 15).

Finally, in the last position, there is the 'classification skill'. It appears to be the least frequently employed skill among the students. It is important to note that the order we are discussing is determined by what we have observed during our data analysis. This particular order helps students gain valuable insights into the distribution and the prevalence of these essential thinking skills among the students' essays. In other words, our findings underscore the significance of understanding how students approach and engage with the 'classification skill', shedding light on their relative prominence and demonstrating the varying degrees to which it is integrated into students' writing essays.

Such a finding reflects the idea developed by Kagan (2003) stating that these skills are not something to be simply stored in the brain; instead, they are processes that, when applied and exercised, enhance the brain's efficiency (cited in Assaf, 2009, p. 6). This indicates that the more students practise, the better they become effective thinkers. For instance, when

students engage in writing their essays that stimulate their thinking processes, such as problem-solving, critical analysis and creative reasoning, they are not only improving their cognitive abilities but also making their brain function more effectively and efficiently.

#### **4. Constructivism and the essential thinking skills**

After analyzing the exam papers, we have deduced that the constructivist approach has a great power with the concept of the essential thinking skills, as stated by Taber (2011) *“constructivism suggests that individuals must actively generate their own knowledge, and the sense of personally uncovering a pattern, as opposed to just being informed about it, can greatly enhance their motivation”* (p. 56). In addition, Hawkins (1994) considers that *“knowledge is actively constructed through interactions and exchanges among individuals, encompassing the process of receiving feedback, assimilation of new information, the adaptation of existing knowledge, and the evolution of one’s comprehension over time”* (cited in Mike Watts, 1997, p. 309). The previous quotations promote that learning is most effective when it involves active participation. Broadly speaking, when students contribute to make sense of the learning process through their own efforts in assimilating, accommodating information and constructing new knowledge, they are not only more motivated but also more likely to develop a deep and a meaningful understanding of the subject pattern. In fact, we have related each category of Presseisen’s taxonomy (qualification, classification, relationships, transformations, and causation) with constructivism.

Students articulate and share basic concepts about a topic based on their existing knowledge. For example, they cannot explain *‘cognitive theory’*, if they are unfamiliar with its meaning. Correcting and answering such questions demonstrate their qualification skill, indicating a comprehension of the topic. Failing to use this skill suggests a lack of information. This skill aligns with educational philosophy of constructivism. As Hoover

(1969) states fundamental ideas that include the simple concept of constructed knowledge, the main importance of the qualification skill is that learning is an encounter in an unfamiliar learning context (cited in Amineh, 2015, p. 10). As it is mentioned in the students' essays that *Albert Bandura states that a child or student can learn through the environment, this means that the student observe and acquire knowledge through the world around him then construct new one.*

The essays of Master one students exemplify the extensive application of the qualification skill, as they consistently incorporate a wide range of explanations to enrich the reader's comprehension of the subject matter, showing their advance proficiency in relating constructivism with qualification skill. It is important to acquire knowledge in order to master qualification skill because it aims to nurture thoughtful individuals who possess maturity and reflection skills (OCR, 2011, p. 6). The objective of the current qualification is not simply to facilitate students in acquiring comprehensive set of thinking skills, but also to explicitly raise their awareness about these thinking skills (p. 5).

It can be inferred from this that the students use classification as a way to make their ideas more concrete and clearer. This goes with the principle of constructivism that active knowledge can be manifested in the learners' ability to provide examples and categories that facilitate the understanding and assimilation of abstract knowledge. Different constructivists are committed to the notion that learning requires the learners' active participation in order to acquire understanding (Jenkins, 2000, p. 601). From the essays analyzed, students are not simply memorizing predefined categories, but they are active participants in the processes of identifying similarities, differences, distinguishing features and presenting their ideas in an organized and a systematic manner. When students identify in their essays *four observational processes of learning of Bandura* or *four main elements of constructivist theory*, they do not only group the elements in one category, but also they extract the similarities and differences

between them. CCEA (2007) advocates that classification refers to recognizing and arranging patterns and connections using various techniques like grouping, categorizing, comparing, and differentiating (p. 43). For instance, *students classify four main implications to Piaget's constructivist theory including; understand cognitive development, keep students active, incongruity and provide social interaction*. In fact, constructivism and classification skill align by advocating learner-centered, and contextually meaningful approaches for understanding and organizing information. Learners are encouraging to construct their own knowledge, classify concepts or items into a specific category, or to group items that share common features together, creating distinct cluster, to compare similarities, to distinguish the differences which help in making accurate understanding. American Libraries Association (1989) assert that being information literate entails the capability to identify the need for information and possess the skills to efficiently find and use the required data (cited in Heard *et al.*, 2020, p. 4). This approach can lead to a more meaningful and flexible understanding of classification concepts.

Students construct their understanding of effective relationships interactions through active engagement and reflection, aligning with the constructivist view of knowledge construction. It is stated by Amineh and Davatgari (2015) that constructivism is a result of the combination of multiple theories into one form (p. 9). In this sentence, constructivism is not an isolated concept but rather a synthesis, analysis, and linking various theories together. This demonstrates the ability of Master one students to show how one idea is influenced or shaped by the merging of several other ideas to form a cohesive whole in writing their essays.

In a similar context, the goal of the relationships skill is to comprehend how things function or how various constituents are connected to form a whole by breaking down parts into their smallest units and identifying relationships between them, as it is confirmed by Anderson *et al.* (2001). The process involves breaking down a substance into its constituent

parts and understanding how these elements relate to one another and the overall structure (p. 68). Furthermore, the concept promotes students' creativity and analytical thinking skills by emphasizing the act of combining components to form a meaningful or practical whole, essentially recognizing elements in new patterns or structures, ultimately leading to the creation of a product (p. 68). Many answers show that Master one students engage actively in implementing the 'relationships' skill, for example, "*the application of these implications is really important for effective teaching or Bandura's social cognitive made a great contribution in teaching process more precisely EFL teaching*". Overall, the connection between relationships skill and constructivism lies in the fact that both concepts acknowledge the active role of learners in shaping their learning. This idea is agreed by Cross (1987), who states "*when students actively participate in the learning process, they acquire a deeper understanding compared to when they passively receive instruction*" (cited in Bonwell & Eison, 1991, p. 3).

From our analysis, we conclude that transformations skill is related to the constructivist framework. After analyzing the answers of students, we notice that they do not simply memorize or mimic knowledge but rather assimilate and accommodate it, they also rely on their pre-existing knowledge and they are encouraging to produce new one in order to write a complete and a coherent essay.

We summarize that 'transformations skill' goes beyond constructivism. According to Billet (1996), "*rather than passively absorbing knowledge, students actively construct it by incorporating new knowledge and experiences into what they have already known and modifying and reinterpreting prior knowledge in order to make sense of the new*" (cited in Kerka, 1997, p. 2). Furthermore, students adjust and reinterpret their previous understanding in order to comprehend and assimilate new information effectively. This skill was applied by students. An illustration from one student's essay is: *the learner will be able to learn new*

*languages and assimilate new information once he reaches the stages. Another example is: assimilate new information and help them make the appropriate modification, so they can accommodate the information.* Naylor and Keogh (1999) share the same idea that the basic principle of this strategy is that students can only interpret new circumstances in light of their prior knowledge and learning is an active process in which students relate new concepts to what they have already known to create meaning (Cited in Brader-Araje, 2002, p. 2).

Master one students demonstrate a strong ability to back their claims with evidence. Such students are talented at presenting their points clearly and effectively, making their essays engaging and convincing. This demonstrates that the constructivist approach to learning aligns well with the development of causation skill. Indeed, Master one Didactics students cannot support their essays with the causation skill without having the knowledge they have acquired before. For example, “*students should assess and evaluate themselves. For this reason, the teacher should develop students’ self-observation, self-judgement, and self-reaction*”. This illustration shows the cause and effect of learning development. The following statement appears that causation skill is connected with constructivism; Beyer (1984) confirms that the processing of sensory information in the mind to construct ideas, arguments, or judgments (cited in Presseisen & Costa, 1991, p. 56). Students involve the brain’ ability to interpret sensory input and use it as a basis for various subjects.

We notice that both concepts, causation and constructivism, emphasize students with active engagement, prior knowledge integration, authentic contexts, exploration, reflection, and the construction of mental models in writing their essays. In this vein, Fisher and Scriven (1997) assert that “*the ability to justify arguments involves articulating thoughts, examining and supporting personal claims and perspectives with evidence and logical reasoning, and avoiding biases in one’s thinking process*” (cited in Heard, 2020, p. 14). Therefore, when a collection of thoughts reinforces one another and coherently fit together, the thinking is

considered logical (Richards & Elder, 2007, p. 10). The constructivist approach provides a strong foundation in developing a clear understanding of cause and effect, the ability to analyze and evaluate questions in depth and “*to form judgements by considering specific requirements and establishing norms*” (Anderson & Krathwohl, 2001, p. 68).

### **Conclusion**

This chapter has put stress on the interpretation of the findings obtained from the analysis of the examination papers concerning Master one Didactics students in the module of ‘EFL Teaching and Testing’. The aim was to answer the fundamental questions stated in the general introduction and to confirm or refute the hypothesis suggested there. Our first research question seeks the extent to which Master one Didactics students implement the essential thinking skills in their exam papers. Absolutely, we have advocated two main hypotheses. The first one conceives that Master one Didactics students implement the essential thinking skills to a high extent in writing their essays. As a result, the analysis confirm that the essential thinking skills are highly implemented by students to write clear and comprehensible essays. The second hypothesis is refuted the fact that the essential thinking skills are implemented to a low extent in essays.

In fact, our second research question is to determine which essential thinking skill is mostly implemented by master one didactics students in their examination papers. We have hypothesized that the classification and the transformations skills are the mostly implemented by Master one didactics students in their essays. The results explored in this chapter provide that the qualification and the relationships skills are the dominant skills in the students’ essays. So, the previous hypothesis is not confirmed.

After our analysis, it has been observed that the skills of ‘qualification’ and ‘relationships’ are the most prominently featured, followed by ‘transformations’ then ‘causation’ and lastly ‘classification’ which has the lowest representation. As we conclude that the Presseisen’s taxonomy of the essential thinking skills share a common goal with the constructivist approach in promoting a deep understanding, active learning and enhancing the academic performance.

# General Conclusion

## **General Conclusion**

This dissertation was set to investigate the integration of the essential thinking skills within the examination papers designed for master one didactics students in the module of 'EFL Teaching and Testing' in the Department of English at MMUTO in the academic year (2020/2021). The current study analyzes twenty-five (25) examination papers. Our analysis is based on the theoretical framework known as the essential thinking skills as outlined in Barbara Presseisen's Taxonomy. This theory encompasses five distinct categories namely 'qualification', 'classification', 'relationships', 'transformations', and 'causation'. Our aims seek to check the extent to which Master one students implement the essential thinking skills in their essays and to demonstrate the mostly implemented skill.

To carry out our study, we have focused on the data collection procedure and the data analysis. In the data collection phase, we have described the corpus of investigation which comprises twenty-five exam papers of Master one Didactics students in 'EFL Teaching and Testing' module at the Department of English at MMUTO. In addition, we have conducted the data analysis which is based on mixed-method approach that combines both quantitative and qualitative method. To calculate the percentages, we have relied on the SPSS computer program which deals with the quantitative data. As regards, the qualitative data, we have tackled the content analysis. To reach the objectives set, we have used a table and pie charts to organize and clarify our results.

From the results obtained, qualification and relationships skills hold the highest percentage accounting for (96%). We have concluded that master one didactics students succeeded in implementing both skills in writing their essays. Indeed, the aim of qualification category is to equip students of Didactics at MMUTO with the ability to effectively assess and

## **General Conclusion**

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analyze information and ideas in a structured and a systematic manner, while the relationships skill focuses on the capacity to recognize and understand the connections between various elements or concepts. In summary, these categories, qualification and relationships, of thinking skills are fundamental for a deeper understanding of information, effective problem solving and informed decision-making.

Transformations skill has a great importance since it is followed by the majority of students (92%). This skill involves assimilation and accommodation process where students did not just produce new aspects relying on background knowledge but also modifying, adjusting, transforming that existing knowledge to reproduce new one. Transformations skill helps students to be autonomous in writing their essays, as they were given the chance to express and enlarge their answers in order to write comprehensive and clear essays.

Following the three precedent categories of essential thinking skills, causation records (64%). This result shows that students master the use of this skill. However, it is still less dominant than the 'qualification', 'relationships', and 'transformations' skills. When it comes to apply the causation skill, the objective is to involve the ability to explain cause and effect, which can enhance the quality and depth of their writing, it helps also students to clarify their thoughts and better understand complex topics. Additionally, it encourages students' critical thinking and incorporates strength arguments in order to support their claims and making their essays more convincing.

We have categorized the classification skill in term of its implementation, it encompasses (60%). It is worth noting that classification skill occupies the last position among the various essential thinking skills observed before. Even though it may not be as a prominently featured as some of the other skills, its significance should not be

## General Conclusion

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underestimated. Broadly speaking, classification skill enables students to organize their ideas by identifying similarities and differences among various concepts.

After analyzing the twenty-five (25) exam papers which are written by master one students specializing in Didactics, we depict that the essential thinking skills are closely aligned with the principles of constructivism. Indeed, these perspectives intend to the construction of knowledge by the learners rather than passive reception of information. This way of learning enhances them to understand things better, work harder, and come up with more creative, critical, analytical and logical ideas. It is all about helping students learn deeply and become more efficient and effective in writing their essays.

This study has some limitations; the essential thinking skills is a wide range and complex topic. In the beginning of our analysis, we have struggled with the identification of the qualification, classification, relationships, transformations, and causation categories in students' essays. In addition, we aimed to use another tool like questionnaire but the students have graduated since we have analyzed their essays of the academic year (2020/2021).

In conclusion, we wish to convey our optimism that the outcomes we attained in the current research will pave the way for future exploration within the same research domain which is 'the essential thinking skills'. As a feasible guidance, this could entail conducting an empirical study on the same subject at the master level or expanding the research scope to compass additional areas and case studies. Our hope also is to integrate the teaching of the essential thinking skills in the learners' curriculum.

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# Appendices