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| RESEARCH ARTICLE

The Impact of Portfolio Task Assignment on the Development of Moroccan EFL Middle School Learners' Critical Thinking Skills

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| ABSTRACT

The 21st century, a transformative era often referred to as the century of knowledge, is characterised by rapid global economic integration, heightened connectivity, and technological progress. These forces reshape human existence across all domains and underline the need for critical thinking. This study examines the impact of implementing the portfolio task assignment on Moroccan middle school learners' development of critical thinking skills. A test based on Bloom's Revised Taxonomy was used to address the research question about the impact of the portfolio task assignment on learners' critical thinking development. This study followed a quasi-experimental research design, specifically a non-equivalent control group posttest-only design. Data was analysed using the IBM Statistical Package for the Social Sciences version 29.0.2.0. The test results revealed that students who built their portfolios scored higher than those who received regular instruction. Furthermore, samples of portfolios and test responses displayed a range of critical thinking skills, including analysis, evaluation, and creation, aligning with teachers' positive views. The findings emphasise the importance of integrating the portfolio task assignment pedagogical tool into the educational system to foster critical thinking skills. As such, the results hold significant implications for educators, especially EFL teachers in Moroccan middle schools.

| KEYWORDS

Portfolio task assignment, critical thinking skills, portfolio-based learning

| ARTICLE INFORMATION

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1. Introduction

In today's ever-changing global arena, characterised by rapid technological advancements and shifting societal norms, the demands placed on individuals in the 21st century are continually evolving. These transformations create complex challenges requiring individuals to continually adapt their skills and mindsets. To prepare students for such challenges, it is increasingly evident that they must cultivate a comprehensive set of essential life skills to survive and thrive in this dynamic environment. In this context, Coughlin (2010) emphasises the importance of 21st-century skills in shaping students' futures, directly influencing their educational journeys, career opportunities, and personal development. These skills encompass a range of competencies, including higher-order thinking, effective communication, collaborative teamwork, and proficient media knowledge (Coughlin, 2010).

To elaborate on the necessity of the abovementioned skills, Binkley et al. (2012) elaborately expressed that such skills play a very critical role in achieving success across academic, professional, and social spheres. Among these competencies, critical thinking emerges as a foundational skill that is indispensable in today's world. Analysing information, evaluating sources, and constructing reasoned arguments are becoming essential for academic achievement and informed decision-making in everyday life (Binkley et al., 2012). Cooper and Patton (2001) noted that the ability to think critically involves assessing situations from multiple perspectives and approaching problems creatively. They emphasise that individuals need to think both critically and creatively to achieve success (p. 4). This highlights the fact that cultivating critical thinking skills goes beyond mere academic

performance; it makes people able to navigate complicated societal challenges, making meaningful contributions to their communities. In summary, as the demands of the 21st century continue to evolve, developing these essential life skills, particularly critical thinking, becomes imperative for students. Therefore, educational systems need to prioritise teaching these skills in order to make students capable of shaping a future which is more successful and fulfilling (Cooper & Patton, 2001).
To effectively prepare young learners in Morocco for the challenges of higher education and the job market, it is very important to focus on establishing a solid foundation in critical thinking skills, which are nowadays increasingly being recognised as vital because of the rapid change in the world. Research conducted by Ketelhut et al. (2010) underscores the importance of educational curricula prioritising inquiry-based learning and complying with national content standards. Such an approach creates varied opportunities for students to actively get engaged with the teaching materials, to ask relevant questions, and to hone their problem-solving abilities. Hence, critical thinking skills are essential for effectively addressing and coping with challenges encountered in the real world (Coughlin, 2010).

2. The portfolio

Reviewing the literature on the portfolio, informative definitions can be cited for this pedagogical tool commonly used for learning and assessment. Merriam–Webster dictionary (2020) defines a portfolio as "a selection of a student's work (such as papers and tests) compiled over some time and used for assessing performance or progress". The portfolio takes various definitions in the literature that appear to have much in common. Citing some of the definitions, Hancock (1994) asserts that portfolio assessment refers to "an ongoing process involving the student and the teacher in selecting samples of student work for inclusion in a collection, the main purpose of which is to show the student's progress." (p. 4).
In light of the earlier assertion, it is concluded that a portfolio is a collection of students' work and documents. It represents a selection of performance. Simply put, a portfolio may be defined as a folder that contains a student's selected pieces of work and his/her evaluation of the strengths and weaknesses of the pieces selected. It can also include some works-in-progress which demonstrate the process of writing an essay, for instance. In line with this, Paulson and Meyer (1991) define a portfolio as a deliberate compilation of work that demonstrates the student's endeavours, advancement, and accomplishments in learning.
In light of the previously stated definitions, a portfolio can be regarded as a growing collection of student work in which every additional piece has a purpose and a specific reason. Students need to select every addition carefully. The primary purpose behind a portfolio is to allow the student to show and demonstrate his / her learning and progress to others. Besides, it is also understood that while students build their portfolios, they become learners and active participants in learning and assessment processes.

3. Critical thinking

It is widely agreed that critical thinking skills are essential in the teaching and learning process. However, there is no one definition for critical thinking, as regarded by Alfadhli (2008), who argues that there is less agreement on how critical thinking is defined. Having reviewed the literature on critical thinking, it is clear that a specific definition is not easy to come by because it encompasses diverse areas of interest and disciplines. Such difficulty originates from reviewing the literature, which clearly shows that different scholars have given diverse definitions of critical thinking. In this regard, the field of critical thinking is illustrated by Cuban (1984) as "a conceptual swamp", meaning that critical thinking as a concept is overwhelmed with definitions; therefore, the issue of critical thinking is a complex field of study as it originates from various disciplines such as philosophy and cognitive psychology (Morgan, 1995; Lewis & Smith, 1993).
To deeply understand the concept of critical thinking, it is deemed essential to shed light on its historical background to have a lucid image. Having reviewed the literature on critical thinking, it is noticed that this concept was at the heart of debates. Critical thinking is deeply rooted in Socrates, while discovering the disciplinary question called the Socratic question technique, aimed at generating thoughts used for specific reasons, as explained by Paul & Elder (2007). Socrates resorted to this technique, which he implemented with his students to discover logical thoughts, recognise complex ideas and explore rational choices (Paul & Elder , 2007). According to Maiorana (1992), Socrates' questioning method acted as a teaching strategy of critical thinking through which he designed a critical thinking work schedule to produce what is referred to as scepticism. During the Middle Ages, critical thinking also gained more focus, which was dominant, especially in scholars' writings and teachings.
The theory of socio-constructivism is also associated with critical thinking; however, reviewing literature related to such a theory falls beyond the scope of this thesis. Instead, the term is being used for this study as referred to by Mercer (2000) and Moll (2014), which is derived from Vygotsky's work, through which language is characterised as encompassing two functions. In this regard, language is considered a tool for people to formulate ideas and collaboratively share and develop knowledge. The pedagogical suggestions in the literature related to critical thinking appear to be consistent with the viewpoint of the socio-constructivist theory. This is precisely the case when it comes to highlighting the importance of student discussion and questioning and the teacher's adoption of a facilitative rather than a didactic approach (Le Cornu et al., 2003). In this case, some theorists recognise the value of a dialogical or discursive approach while teaching critical thinking regarding discussion and student questioning (Ennis, 1987; Siegel, 1988; McPeck, 1990; Paul et al., 1995).

Besides, Thayer-Bacon (2000, p. 134) explains that "a dialogical style of teaching encourages students to develop logical reasoning" by allowing ideas to be explored in greater detail. Along the same lines, Meyers (1986) asserts that critical thinking skills are best developed in an environment of dialogue, exchange, inquiry, and problem-solving. This is because students have more time for 'quiet pondering…to mull over and digest all the new information, concepts and methodologies being presented to them' (Meyers, 1986, p. 63). Therefore, students can activate their knowledge and interact in classroom activities such as dialogues, discussions, and inquiry in a more fluent way because they are using the knowledge they have activated. So, this approach implies that teachers must promote tasks and activities that foster and encourage interaction (Meyers, 1986).
Numerous theorists have researched and defined critical thinking differently, yet more than one definition adequately expresses what it is in one clear definition (Chun, 2010; Steffen, 2011). This complexity in defining the concept of critical thinking is due to the reality that there are so many aspects to it, which makes it challenging to narrow down the idea into a single description that summarises them all (Bessick, 2008).
Steffen (2011) investigated how educators view their critical thinking instruction and how learners view their critical thinking education. According to Steffen (2011), "reasoned, open thinking fused with knowledge where one thinks about thinking" (p. 65) is what makes up the themes of critical thinking. Despite the many definitions of critical thinking that have been published, Chun (2010) clarified that "it is a form of higher order thinking, along with analytic reasoning and problem-solving" (p. 20). According to Steffen's research, critical thinking involves "reflective, making reasonable judgments and understanding that real problems are unclear" (p. 10). According to Fisher (2001), "reasoned and reflective thinking" is a common element among critical thinking theories and dispositions (p. 2). According to Lai (2011), there are similarities in skills such as analysing, inferring, judging, and evaluating, even though researchers have not come up with a universal definition of critical thinking.
In light of the previously reviewed literature on the definition of critical thinking, it is evident that the literature presents many definitions from key theorists and other scholars. Numerous definitions that came before this one entail using individual mental processes for problem-solving, judgment, analysis, evaluation, and application. Some definitions of critical thinking state that for an individual to carry out the mental processes necessary for critical thinking, they must possess certain talents.
Six critical thinking skills are part of the critical thinking paradigm that Facione (1998) arranged. They covered interpretation, analysis, testing, inference, justification, self-control, and other critical thinking abilities. Furthermore, Bloom (1956) developed a hierarchy of thinking for educators to arrange from easier to harder. Knowledge, comprehension, application, analysis, synthesis, and assessment were among the levels described by Bloom (1956). But later on, Anderson and Krathwohl (2001) updated Bloom's Taxonomy, moving the stages up to correspond with the following aspects of more contemporary education: recall, comprehend, apply, analyse, evaluate, and create. Using the top three levels of Bloom's Taxonomy, Ennis (1985) increased the critical thinking levels and developed the qualities and skills of a critical thinker. To indicate the level of understanding required for students to complete activities, Webb devised the Depth of Knowledge model. These levels comprised recollection, skill, strategic, and extended thinking (Olvera et al., 2009).
Although there is no agreed-upon definition of critical thinking, a broad term, almost all definitions contribute to its growing picture. For this research purpose, it is deemed helpful to narrow the focus and concentrate on the phrase critical thinking, which is variously defined and occupies a fundamental status in academic and public life (Cooper & Patton, 2001). Upon reviewing the critical thinking literature, it became evident that there was a need to concentrate on a single definition of critical thinking and the characteristics that define it. Scriven and Paul (1996) included action words to define critical thinking.
In brief, critical thinking is understood in various ways by different scholars. This study adopts the definition provided by Scriven and Paul (1996). They describe critical thinking as "the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from or generated by observation, experience, reflection, reasoning, or communication, as a guide to belief and action" (National Council for Excellence in Critical Thinking, para. 1).
In addition, modern educational research has paid greater attention to teaching critical thinking, especially with the shift from teacher-centred to learner-centred approaches. In this regard, modern education has paid influential attention to critical thinking, which is highly related to questioning. For this purpose, the following subsection sheds light on critical thinking in teaching and learning.

4. The impact of the portfolio task on learning

Portfolios serve a variety of essential functions within the educational sphere. It is a purposeful, systematic process of collecting and evaluating student products to document progress toward the attainment of learning objectives. Portfolios are instrumental in fostering student self-reflection and facilitating increased engagement in their learning processes (Zollman & Jones, 1994). Another critical rationale for using portfolios is articulated by Dochy and McDowell (1997), who assert that portfolios enhance students' intrinsic motivation. They regard portfolios as powerful tools for authentic learning experiences and activities.
Different empirical research studies have been conducted to find evidence demonstrating that using the portfolio for teaching and assessment supports and encourages students' learning. For instance, Valdez (2001) implemented the student portfolio to follow learners' progress and growth by taking a 7th-grade life science course as a case study. Valdez (2007) concluded that portfolios allowed students to reproduce and explain what they learned.

Another study was conducted by Dori (2003) with two experimental and control groups of senior high school students to investigate their learning outcomes in chemistry and biology. In the two experimental groups, alternative assessment methods were applied, including portfolios. The research results showed that the students in the experimental group scored significantly higher than their control group peers on tasks in which higher-order thinking skills were required on the part of the learners. Although portfolio assessment is recommended in the literature, some studies have demonstrated contradictory results regarding the benefits of portfolio assessment on learning. Such studies showed that portfolio implementation did not cause any difference in students' learning. For example, Slater et al. (1997) compared two groups of students: the first group was assessed using portfolio assessment, while the second group was evaluated using traditional testing techniques. Results showed no significant differences regarding learners' achievement between the two groups in the final examinations. Another study by Struyven et al. (2006) showed that portfolio assessment did not deepen students' approaches to learning since they felt that tasks were complex and challenging, resulting in pressure and workload.

In previous research, educators have shown that portfolios have many advantages. Bataineh and Obeiah (2016) assert that portfolios are self-directed learning tools that promote students' improvement in academic achievement. In addition, portfolios can be considered an effective tool for fostering motivation, giving learners a sense of accomplishment, especially when they finish their work and produce their portfolios. In the same context, in a survey-based study by Kizilkaya (2014), the researcher investigated high school students' attitudes and views about alternative assessment approaches. The research was primarily conducted to discover students' preferences regarding alternative and traditional evaluation. The high schoolers generally supported alternative assessment as they found it motivating and appealing.

In a nutshell, the implementation of the portfolio task assignment is highly recommended as an efficient tool for promoting critical and reflective thinking among learners. Portfolios provide students with a structured way to document their learning experiences over a certain period. Students can create a comprehensive overview of their educational journey by systematically recording their thoughts, assignments, projects, and other relevant activities. Taking this into account, the portfolio task remains an essential resource for nurturing and refining students' critical thinking skills. It provides a structured way for students to reflect on their experiences, to analyse their progress, and to connect theoretical knowledge to real-life situations. By engaging students in this process, they can develop their ability to think critically and make informed decisions in various aspects of their lives. In addition to documentation, portfolios encourage students to assess their own progress and reflect on their understanding of various concepts within the subject matter. This self-assessment process allows learners to identify their strengths and weaknesses, set personal goals, and take ownership of their educational experiences. Moreover, using a portfolio fosters a profound evaluation of the quality of their work. It prompts students to think deeply about the connections between theoretical knowledge and practical application, thereby enhancing their ability to apply what they have learned in real-world contexts. This integration of theory and practice not only solidifies their understanding but also improves their overall learning outcomes, making portfolios an invaluable component of a well-rounded educational approach. (Kizilkaya, 2014)

5. Comparison between the portfolio task assignment and critical thinking

Critical thinking and portfolios are apparently separate elements. However, they have some things in common, especially in educational research, wherein the focus is placed on the learners of foreign languages and 21st-century skills. Demirel (1999) specified five basic dimensions of critical thinking, namely: coherence, integration, applicability, competence and communication. The first, coherence, is related to critical thinkers' abilities to identify their contradictions and reduce them. Integration means that the individual can establish relationships among his or her thoughts. As for applicability, the individual is expected to be able to apply their thoughts to a given model. Concerning the dimension of competence, the individual is expected to be able to base his/her experiences and conclusions on realistic grounds. Finally, competence refers to the individual's ability to express and share thoughts through effective communication in an understandable manner.

The portfolio is commonly considered both a process and a product that can provide learners with a personal space to evidence their own experiences and articulate their learning. By building portfolios, students will have the chance to experience the five elements stated above coherence, integration, applicability, competence and communication. In such a manner, portfolios implemented in foreign language learning contexts can be seen as students' productions through which they have more freedom to assert and express themselves more openly without the pressure imposed by the classroom atmosphere and teachers' control over the teaching process. In addition to that, portfolios can define students' learning as well as their mastery of various skills.

Trying to compare critical thinking and portfolio, it is worth mentioning that listing similarities or differences between them is not feasible. In contrast, the two concepts are strongly interconnected in the sense that using portfolios as a teaching tool has proved to be very helpful in developing learners' critical thinking skills because the task of portfolio building encompasses various processes, namely planning, compiling, sharing, discussing, reflecting, giving and receiving feedback. Put differently, the portfolio, as a product or process, can be regarded as the result of critical-thinking processes. Being able to discuss and reflect on learning experiences or outcomes can be a challenging task. Instead, it should involve elements of thinking deeply and critically. Accordingly, the creation of portfolios is necessarily the opportunity that allows learners to be critical thinkers, for they bear responsibility for assessing and producing their own collections.

In light of the abovementioned ideas, the portfolio can be considered a tool of enhancing higher-level thinking skills since it can be used to record intellectual growth, which subsequently leads to a reflective and critical thinking process. Linking portfolios with critical thinking, it was found that portfolios provide teachers with concrete evidence of critical thinking. In other words, the writing of portfolios can increase evidence of critical thinking outcomes. In the same sense, portfolios are found to be helpful for teachers in assessing students' higher-order thinking skills as well as assisting students in training their higher-level thinking skills, such as critical and analytical thinking. Furthermore, the portfolio helps students develop their critical thinking skills by allowing students and teachers to cooperate and solve various problems. Tezci and Dikici (2006) argue that portfolios can also foster students' learning responsibilities. It is clearly understood from the abovementioned claims that portfolios can help students become more autonomous, reflective and independent learners who think critically. Besides, portfolios are considered tools for involving learners, improving teaching and learning, and reflecting assessment reform. They also demonstrate authentic learning and a common vision of goals (Mokhtaria, 2015).

Taking into consideration the aforementioned, it is imperative to acknowledge that the portfolio serves as a valuable instrument in honing and nurturing students' critical thinking aptitude within the specific academic framework and broader scope of life. In this particular regard, Courtney and Abodeeb (1999) conducted research which led them to find that the process of analysing students' compilations in their portfolios is very indicative of discovering that students' reflections on what and how they study are strong enough to help them develop and foster a sense of critical thinking towards their schooling. Hence, the use of portfolios is very likely to provide learners, who are unquestionably essential contributors to the teaching and learning processes, with the opportunity to project and express their ways of seeing things, including their likes and dislikes, along with their views about the effectiveness and compatibility of what they are studying with their learning needs and inclinations. This approach respects the student's role in their learning process and values their perspectives. (Courtney & Abodeeb, 1999)

Given the claim that portfolios help make students critical thinkers, Courtney and Abodeeb (1999) argue that parents should also be involved, especially in the early stages of portfolio creation. In the same regard, encouraging the use of portfolios in class is expected to positively impact learners' abilities to purposefully make judgments, make decisions, learn new concepts and solve problems. With the possibility of giving students, using portfolios, the chance to analyse, interpret, and state their views about the knowledge they receive in class and their surroundings or worldly issues, Aguirre (2004) asserts that making use of portfolios will result in benefiting students significantly in their learning process and enable them to solve problems beyond formal education contexts.

In light of the above-mentioned views, it is understood that using portfolios in class can play a significant role in allowing the chance for learners to develop the characteristics of critical thinkers, including being inquisitive, well-informed, reasonable, open-minded, flexible and diligent to seek relevant information (Facione, 1998). Additionally, portfolios are expected to assist learners in promoting and fostering their critical thinking skills because the students are free to express themselves and show creativity, provided that students' reflections in their portfolios are concrete demonstrations of using their critical thinking skills (Torres Diaz, 2009).

6. Methodology

The main objective of this study is to investigate the impact of portfolio task assignments on the development of critical thinking skills among Moroccan middle school learners studying English as a Foreign Language. To elaborate, this dissertation aims to provide a comprehensive analysis of how integrating the portfolio task into the English curriculum can serve as an effective teaching tool for cultivating critical thinking skills in Moroccan middle schools. The central guiding question for this study, therefore, is whether the systematic use of portfolio tasks can act as both a pedagogical and assessment mechanism that significantly influences students' capacity to engage in critical thinking.

6.1. Research question

This study examines the effects of the portfolio task assignment on the development of critical thinking skills in Moroccan learners of English as a foreign Language. Recognising the increasing importance of critical thinking in language learning and overall education, this study investigates how structured portfolio assignments can enhance these skills among Moroccan middle school students. To achieve this goal effectively, it is crucial to refine the research objectives and outline a specific research question that directly relates to the central purpose of the study. This article seeks to answer the following question:

What are the teachers' attitudes towards using the portfolio task assignment as a tool to enhance critical thinking?

This research question is thoughtfully designed to fill the existing literature gap regarding the portfolio task's effectiveness in fostering critical thinking skills. It aimed to investigate how implementing a portfolio task assignment affects the development of critical thinking skills among middle school learners. Specifically, the research sought to identify how engaging with the portfolio assignment can enhance students' ability to analyse information, evaluate different perspectives, and make reasoned judgments, fostering their overall critical thinking skills. By examining the students' experiences and outcomes related to the portfolio task assignment, the study intended to draw insights into effective educational strategies that promote critical thinking in a middle school context.

6.2. Research hypothesis

To thoroughly investigate the research gap and answer the previously raised research question, the following hypothesis has been formulated:

Implementing the portfolio task assignment contributes to developing EFL middle school learners' critical thinking skills.

The research hypothesis proposes that implementing the portfolio task assignment plays a significant role in fostering the development of critical thinking skills in young learners of English as a Foreign Language (EFL) in Morocco. This hypothesis suggests that students are encouraged to reflect on their learning experiences and analyse, evaluate, and synthesise information more effectively by engaging with portfolio tasks. This process is expected to enhance their ability to think critically, which is essential for their academic success and future problem-solving skills in various contexts.

6.3. Research design

Research design is the specific methodology used in the research process, encompassing data collection, analysis, and report writing. It refers to the systematic approach researchers use to organise the parameters for data collection, analysis, and the written report of the research findings (Creswell, 2012). The present study used a nonequivalent control group posttest-only research design to thoroughly investigate the impact of implementing the portfolio task assignment on developing critical thinking skills among Moroccan middle school learners studying English as a Foreign Language. Therefore, the investigation utilises explicitly a non-equivalent control group posttest-only quasi-experimental research design.

The rationale behind using such a research design is that it was chosen because participants were not randomly assigned to the experimental or control groups. In addition, this study aimed to determine how structured portfolio task assignments can foster critical thinking development, providing insights into their effectiveness as an educational tool in Moroccan EFL classrooms by focusing on ninth-grade students who have not studied English before. Therefore, it was not ideal to administer a pre-test to test students' critical thinking skills before experimenting with the portfolio task assignment because the students involved in this study were all zero-beginners and relatively homogeneous regarding their linguistic abilities and language exposure. Additionally, they use the same materials and attend the same school, taught by the same teacher.

The quasi-experimental design has different forms, including the non-equivalent control group posttest-only design, which involves at least two non-equivalent groups that can be subjected to a treatment followed by a post-test and can act as a group for comparison (Cook & Campbell, 1979). The control group is non-equivalent because participants are not randomly assigned to the experimental or the control group, as they share the same characteristics. (Campbell & Stanley, 1963; Cook & Campbell, 1979; Shadish, Cook, & Campbell, 2002). In this research design, one group receives the treatment while a nonequivalent group does not, allowing for a systematic comparison between the two groups. The dependent variable, critical thinking, is assessed in the treatment group following the intervention and concurrently in the non-equivalent control group that does not receive the treatment (Campbell & Stanley, 1963; Cook & Campbell, 1979; Shadish, Cook, & Campbell, 2002).

The non-equivalent control group quasi-experimental study took place over one semester at a middle school in Martil. It involved two distinct groups of students: an experimental group and a control group. The control group received standard instruction, while the experimental group engaged in a portfolio task assignment developed based on the revised Bloom's Taxonomy framework (Anderson & Krathwohl, 2001). At the end of the semester, both groups underwent a final test to compare the two groups and evaluate any significant differences in their critical thinking skills. These skills, which include analysing, evaluating, and creating, have been developed by the portfolio task assignment. The following table illustrates the non-equivalent control group posttest-only quasi-experimental research design:

Table 1

The research design

Group	Pretest	Treatment	posttest
Experimental	Ɵ	X	O1
Control	Ɵ	-	O2

Where:

X: Treatment

Ɵ: Pre-test of Experimental Group not administered

O1: Post-test of Experimental Group

Ɵ: Pre-test of Control Group not administered

O2: Post-test of Control Group

6.4. Variables of the study

A variable is an attribute that researchers examine to gather insights, and it is a key concept in statistics. Variables can be categorised into two main types: independent variables and dependent variables. An independent variable is one that has the potential to affect another variable, whereas a dependent variable is one that is affected by the independent variable (Sugiyono,

2016). This study centres on two variables: one independent and one dependent. The independent variable in this investigation is the portfolio task assignment, while the dependent variable is critical thinking skills. Below is a detailed description of these variables:

Table 2

Research Variables

Group	Independent variable	Dependent variable
Experimental group	Portfolio task assignmet	Critical thinking skills
Control group	-	Critical thinking skills

Therefore, this study uses two principal variables: the portfolio task assignment, which is the independent variable (IV), and critical thinking, which is the dependent variable (DV).

6.5. Sample

A research sample is defined as a subset of the population that shares all the essential characteristics of that population. In essence, the sample serves as a smaller representation of the entire population and demonstrates similar traits (Arikunto, 2010; Sugiyono, 2016). This study involved two groups: an experimental group of 28 students and a control group of 28 students. The design was quasi-experimental, with participants drawn from an intact group, meaning they were existing members of a specific school or setting rather than being randomly selected from a larger population. The sample was chosen using convenience sampling, a method that selects participants based on their availability and accessibility. The following table shows the research population:

Table 3

Research population

N°	Class	Number of students
1	A	28
2	B	28
Total number of students		56

6.6. Experiment

Two intact groups were chosen and assigned to the treatment and control groups. The experimental group experimented with the portfolio task assignment treatment, while the control group did not but received a regular instruction. Before implementing the treatment, a pre-test was not administered to both groups to determine whether their critical thinking abilities were similar, because the experiment involved middle school ninth-grade students who are relatively homogeneous in their linguistic abilities and have the same language exposure. In addition, the teacher of English who hosted the quasi-experiment in her school informed that students have similar beginning levels in English, adding that they were public school students from the same background and that they all came from the eighth-grade class where English was not taught. These students study in the same school with the same teacher using the same materials. The following table briefly illustrates the treatment procedure:

Table 4

Summary of the treatment procedures

Group	Pretest	Treatment	posttest	Mann-Whitney U test
Experimental	-	X	X	✓
Control	-	-	X	✓

6.7. Research instruments

After the quasi-experiment was completed, this study administered a test at the end of the experiment to compare the test scores of the experimental and control groups. The primary objective was to identify and analyse notable disparities and statistically significant differences between the two groups. The test was designed based on Bloom's Taxonomy, a theoretical framework in education and cognitive psychology that categorises different thinking skills. It is specially tailored according to the Revised Bloom's Taxonomy Action Verbs as coined by Anderson and Krathwohl (2001). Besides, this test explicitly measures higher-order thinking skills, namely analysing, evaluating, and creating.

6.8. Statistical procedures

The data was thoroughly analysed using an array of statistical techniques, specifically employing the IBM Statistical Package for the Social Sciences (SPSS), version 29.0.2.0. This rigorous quantitative approach encompassed both descriptive and inferential statistics, allowing for a comprehensive examination of the data. Descriptive statistics were utilised to summarise and characterise the data, providing key insights into the overall trends and patterns related to the portfolio task assignment. These statistics included measures such as means, medians, and standard deviations, which helped to create a clear picture of the learners' performance levels in critical thinking.

In conjunction with descriptive statistics, inferential statistics were applied to derive conclusions and make generalisations about the population from the sample data analysed. Specifically, these statistics were instrumental in evaluating the impact of the portfolio task assignment on the critical thinking skill development of middle school learners. This analysis facilitated the identification of relationships and differences in performance based on the assignment. To further investigate the effectiveness of the portfolio task assignment, the Mann-Whitney U test was employed. This non-parametric test was chosen to compare the students' scores on the critical thinking test. It assessed the continuous dependent variable, critical thinking skills, against the independent variable, the portfolio task assignment. By utilising this test, the study aimed to determine whether there were statistically significant differences in critical thinking skills between the groups of students who completed the portfolio assignment and those who did not. Through this multi-faceted analytical approach, the investigation sought to capture a nuanced understanding of how the portfolio task assignment influenced the development of critical thinking skills among middle school learners.

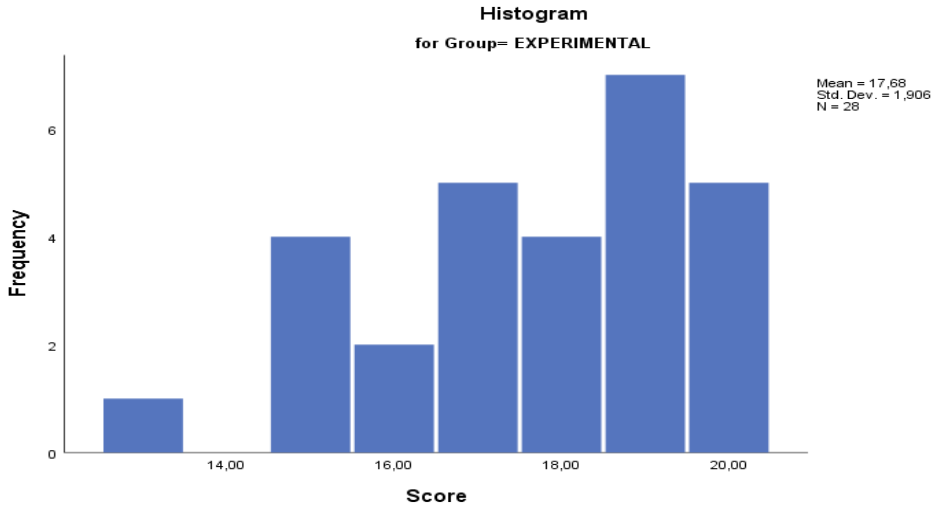
7. Inferential statistical analysis of the test results

After collecting the necessary data using the test to investigate the research question about how the portfolio task assignment impacts middle school learners' critical thinking skills, this investigation used the Mann-Whitney U test procedure to compare the two groups and determine their differences regarding students' scores. The research question is, "Does the portfolio task assignment impact middle school learners' critical thinking skills?

Initially, to compare the continuous dependent variable "critical thinking" with the independent variable "portfolio task", a t-test was run because it is a robust parametric measure. However, the normality tests, Kolmogorov-Smirnov and Shapiro-Wilk, turned out to have a significance level of 0.16 and 0.25 for the experimental group, respectively. In the same vein, they both showed a significance level of (.00) for the control group. These values are indications that the normality assumption is not met. A normally distributed data set has not yielded a significance higher than (.05). This fact is also shown in the following histogram and in the QQ plot:

Figure 1

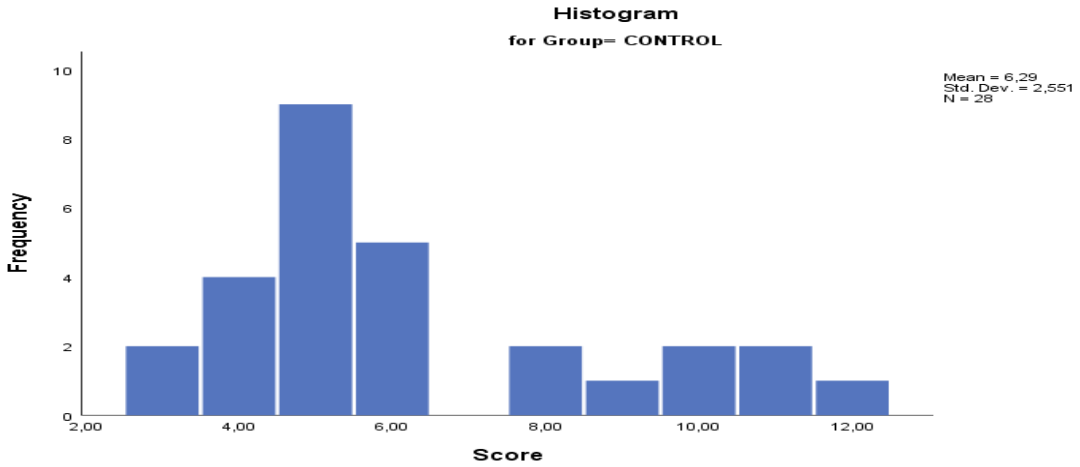
Histogram for group: Experimental



The histogram above displays students' performance on the test they took at the end of their portfolio-building experience. This test aimed to uncover possible improvements in the level of students who formed the experimental group. As shown in the histogram, the marks of these students are noticeably high, with most of them scoring very well. This result indicates the effectiveness of experimenting with the portfolio tasks, which could positively impact young learners' development.

Figure 2

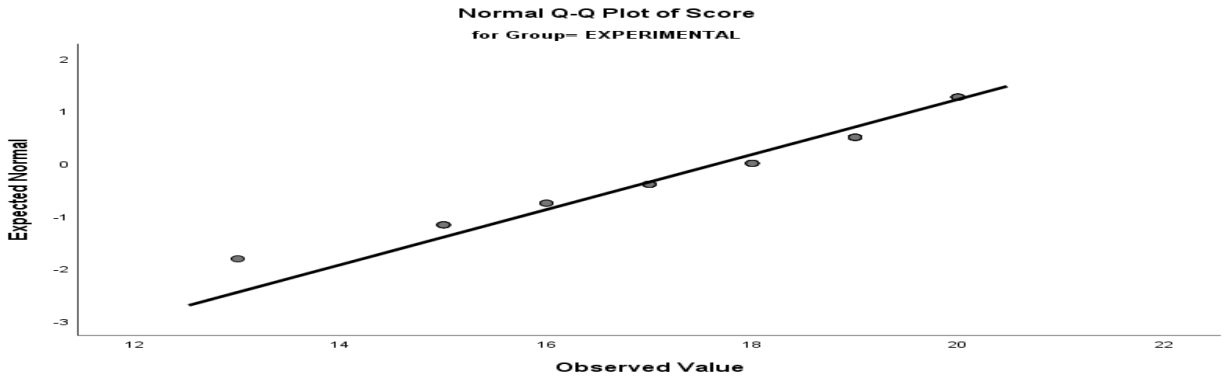
Histogram for group: Control



Intending to identify the role of assigning portfolio tasks along a school year, the control group was invited to do the identical post-test. Interestingly, Figure 19 gives a clear idea about how these students performed. The histogram above shows how low the marks are compared to those of the experimental group. Only a few students (5 out of 28) managed to score an average mark that reached 12 out of 20 as the highest mark. With these results in mind, it is interesting to consider the remarkable difference in students' performance regarding the use of portfolios in the EFL classroom.

Figure 3

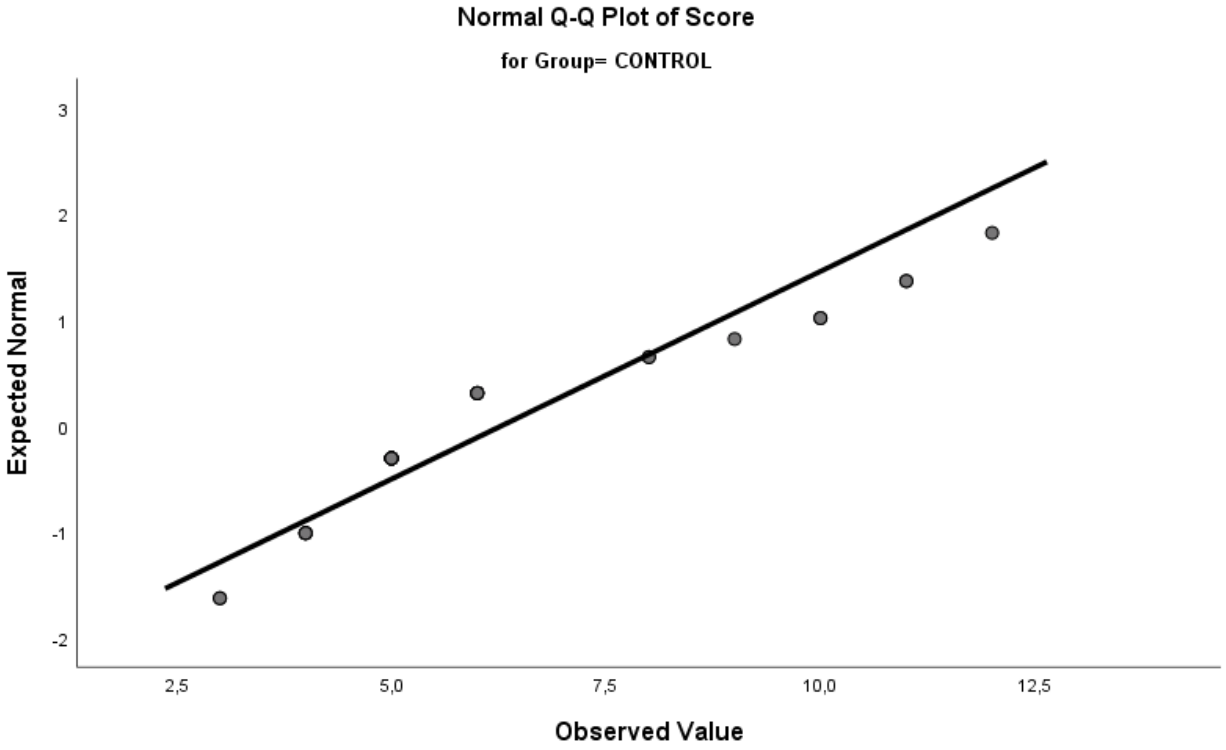
Normal Q-Q plot of score for group: Experimental



The Q-Q plot of the score analysis method was applied for further analysis of the data obtained from the post-test taken by both groups. Figure 20 above shows the results of the analysis regarding the experimental group's scores. Based on the straight-line alignment shown in the figure above, the analysis model is suitable for the data in terms of normality. This implies that the model is likely reliable in concluding the effectiveness of the portfolio task assignment investigated in this thesis.

Figure 4

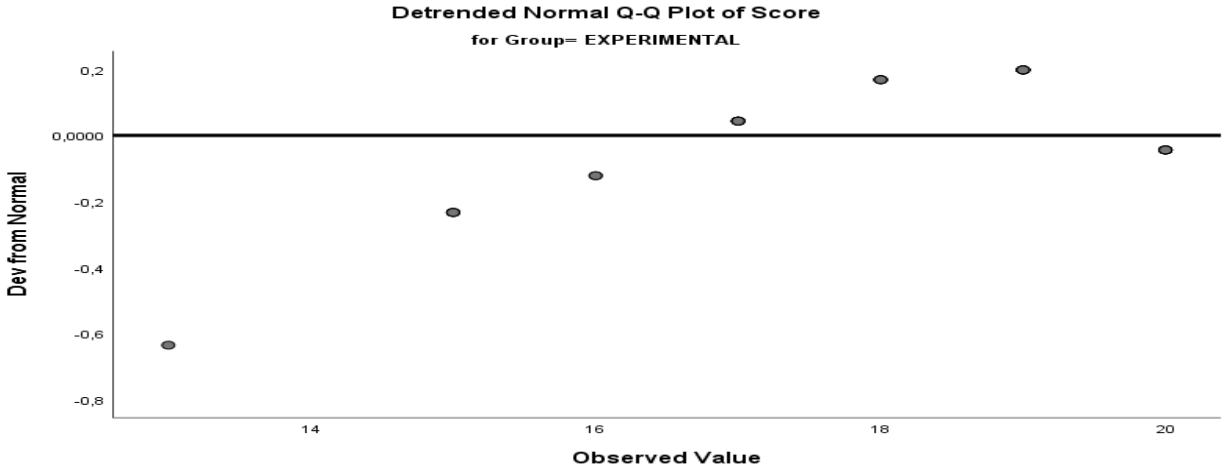
Control group standard Q-Q plot score



The same method of analysis, a Q-Q plot of scores, was applied to the scores of the control group. Figure 21 above gives an idea about the level of reliability that can be provided by this analysis method. As displayed in the figure above, the level of line alignment, though not completely straight, is very likely to help identify the impact of implementing portfolio tasks to improve students' critical thinking skills in middle school education.

Figure 5

Experimental group detrended Q-Q plot score



In order to clarify the differences between the observed and predicted values and assess the suitability of the model used to analyse the data collected, a detrended Q-Q plot test was run. As shown in Figure 22 above, the data's normality level is helpful for further interpretation, provided that all the values are in balanced closeness to the horizontal line representing the zero level in the detrended Q-Q plot. A synthesis of the results obtained from the analysis, as mentioned above, will likely optimise the process of discussing the results and arriving at reliable findings.

Figure 6

Experimental and control group scores

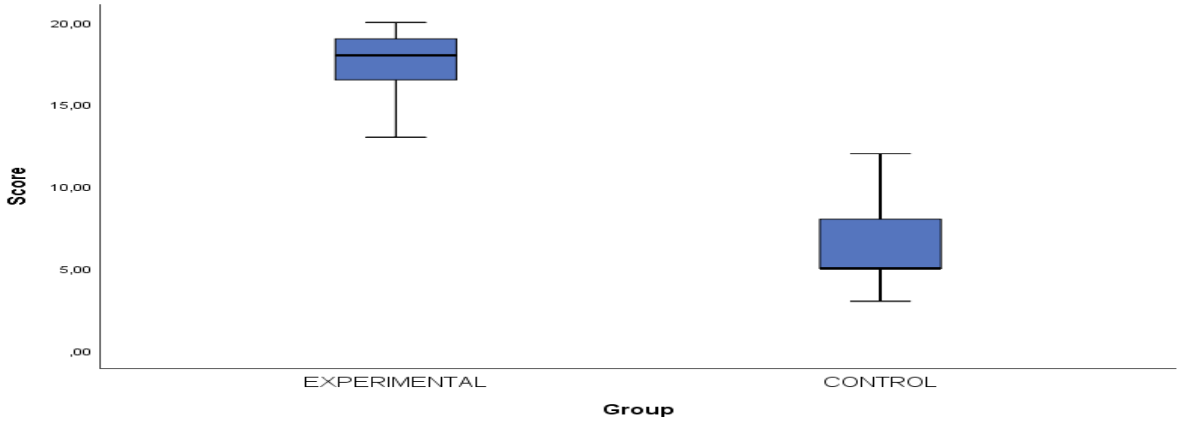


Figure 23 above shows the results of the test scores of the experimental and the control group. These test scores are substantially different because the experimental group participants scored higher than the control group participants, indicating that the normality assumption is not met. Unable to run the t-test, the researcher switched into the non-parametric equivalent of the t-test, which is the Mann-Whitney U test, which is based on the Median rather than on the Mean. The nonparametric results are displayed in the following table:

Table 5

The Mean Rank of the experimental and control group

Ranks

	Group	N	Mean Rank	Sum of Ranks
Score	EXPERIMENTAL	28	42,50	1190,00
	CONTROL	28	14,50	406,00
	Total	56		

Table xx above shows that the mean rank for the experimental group is (42.5), while that of the control group is (14.50). The Mann-Whitney U test shows a p-value of (.00), which is highly significant, as is shown in the following table:

Table 17

The Mann-Whitney U Test

Test Statistics

	Score
Mann-Whitney U	,000
Wilcoxon W	406,000
Z	-6,454
Asymp. Sig. (2-tailed)	,000

a. Grouping Variable: Group

The table above shows that the experimental group and the control group differ significantly in their higher-order thinking skills of analysing, evaluating, and creating.

Consequently, the differences observed between the two groups are statistically significant. The considerable disparity in the mean values presented in Table 14 offers compelling evidence that implementing the portfolio task assignment as an educational strategy can substantially enhance students' critical thinking skills. Such findings underscore the effectiveness of the portfolio task assignment in fostering students' critical thinking skills.

8. Data interpretation and discussion

Quantitative data analysis using the test as a research instrument revealed that the student portfolio significantly influenced middle school students' critical thinking abilities. This was particularly evident when the test results showed that students' critical thinking abilities had improved in the experimental group participants compared to the control group participants due to the significant difference in the mean and the remarkable significance of the P-value, indicating that students who experimented with the intervention of the student's portfolio scored ahead of those who received regular instruction. Students in the experimental group achieved superior scores compared to those in the control group. The scores of the experimental group varied between 13/20 and 20/20, with no grades falling below the norm. The pupils in the control group performed poorly, with only three scores above the norm and the remainder of the grades falling below average. Ultimately, there exists a significant disparity between the two groups in their scores, with the experimental group achieving high scores and the control group attaining low marks.

9. Conclusion

The analysis of the collected data answered the research question and achieved the study's objectives by examining the impact of portfolio task assignments on the development of critical thinking skills among Moroccan EFL middle school learners. To investigate this relationship, the study employed a quantitative quasi-experimental research design, which was selected because the participants were drawn from intact, pre-existing classes and could not be randomly assigned to the experimental and control groups. The findings revealed that portfolio task assignments had a statistically significant positive effect on students' critical thinking skills. Learners in the experimental group demonstrated significantly higher mean scores than those in the control group, with the results supported by a statistically significant p-value. These findings suggest that students who engaged in portfolio-based learning developed stronger critical thinking skills than those who received conventional classroom instruction.

The conclusions derived from this study carry important theoretical implications for educators and teachers. It is crucial for them to understand the significance of the portfolio task assignment and to promote the adoption of the portfolios not only among middle school students but also among those in high school and university. This approach will equip students to be leaders in addressing the challenges and demands of the 21st century and the evolving technological age. In light of the findings of the present study as well as those of the various studies reviewed in the literature, portfolios, as both a teaching and an assessment tool, have many positive contributions to teaching and evaluation. Portfolio development is one of the most popular alternative types of assessment, especially within the communicative language teaching framework. Portfolios help students develop their critical thinking skills and foster their learning responsibilities, which can help students become more autonomous, reflective, and independent learners and thinkers. Besides, portfolios are practical tools for involving learners, improving teaching and learning, and reflecting assessment reform. Portfolios are recognised as an authentic assessment of students' learning because they demonstrate classroom experience, link the knowledge studied in class to the students' skills, reflect students' ability and achievement, and involve realistic and relevant materials, making students create real-life products

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