A CALL FOR CHANGE: INSIGHTS FROM A COMPARATIVE STUDY OF CRITICAL THINKING INTEGRATION IN EACH OF THE UAE AND LEBANESE PRIMARY CLASSROOMS

By
Joelle El Zoghbi

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Faculty of Arts and Social
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Faculty of Education

This is to certify that I have examined this copy of a Master's

thesis by Joelle El Zoghbi

and have found that it is complete and satisfactory in all respects, and that any and all revisions required by the final
examining jury have been made.

JURY MEMBERS:

Approved: Samira Nicolas

Samira Nicolas,
Ph.D.
Supervisor

Approved:
Megan
Khairallah,
Ph.D. Jury
Member

Approved:

Elie Nakhleh,
Ph.D.
Jury Member

Date of thesis defense: 11 June, 2025.

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ABSTRACT

The purpose of this study was to explore the integration of critical thinking into the upper primary curriculum, focusing on the perspectives of teachers, coordinators, and principals in Lebanon and the UAE. Two case studies of private English schools were chosen in each context for comparison and insights. This qualitative study conducted a series of semi-structured interviews with 9 participants from each case. This research employed thematic analysis and inductive coding to identify key themes and insights related to perceptions, strategies, and the leadership role on the teaching of critical thinking in elementary classrooms. The findings highlight the importance of equipping teachers in Lebanon with well-rounded understanding of critical thinking and the strategies to foster critical thinking skills, while also revealing the barriers that educators face, such as limited resources, curriculum constraints, and a lack of professional development opportunities. The study also underscores the pivotal role of the school leadership in empowering teachers to successfully integrate critical thinking and taking individual initiatives for reform in Lebanon. The study also provides recommendations for curriculum adjustments, teacher training, and leadership practices to better support the integration of critical thinking into primary education. This research contributes to the growing body of literature on critical thinking in education and aims to draw insights from schools in the UAE to inform both educators and schools' policymakers in Lebanon.

Keywords: critical thinking, primary curriculum, teacher perspectives, teaching strategies, assessments, Lebanon, UAE, leadership role

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CHAPTER 1

INTRODUCTION

1.1 Introduction and Statement of the Problem

The term 'critical thinking' has been linked to reform for decades now. Research has shown great interest in how critical thinking is set as a key component of educational reform in countries worldwide. Paul and Elder (2006) link the growing importance of critical thinking to the fast-changing environment we live in and the need to be critical. They discuss the dilemma of teachers' false assumptions that students need to memorize to acquire knowledge instead of being intellectually engaged in learning. They also argue that critical thinking is the set of skills that leads to the mastery of content, and thus critical thinking equips students with lifelong skills that are essential.

As critical thinking has been identified as a key component of the 21st century skills, more research is drawn to how to integrate critical thinking in the classroom. For instance, Lai (2011) sheds light on the role of constructivist teaching approaches that encourage active learning and student- centered learning to develop students' critical thinking. Authentic performance-based assessments and open-ended questions were also well-qualified assessment methods of critical thinking (Lai, 2011).

Herlinawati et al. (2024) discusses teachers' positive opinions of integrating 21st century skills, such as critical thinking, but also the struggle in incorporating these skills into their teaching practices.

Therefore, Herlinawati et al. (2024) highlight the crucial role of educational leaders in developing a strategy to include professional development and support in making teachers familiar and well equipped with integrating critical thinking skills and other 21st century skills

into their teaching practices.

As Arab countries become more involved in educational reform to modernize teaching objectives and methods, Lebanon in particular seems to fail in implementing the needed educational policies, including teacher training and funding allocations, to achieve reform (Frayha, 2012). Lebanon is a country of diverse cultures and religions. It has also been through many wars that left negative consequences on the country. The religious and political ideologies rooted in Lebanese people seem to influence its education system negatively (Akl, 2007). Baldwin et al. (2021) explain that, "Exploring the sociohistoriography of education in Lebanon from World War II provides a critical analysis of the wars, conflicts, and corruption that has created barriers for policy makers to deliver a Lebanese education system," (p.33). Consequently, the challenge of developing critical thinkers is deeply rooted in Lebanon's conflict-filled past. The Lebanese education sector has been suffering from its outdated curriculum for decades, as the last reform was in 1997. Lebanon's scores in international assessments such as PISA and TIMSS have been among the lowest, whereas other countries such as Singapore, China, Finland, and the UAE take the lead. The National Research Council (2012) highlights the importance of deeper transferable learning that includes the acquisition of the 21st century skills for better educational attainment and for becoming successful adults. According to an interview in Annahar Newspaper that hosted Dr. Mneimneh and Dr. Abou Jaoude, Lebanese educational experts, Lebanese students are struggling to transfer their learning and apply it in new situations. This lack in ability to skill transfer may indicate the neglect and limited attention to promoting critical thinking, a 21st century skill, in the Lebanese curriculum. Therefore, curriculum reformers are called upon to review the curriculum to follow up and to prioritize critical thinking. This reform must also involve principals, coordinators, and teachers in reflecting on their curriculum and classroom practices.

1.2 Research Purpose and Questions

Critical thinking is defined as the ability to conceptualize, apply, analyze, synthesize, and evaluate information to make a reasonable judgement. The purpose of this study is to explore:

(a) the Lebanese and UAE teachers' conception of and perspectives on critical thinking and its role in the upper primary classrooms,

(b) the strategies implemented by teachers to develop critical thinking skills in the upper elementary classrooms of each of Lebanon and the UAE,

(c) the role of principals and coordinators in the successful integration of critical thinking in the primary years' curriculum in both Lebanon and UAE.

To guide the study, the following research questions have been constructed:

- How do elementary teachers conceptualize critical thinking in each of Lebanon and the UAE?
- How do teachers nurture critical thinking in the upper elementary classrooms in each of Lebanon and the UAE?
- What role do principals and coordinators play to ensure the successful integration of critical thinking in each of Lebanon and the UAE's upper elementary classrooms?

1.3 Rationale and Significance of the Study

In 1994, the Lebanese government initiated a call for an educational reform to introduce critical thinking as an essential skill in the curriculum. However, the reform plan failed since there was no agreement on how critical thinking should be taught and implemented in the classroom (El- Soufi, 2019). As a consequence, the new curricula and textbooks still lack opportunities for critical thinking (Baldwin et al., 2021).

Drawing from my professional experience, I have taught 4th grade for three years in North Lebanon and an additional two years in the United Arab Emirates. This experience revealed significant disparities in educational approaches between the two contexts. In Lebanon, a sense of professional frustration was prevalent among my colleagues and me. Despite having graduated from the same teacher education program in North Lebanon, we collectively found it challenging to implement the pedagogical strategies and approaches we had acquired during our university training. This gap between theoretical knowledge and practical application proved to be a source of considerable disappointment and concern. Nevertheless, teaching in the UAE bridged my knowledge with concrete classroom practices that resulted in students' noticeable progress and improvement.The school leadership equipped me with innovative strategies that allowed me to confidently nurture students' critical thinking in the elementary level.

Therefore, this study aims to understand the explicit differences in how critical thinking is nurtured and taught in the two different cases with the purpose of gaining insight into effective teaching strategies that can perhaps be implemented in Lebanon. This study also aims to explore the views of education administrators with the goal of raising awareness about integrating critical thinking into the curriculum as a priority, which may lead to better achievement in international assessments. The disparity in the results of international assessments between Lebanon and the UAE is a significant driving force of this study, as is the need for prioritizing critical thinking skills for the sake of students' daily lives and future work life. Lunenburg (2011) regards critical thinking as a central organizing concept to establish educational reform. In addition, El-Soufi (2019) also notes that it is important to understand how school subjects are taught in order to integrate critical thinking into the instruction; therefore, exploring the UAE and Lebanese teachers' perspectives of critical thinking, its role, and application is

valuable research. As teachers are the direct method of the delivery of the curriculum to the students, their perceptions are of high significance. This study also explores the need in shifting the instructional strategies that are being utilized in daily practice to intentionally target critical thinking skills. The study of AlJaafil and Sahin (2019) explored teachers' perspectives on the matter of critical thinking integration into the curriculum, and they found alarming results in a specific region in Lebanon. It is crucial to give more significance into the issue of critical thinking integration into the curriculum in Lebanon for the sake of its future education system.

CHAPTER 2

LITERATURE REVIEW

2.1 Theoretical Framework: Constructivism

Constructivism is a learning theory in psychology that describes how learners acquire knowledge and develop meaningful learning experiences (Bada & Olusegun, 2015). Therefore, when addressing skills and approaches to learning, constructivism is an ideology of significance in education. Constructivism is built around the concept of active learning. The main idea is that human learning is constructed, such that learners build new knowledge based on previous learning. This view of learning opposes the one in which learning is the passive transmission of information from one individual to another (Bada & Olusegun, 2015). In other words, construction not reception is the key of this widely applied theory in the current times. As Bada and Olusegun (2015) mention, this theory's teaching methods are mainly used in learning complex skills such as problem solving and critical thinking, and they have been effective and beneficial.

A constructivist learning environment is mainly characterized by the sharing of knowledge, information, and authority between the teacher and the students (Bada & Olusegun, 2015). This involves the teacher in the role of the facilitator or the guide rather than the holder of knowledge (Jia, 2010). Moreover, constructivist learning aims for providing meaningful, authentic, and diverse experiences where student centered learning, collaboration, multiple modes of presentation, and reflection are central goals. Constructivist learning will thus prepare students to be active learners rather than passive, think and understand rather than memorize, transfer learning in different and real-world contexts, and be able to collaborate and share ideas successfully (Bada &

Olusegun, 2015).

A key theoretical framework that supports the integration and assessment of critical thinking in education and aligns with the principles of constructivism is Bloom's Taxonomy (Krathwohl, 2002), which categorizes cognitive processes along a range of complexity, starting from remembering and understanding to analyzing, evaluating, and creating. This hierarchy serves as a valuable structure for aligning learning objectives, assessments, and instructional strategies with the development of critical thinking in students. Particularly at the upper elementary level, the taxonomy offers practical guidance for designing tasks that challenge students to engage in analysis, synthesis, and creative problem-solving, which are core components of critical thinking. This framework sets a grounded foundation and an analytical lens for analyzing how teachers in Lebanon and the UAE plan for instructional strategies and assessments that nurture analysis, synthesis, and reflective problem- solving, thus supporting the development of critical thinking.

Activity Based Learning (ABL) is a constructivist method of teaching that targets students' higher order thinking. According to D'souza's (2017) study, ABL is linked to the development of students' critical thinking abilities and problem solving. It also engages them in meaningful learning through situating students in the core of learning, requiring students to make connections to real life situations as well as transfer their learning skills from one context to another. Many scholars have found ABL to be highly effective in improving critical thinking skills such as application, synthesis, and evaluation of knowledge, as cited in D'souza (2017). D'souza (2017) also highlights the downfalls of traditional teaching methods that limit students' critical thinking. Traditional teaching methods seem to limit students' transfer of knowledge as well as the retainment of knowledge on the long run, allowing ABL to achieve better student

achievement.

Project-Based Learning (PBL) along with STEM integration is another learning model that supports constructivists learning (Wiratman et al., 2023). PBL involves students in hands-on learning through collaborative work and actual application of knowledge, which fosters critical thinking. In addition, STEM integration allows learning to be based on real-life contexts and experiences, engages students in research and analysis, and provides students with a multidisciplinary approach to learning (Siregar et al., 2019). Studies show that students need to engage in the several stages of PBL in order to target critical thinking. To explain, Project-based learning integrated with STEM has five stages: reflection, research, discovery, application, and communication (Wiratman el al., 2023; Eja et al., 2020). These stages are necessary for the successful application of PBL integrated with STEM, making learning relevant to real life experiences and allowing the application and transfer of skills and thus fostering critical thinking.

Suteja and Setiawan (2022) found that PBL improves elementary students' writing skills, and writing and critical thinking are closely related. The writing process engages students in active learning that develops critical thinking skills, and the higher students' critical thinking is, the better their writing skills become. Research conducted by Wale and Bishaw (2020) also suggests that students' critical thinking skills improve through writing lessons that follow inquiry-based learning. The stages of inquiry-based learning that include interpretation, analysis, inference, evaluation, explanation, and self-regulation, which are skills that are associated with critical thinking (Wale & Bishaw, 2020; Facione 2011). Therefore, it can be concluded that PBL and inquiry-based learning have a positive impact on students' critical thinking.

The study conducted by Bhuttah et al. (2024) also shed light on the role of

constructivist learning theories in advocating for student-centered learning and innovative learning pedagogical approaches. The results of the study found a direct link between innovative teaching practices and critical thinking as well student achievement, and the researchers emphasized the mediating role of the school leadership in maximizing the impact of such strategies through professional development and training. Ng and Wong (2020) cited Lambert (2009) to further discuss the role of the constructivist school leadership. They summarize constructivist leadership to be one that does not follow traditional leadership roles but acknowledges the role of the school leaders in promoting a shared vision of an environment of innovative learning through inquiry and reflection.

In conclusion, using the variety of cognitive strategies that focus on active learning improves critical thinking abilities in students (Schunk, 2012). Considering such strategies in the 21st century has become necessary as research has shown that a constructivist learning environment influences students' critical thinking positively (Kwan & Wong, 2015). It is the responsibility of the school leadership to follow the constructivist approach to equip teachers with innovative active learning strategies (Bhuttah et al., 2024).

2.2 Improving Student Achievement

There are many factors that contribute to better student achievement on testing, whether it is local or national testing. Teaching methods are an obvious contributing factor. Critical thinking and constructivist approaches in teaching are promising of better student achievement in national testing (Lunenburg, 2011).

As previously stated, constructivist approaches involve active learning. According to Lunenburg (2011), "content dies" when mechanic memorization is used as

an approach to learning and so does logic (p.3). Thus, it is suggested that students learn concepts critically to internalize the information and come up with new questions to explore different points of view. Increasing student achievement will then require change in the curriculum and in instructional approaches used across all subjects (Lunenburg, 2011). Ghanizadeh (2017) also concludes that there is a strong link between critical thinking, reflective practices, and academic success, which rote learning and habitual learning cannot achieve. Thus, educators need to provide students with opportunities of reflection and self- evaluation to reach the higher thinking levels, especially critical thinking, in order to achieve higher student achievement. To refer back to one of the constructivist approaches, D'souza's (2017) study found that ABL achieved better student achievement. Through the author's research, pre-tests and post-tests were specifically analyzed after applying ABL method to a previously traditional classroom, and results showed significant differences in student achievement. The tests required application of knowledge and "thinking outside the box" (p.19). Such assessments are similar to international standardized tests, which give countries ranking based on the acquisition of higher order thinking skills of application and synthesis.

Parents also have an influence on students' achievement. Hacıeminoğlu and Ertepınar (2009) found that students whose parents encouraged meaningful learning were able to achieve higher than those whose parents called for rote learning. Although students who used memorization and rote learning achieved high grades in the short term, it was found that meaningful learning allowed students to retain information better in the long term and thus attain better achievement. It is also worth mentioning that Hacıeminoğlu and Ertepınar (2009) found that parents who preferred meaningful learning had a higher education level than those who preferred rote learning. This emphasizes the role of the socioeconomic status of parents in affecting their children's

learning approaches. Heryanto et al. (2020) cites Jacob (2012), Nur'azizah et al., (2021), and Taghva et al., (2014) to also shed light on the positive relation between critical thinking and student achievement. Specifically, Heryanto et al. (2020) found a link between students' critical thinking, parents' involvement, student achievement, and digital literacy. In other words, parents hold the role of improving children's critical thinking at the elementary level through using technology as a motivator, which increases student achievement. Therefore, parents' role in their children's approach to learning can determine their achievement.

2.3 International Assessments: PISA and TIMSS

Many countries worldwide are interested in participating in international standardized assessments for different purposes. While international assessments provide a ranking of countries' education systems, the main aim of international assessments launched by the Organization for Economic Co-operation and Development (OECD) is to provide governments and leaders with indications of the quality of education (Froese-Germain, 2010). These indications can provide useful feedback to countries to adjust policies and match international educational standards globally.

The Programme for International Student Assessment (PISA) has thus been created by OECD to be a "principal source of data on the performance and quality of education systems, as measured by student achievement outcomes, for the OECD indicators reports" (Froese-Germain, 2010, p. 7). PISA is an international standardized test administered in many participating countries worldwide, in which, according to Figazzolo (2003, as cited in Froese-Germain, 2010), "PISA assesses the extent to which 15-yrs-old students near the end of compulsory education possess the key knowledge and skills [in the areas of science, reading and mathematics] for their full participation in society" (p. 3). Froese-Germain (2010) also

discusses the impact of PISA on participating countries, and studies clearly show a strong correlation between PISA outcomes and the education policy. Therefore, policymakers are held as the first responsible stakeholder for using PISA data to inform and improve the country's performance followed by school principals and authority officials.

The PISA outcomes and data call for the need of stakeholders to produce effective strategies to implement sustainable change and achieve better outcomes. It is also noted that the OECD provides policy recommendations through PISA results that could push low achieving countries to perform higher through educational reform. OECD (2013) discuss key features of PISA, noting that it is a test of innovative literacy where the focus is on 21st century skills that are obtained in and out of school. OECD (2013) also explains how PISA prioritizes skills of problem solving, analyzing, interpreting, applying, reflecting, and transferring of skills into real-world problems. In fact, these skills fall under the definition of critical thinking, as mentioned later in this paper.

TIMSS is another international standardized assessment that assesses fourth and eighth grade students in numerous countries worldwide (Mullis et al., 2020). The test targets questions of cognitive abilities of knowing, applying, and reasoning, and gives valuable insights to professionals, researchers, and leaders. For example, TIMSS 2019 studies shed light on important insights and remarks concluded from the assessment. One of insights drawn was that 69% of Mathematics teachers and 65% of Sciences teachers indicate the need for professional development in improving students' critical thinking or inquiry skills (Mullis et al., 2020). This calls for the need of more professional development given by school leaders to tackle integrating critical thinking successfully and applicably into the curriculum. Another insight, as seen in figure 1, shows that Lebanon scored a low benchmark on TIMSS 2019 science- eighth grade

assessment, meaning that students have a limited understanding of scientific principles and knowledge. On the other hand, UAE scored an intermediate benchmark, meaning students can show and apply some knowledge of different scientific domains (Mullis et al., 2020).

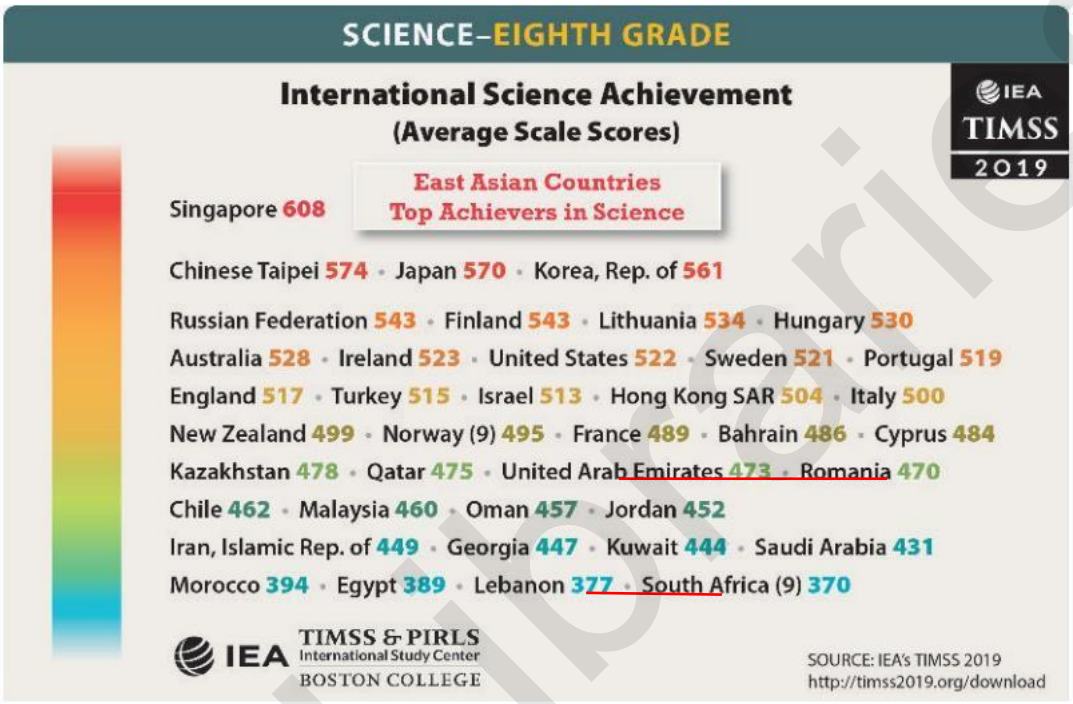

Figure 2.1 Countries' Average Achievement in TIMSS 2019 (Mullis et al., 2020)

2.4 Critical Thinking in Primary Education

Critical thinking is a complex process (As'ari, 2014). Many philosophers, educators, and psychologists have defined critical thinking in different ways, have discussed its importance, and have reflected on its role in education.

In order to define CT, Facione (2011) identifies six foundations of critical thinking skills, that is: "(1) interpretation, (2) analysis, (3) inference, (4) evaluation, (5) explanation, and (6) self- regulation" (p.3). John Dewey, considered "the father of contemporary critical thinking tradition", prioritizes the role of reflection, and in fact refers to critical thinking as focused reflective thinking (Padmanabha, 2018, p. 46). Reflection is the key to learning and using higher order abilities. It is a crucial element

of critical thinking and allows self-improvement. It puts students in the process of finding solutions to problems in a situation through questioning, exploring, and hypothesizing. Dewey also sheds light on the need for students to be trained for such reflective processes. As for Piaget, critical thinking 'activates in early childhood' (Padmanabha, 2018, p.48). In addition, both Paulo Freire and Vygotsky shed light on the role of 'critical teachers' —ones that also think critically about teaching and learning— in providing stimulating environments to develop young students' minds to think critically, mainly through experimenting, reasoning, communication, and reflection (Padmanabha, 2018).

Even though many argue that primary students are not able to reach such levels of thinking, research shows that incorporating critical thinking opportunities in the primary levels is possible and also important. Massa (2014) argues that children at the primary level are able to undergo such critical thinking processes. The author also adds that it is important to consider critical thinking in instruction and curriculum of elementary levels, as well as in teachers' professional development (Massa, 2014). D'souza's (2017) study results call for a redesign in the primary curriculum to give active learning more time and space. She also sheds light on the need of funding and resources to incorporate such teaching methods that target critical thinking and problem solving. In addition, she mentions the need of differentiating instruction through evaluating students in order to target different thinking levels. Furthermore, Bailin et al. (1999) suggest ways to include critical thinking in instruction such as to "value reason and truth; be open-minded; respect others during discussion; be willing to see thinks from another's perspective" (p. 388). An example of the integration of critical thinking at the primary level is the European curriculum analyzed by Lombardi et al. (2022). According to Lombardi et al. (2022), the

European curriculum includes an explicit and implicit integration of critical thinking skills, and a holistic description of characteristics, core skills, and approaches to critical thinking in the syllabi. In other words, the European curriculum sets as an adequate example of how critical thinking can be integrated into the curriculum.

2.5 Critical Thinking in Different Curricula

2.5.1 International Overview

Many countries have revised their education system and curriculum to adapt to the 21st century requirements that go beyond content knowledge. Countries that tend to receive the highest ranks in international assessments receive extensive exploration of their educational reform strategies.

Deng et al. (2022) found that reform in Finland, China, and the United States greatly emphasized critical thinking. Wang et al. (2018) thoroughly investigate the integration of 21st century skills into China and Finland's curricula. Equally in both curricula, critical thinking is integrated

explicitly within the learning goals and activities such that "students are encouraged to ask questions and to think deeply, based on activities or assignments related to the science context" (Wang et al., 2018). A key remark that Wang et al. (2018) made is that Finland has always considered critical thinking as part of its culture; however, China newly integrated critical thinking in order to address the 21st century skills. Dang et al. (2022) further mentions that China was influenced by the American curriculum to focus on critical thinking. Jiang (2013) also discusses the reform that the Chinese government implemented to fit to the 21st century demands. The reform involved reducing testing, memorization, and rote learning to be able to raise critical thinkers. This is important to mention so that it can stand as a role model for Lebanese curriculum reformers to

initiate similar logical change as China did.

2.5.2 Lebanon's Education

Lebanon witnessed educational reform in 1997 that covered three aspects: the curriculum, the textbooks, and teacher training (Aljaafil & Beyhan, 2021). Curriculum documents do reference the importance of 21st-century skills, including critical thinking. However, these references tend to be broad and not operationalized through specific learning objectives or teaching guidelines at the primary level. Although further efforts were made to implement reform, these efforts failed due to external factors and complexities. Furthermore, Aljaafil and Beyhan (2021) claim that several efforts were also made to involve the Ministry of Education and Higher Education (MEHE) in inspecting the private schools to ensure uniformity, but these efforts were also hardly applied and resulted in failure. This means that private schools were able to implement change policies independently to follow up with trends in education and technology, creating a wide gap between private and public schooling. The Lebanese educational system was then left with no vision for reform, and the curricula has been left unrefined for more than 25 years now.

Most schools still adopt traditional teaching methods. Aljaafil and Beyhan (2021) discuss the need for continuous monitoring and development of the textbooks and curriculum used by schools in Lebanon, as well as the need for a performance appraisal system and training for school principals. The Educational System Overview (2022) specifically sheds light on the traditional techniques of drilling, memorization of facts, and rote learning implemented in Lebanese schools. In addition, teachers' instruction strategies are mainly led by textbooks, where they simply refer to direct teaching strategies such as lecturing from the book and completing exercises at school from the

book as a whole class ("Lebanon - Educational System—overview", 2022). Assessments are mostly summative and majorly require recitation of information. This highlights the passive role of students that lacks critical thinking skills ("Lebanon - Educational System—overview", 2022). It is the role of school leaders to direct their teachers toward newer strategies in education so that private schools stay on track with international modern criteria.

In 2011, The Lebanese Ministry of Education and Higher Education (MEHE) developed Lebanon's Education Reform Strategy and Action Plan (LERSAP) with major focus on technology integration into the curriculum (Awada & Diab, 2016). The goal of this framework was to target higher order thinking of problem solving and critical thinking through the demands of the digital age of technology integration. Awada and Diab (2016) further discuss the need for professional development in technology integration as well as change in technical infrastructure for all schools in Lebanon for the action plan to succeed. They also elaborate on the several advantages that the ICT plan would bring to Lebanon's education such as active learning, students' engagement, meaningful learning, real-world connections, cooperative learning, problem-based learning, higher order thinking, and creativity. Although LERSAP did not achieve major reform and did not reach the intended success due to many factors, it sheds light on the indispensable role that technology plays in developing students' critical thinking and linking learning to real life, and it calls for school leaderships to prioritize technology integration for higher competency of the curriculum's objectives.

2.5.3 Emirati Education

Similar to developing nations, the Emirati curriculum has undergone significant changes and reform to equally match international standards. The reform mainly tackled

change in outdated curricula as well as school facilities, policies, management, leadership, pedagogy, assessments, outcomes, and resources (Litz & Scott, 2017). The Knowledge and Human Development Authority (KHDA) and Abu Dhabi Education Council (ADEC) were also created to ensure the successful implementation of the educational reform in public and private schools to raise standards according to international indicators. Litz and Scott (2017) studied the effectiveness of implementing transformational leadership by school leaders in the UAE to achieve positive reform. In their study, transformational leadership model was defined as "a process in which leaders transform an organization by increasing the achievement and motivation of their followers. They establish change through hard work with their followers, who must be motivated to achieve success" (p.569). This leadership model was established in the West and was then adopted by countries in the Middle East as well for the common purpose of change. Although Litz and Scott (2017) suggest cultural adjustments to the transformational leadership model to better suit the Middle Eastern context, the positive impact and change that this model brings to the educational system of the countries that adopt it is evident and necessary.

Governments worldwide seek to competitively perform highly in PISA and analyze the skills focused on by PISA, such as critical thinking and problem solving, to further enhance their education system and reform (Dawood & Hirst, 2014). Abu Dhabi, in particular, was one of the emirates that implemented such reform since 2012 and showed positive improvements in PISA. Their educational reform involved reform strategies of three aspects: quality of academic outcomes, non-academic outcomes and national identity, and access and affordability (Dawood & Hirst, 2014). Quality of academic outcomes focused on ensuring quality education. Thus, similar to KHDA in Dubai, ADEC in Abu Dhabi was made accountable for ensuring the curriculum was taught up to standards through a specifically

designed framework. ADEC also planned to initiate individual visits to schools to support them in reviewing the curriculum as well as provide professional development workshops for teachers. Furthermore, Dawood and Hirst (2014) also mentioned that Abu Dhabi's reform strategies to improve non-academic outcomes focused on cross-curricular skills and 21st century skills such as "critical thinking" (p.509) specifically. ADEC also derived a framework to ensure all schools, regardless of their curricula, integrate these skills. This framework would measure learning outcomes and consequently schools would have to abide by it seriously.

Therefore, Dawood and Hirst (2014) claim that the educational reform journey and methods that Abu Dhabi implemented aligns with those of countries like Finland and Hong Kong. It is the reform journey that is a key that led the UAE and Abu Dhabi specifically to compete internationally in international assessments such as PISA.

2.6 Teacher's Perceptions of Critical Thinking Integration

As mentioned earlier, teachers play a vital role in promoting students' critical thinking skills. Teachers' perceptions of critical thinking integration into the primary curriculum can change the way today's class instruction is designed.

Lombardi et al. (2022) studied teachers' perceptions of critical thinking and found that most teachers in the three European schools studied have a good understanding of critical thinking and its components as well as an agreement on its importance and significance. Some of the useful techniques for nurturing critical thinking that the participants suggested included debates, reflective exercises, and cooperative work situated in real life contexts. These teachers also claim that these techniques are far more effective than recalling, copying, and memorizing. Lombardi et al. (2022) also mention that teachers found workshops on project-based learning,

rubrics, questioning, and reflective practices most useful in empowering them in integrating critical thinking skills into their lessons. Nevertheless, it was found that there would always be a consistent need for sharing expertise on best practices to promote critical thinking effectively, and this comes by nature of educators being life-long learners themselves.

AlJaafil and Sahin (2019) investigated the beliefs and opinions of primary school teachers in two private schools and two public schools in the region of Saida, Lebanon. According to the findings of their study, teachers seem to have a confusing yet fair understanding of critical thinking that is quite similar. Some teachers were not able to identify skills of critical thinking. All teachers agreed on the important role that critical thinking plays in students' lives, but not all did integrate critical thinking into their instruction. It also appeared that private school teachers use more techniques and strategies to promote critical thinking than public school teachers do. In fact, teachers of private schools had a more positive opinion of students' critical thinking abilities than those in the public schools, who rather described feeling "frustrated, discouraged, or lack some faith and confidence in their students" (AlJaafil & Sahin, 2019, p.5). Moreover, AlJaafil and Sahin, (2019) indicated a remarkable idea that is relevant to this study; when asked about challenges and suggestions for improvement, teachers agreed that the curriculum was hindering the process as well as teachers' qualifications, and they suggested reform in the curriculum that can allow them to better integrate critical thinking in the classroom.

Aljaafil and Beyhan (2021) also shed light on crucial perspectives of teachers in Lebanon. They specifically quote a teacher saying, "The curriculum is loaded with information which focuses on memorization and textbooks are loaded with either too little exercises or too much questions. It is not designed according to Bloom's level thinking skills

therefore students suffer academically" (p.94). Aljaafil and Beyhan (2021) also mention other teachers' perceptions of the curriculum's lack of critical thinking, where teachers found the absence of higher order thinking skills integration. One of the challenges they found included the lack of resources to support teachers in innovating their teaching methods to target higher order thinking. In other words, the study found that teachers are in need for a curriculum reform to implement 21st century skills to achieve better performance, target higher order thinking skills, and link learning to life. Even though the context of the study of Aljaafil and Beyhan (2021) was focused on public schools, the similarity in the results with AlJaafil and Sahin's (2019) study on private schools is evident. This is because private schools still have to follow the Lebanese curriculum and its objectives in order to prepare their students for the Brevet and Baccalaureate Exams. As private schools are thought to be more innovative and resourceful, it is not always the case and is merely dependent on the school's leadership and funding sources.

The case studies implemented in this research will thus build on AlJaafil & Sahin's (2019) work in Saida to expand to the North of Lebanon. This will allow further exploration of the issue in Lebanon especially when compared to a leading system as the UAE's.

2.7 The Impact of Technology and AI on Critical Thinking in the Curriculum

2.7.1 The Impact of Technology on Critical Thinking

Technology has become an integral part of the 21st century. There is an increase in the use of technology in the classroom by educators, and this calls for the need of a better understanding of how technological tools can be used to improve students' critical thinking (Mejia & Sargent, 2023).

Research shows that teachers do believe in the positive impact of technology integration in today's elementary classrooms, as it not only improves students' enthusiasm for learning but also leverages their critical thinking skills (Jannah et al., 2020; Mejia & Sargent, 2023). Jannah et al. (2020) specifically state that technology for elementary school students is highly supported by the application of high order thinking skills, such as critical thinking, as it allows students to "observe, analyze, ask questions, and communicate critically" (p. 9). Gamified learning is one of the technology-enhanced learning approaches that has shown significant improvement on students' critical thinking abilities (Hussein et al., 2013). Research has also found that engaging students in not only gamified learning but the creation of games for learning significantly increases students' critical thinking skills and problem solving (Carolyn Yang and Chang, 2013). Thus, as research has shown the positive impact of technology use on critical thinking, digital literacy in today's world has become inevitable, and the integration of technology in the classroom has become necessary (Amin & Adiansyah, 2023; Siregar et al. 2019).

Research also highlights some disadvantages of integrating technology in teaching. Although most research shows positive impact of technology use in the classroom, Jannah et al. (2020) found that some teachers worry about its instant results, where students receive the needed information in a click of a button, which could affect critical thinking negatively. Therefore, technology needs to be correctly integrated as an exploratory tool rather than an informing tool. Kryeziu et al. (2021) found that some parents and teachers have a few concerns about technology integration in the classroom, such as reduced social interaction, greater tendencies of plagiarism, and increased distractions.

Taghizadeh and Yourdshahi (2018) received similar results. When looking into the

disadvantages, they found that technology integration in the classroom can also be distracting and time consuming. However, the study concluded that there is a generally positive outcome of integrating technology in the classroom. Thus, teacher training in technology is necessary for the successful and effective implementation of technology integration in the elementary classrooms.

2.7.2 The Impact of AI on Critical Thinking

In November 2022, Generative Pretrained Transformer (ChatGPT) ignited a revolutionary shift in our approach to various and fundamental aspects of our life and society including education. However, it has been a subject of great debate as many criticize the ethical ramifications it imposes as well as its effect on our thinking process (Du Plessis & Van Den Berg, 2023). Capinding and Dumayas (2024) shed light on the concern of the misuse of AI that results in hindering the process of critical thinking. This could be the case if students over rely on AI to seek answers. Although further research and exploration of best practices are still required, Du Plessis and Van Den Berg (2023) reflected a positive attitude and confidence that AI can transform education and provide many opportunities to support teachers.

In the AI era, traditional classrooms need to shift to more student-centered approaches (Chiu et al., 2023, as cited in Walter, 2024). One way of employing AI tools in teaching to contribute to better critical thinking skills and creativity is through using it for rigorous lesson planning (Du Plessis & Van Den Berg, 2023). In other words, it helps teachers in providing students with challenging lessons and activities that enhance their critical thinking abilities. Thus, AI, such as ChatGPT, can spark creativity, enhance critical thinking abilities, and encourage innovative activities that improve the learning process and make it active rather than passive (Du Plessis & Van Den Berg, 2023;

Walter 2024). It expands the room for insightful discussions and debate which promotes critical thinking as it is capable of providing analogies, hypothetical situations, and examples (Du Plessis & Van Den Berg, 2023). Furthermore, Hwang's (2022) meta-analysis study found that AI influenced elementary students' achievement positively by providing a relevant, hands-on, and personalized learning experience. Capinding and Dumayas (2024) also found similar results and claim that AI can influence students' critical thinking positively, and allow them to be self-reliant by using AI skillfully. In addition, AI can situate students in real-life experience in which they analyze and interpret information to find solutions independently (Capinding & Dumayas, 2024).

The learning process whereby students are provided with the most effective and engaging methods is the top priority in education. Funmi and Xusheng (2020) discuss that not only is critical thinking crucial in this era of machine learning, but it is also the antidote to the threats inflicted by artificial intelligence. When students use AI critically, it becomes an exploratory tool. Critical thinking is a crucial requirement for the integration of artificial intelligence into the educational sector or teaching methods. Moreover, such technologies can enhance learning and subsequently assist in the development of critical thinking skills (Swart, 2017, as cited in Funmi & Xusheng, 2020). As such a promising advancement in technology sets ground for many opportunities, educators need to train for the new set of challenges that come along, such as the ethical use of AI and keeping a critical mindset.

CHAPTER 3

RESEARCH METHODOLOGY

This research aimed to explore and compare insights from teachers, coordinators, and principals within each of the participating Lebanese and UAE private schools on the integration of critical thinking skills in the upper primary curriculum. This chapter presents the research approach, context and participants, data collection, data analysis technique, trustworthiness, and the ethical considerations.

3.1 Approach

This study followed a comparative qualitative case study, comparing two separate case studies, to interpret the case of Lebanon and the case of the UAE regarding the perspectives of teachers, coordinators, and principals on integrating critical thinking skills and tasks into the upper primary classrooms and the curriculum in the two countries. This research is anchored in the philosophy of social constructivism, or interpretivism (Creswell & Poth, 2016). According to Creswell and Poth (2016), social constructivism, or interpretivism, is a worldview through which people attempt to find complex meanings and understanding of the variety of experiences in the world. Research that follows such a philosophy extensively depends on the participants' views and perspectives for interpretation. Moreover, a qualitative approach provided the study with an in-depth understanding of the participants' perspectives on critical thinking through open-ended questioning where analysis happens inductively to form general themes for interpretation and building meaning from the data (Creswell & Creswell,

2018). This happens through a process called thematic analysis. Thematic analysis involves the analysis and rich description of common themes and characteristics within a set of data, in which the common themes are extracted inductively from the data through specific stages that ensure the effective extraction of themes (Özden, 2024).

A case study is a qualitative approach in which "the investigator explores a bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information" (Creswell & Poth, 2016, p. 73). This is then followed by a case description and case-based themes. In this study, multiple sites were chosen for comparison; one site includes two private English-medium schools in North Lebanon, and the other site includes a school in Dubai, UAE. Two schools in North Lebanon were chosen in comparison to one school in Dubai for the sake of the size of the schools and their number of participants. The schools in the Lebanese context have much fewer teachers than the one in the UAE. The choice of a cross-cultural case study of the UAE and Lebanon is purposeful. Lebanon, being my home country in which I, as an educator and a researcher, was taught and have taught in its schools, has scored as one of the lowest performing countries in international assessments such as PISA and TIMSS; and UAE, being my current job location, has scored among the 20 highest performing countries in international assessments.

3.2 Research Context and Participants

This comparative study targeted the case of two schools in Lebanon in comparison to one larger school in the UAE. The two Lebanese schools chosen share a similar curriculum and student body, which is why they can be considered as part of one case. The regions of the schools chosen are the North of Lebanon and Dubai

respectively. All of the schools chosen are private schools of an English medium. The school in the UAE context follows the American curriculum with adaptations to meet KHDA standards, emphasizing inquiry-based learning. The curriculum followed is thus standard-based with focus on Common Core State Standards. Such curricula typically emphasize inquiry-based learning, formative assessment, and the development of higher-order thinking skills, which provides a relevant foundation for exploring how critical thinking is operationalized in classroom practice. The Lebanese schools follow the national curriculum as an objective-based program, supplemented by American textbooks and teaching resources aligned with U.S.-based educational standards. The books are only used as tools to target the objectives listed in the school's scope and sequence for the elementary level. I have also been an instructor in all three schools and has experience in their teaching approaches and environment. All teachers, coordinators, and principals interviewed are Lebanese in both cases, Lebanon and the UAE. Since the focus of this study is the primary program, upper elementary level is the required field of expertise of the participants, whether teachers or coordinators. In addition, since international assessments involve reading, math, and sciences, teachers and coordinators of these subjects were invited to participate. This falls under purposeful sampling, or criterion sampling, since the participants have a required role and teach in the relevant context. Purposeful sampling is choosing the study's participants for a specific purpose that the researcher seeks to provide rich information and data, and thus criterion sampling includes studying participants that follow specific criteria (Suri, 2011). One principal from each school participated, three coordinators from each context participated to cover the three subjects targeted, and five teachers from each context participated, forming a total of 18 participants. Some teachers are subject teachers of Math, English, or Sciences, and some teachers are homeroom teachers (in the case of

Lebanon only). It is also worth mentioning that one of the coordinators from the Lebanese case is also a teacher herself, but she was interviewed as a coordinator only.

3.3 Data Collection

Data was collected from each participant through a 30 minute one-on-one semi-structured interview. Some interviews took place face-to-face, while other interviews were conducted virtually via online platforms such as Zoom, depending on the location and preference of the participant. The interviews were conducted from December 2023 through September 2024. Semi-structured interviews are a flexible qualitative method that offer adaptability in which the researcher follows a predetermined set of questions but may still improvise based on responses (Kallio et al., 2016). Therefore, this method provides rich descriptive data to target the research questions.

The interviews were differentiated according to the three roles: teacher, coordinator, and principal. The teachers were asked nine questions that inquired about the participants' understanding and perception of critical thinking skills, the importance of critical thinking integration, the definition and role of critical thinking, teaching methods and approaches that target critical thinking, description of activities and lesson plans, assessment of critical thinking, as well as challenges and suggestions. Coordinators were asked five questions while principals were asked seven questions. They both had similar questions about their perceptions but were altered to target a leadership point of view. Therefore, the questions focused on the mission and vision as well as allocations and team management to prioritize critical thinking integration in the primary curriculum. The design of the interview questions was guided by Bloom's Revised Taxonomy (Krathwohl, 2002), which classifies learning objectives according

to six cognitive domains: remembering, understanding, applying, analyzing, evaluating, and creating, and this framework also served as a lens to analyze responses. The study focused particularly on eliciting responses related to higher-order thinking such as analysis, evaluation, and creation, given their alignment with the concept of critical thinking. For example, questions regarding instructional strategies and assessment tools were constructed to determine whether and how participants support students in applying critical thinking during tasks, discussions, or problem-solving activities. The theoretical foundation ensured that the questions probed participants' perceptions, practices, and institutional support structures in a way that reveals educational rigor. Table 4.2 summarizes the aspects of the questions asked to each participant according to the role they have in the school. It includes keywords of each of the questions asked according to the role of the participant specifically on the integration of critical thinking in the classroom.

Table 3.1 Interview Question Keywords by Role

Role	**Question Keywords**
Principal	Motivations, Communicating Importance, Vision and Mission, Empowerment and Support, Resources Allocations, Assessment, Parental Empowerment.
Coordinator	Vision, Leadership Strategies, Resources and Support, Assessment, Challenges.
Teacher	Definition, Components, Significance, Strategies, Challenges, Examples of Lesson Plans and Activities, Assessment, PDs Received and Needed.

3.4 Data Analysis

Data analysis in qualitative research is a descriptive process that includes analyzing the information gathered from the participants through general steps (Creswell & Creswell, 2018). These steps include preparing the data through thorough reading, coding, thematic analysis, presenting the findings, and interpreting the findings. Therefore, this process was specifically followed in this study to obtain accurate understanding and knowledge.

The qualitative data analysis focuses on providing in-depth feedback on each research question. Thematic analysis is a qualitative research method that identifies, organizes, describes, and reports the themes found within the data collected (Nowell et al., 2017). In this study, all interviews were first recorded and then transcribed into text. Then, they were thoroughly and repetitively read by the researcher for consistency and accuracy in coding. As mentioned by (ÖZDEN, 2024), "Coding is a living, dynamic process influenced by ongoing developments," (p.72). Therefore, the first stage of thematic analysis involves rigorous reading of the transcripts followed by hand color-coding, or marking important data that could be relevant to the research questions or even beyond. Winnowing the data is also an important step in which data is filtered depending on the focus of the study (Creswell & Creswell, 2018). Themes then emerged from grouping the general codes found into larger categories. The themes found were mainly different according to the role of the participants (teacher, coordinator, or principal) since they had a different set of questions. In this sense, the thematic analysis performed is data-driven in which themes were found inductively since they were formed after coding the data and do not follow a pre-existing frame (Nowell et al., 2017). This method provides a richer description of the data. Eventually, the data was compiled in a rich narrative descriptive form for each theme in comparison

of the case studies and summarized in tables for comparison to be included in the findings.

3.5 Validity

The study used triangulation of types of participants, which means involving participants of different roles and positions in the school. This provided a richer data and a deeper understanding of each context. Therefore, interview questions differ depending on the positions of the participants to answer every research question precisely and adequately. Triangulation of data sources is a validity strategy as it ensures that the data gathered is valid by providing multiple sources of information (Creswell & Creswell, 2018). Since collecting data through classroom observations or curriculum document analysis was not feasible due to geographical and institutional access limitations, the study employed site-based triangulation in addition to participant-based triangulation. The comparative nature of this study, involving two distinct educational contexts—Lebanon and the UAE—adds a level of internal consistency and depth. Both cases operate under the same curricular model (American-based), yet differ culturally and institutionally, allowing for a richer understanding of how critical thinking is integrated under varying leadership and instructional environments.

The interview questions also received face validity from this thesis' supervisor. Face validity is an essential form of validity in which a tool is assessed for providing both quality data and a better experience for participants (Allen et al., 2023). Therefore, face validity insured that the interview questions used in this study are meaningful, relevant, and comprehensible.

3.6 Trustworthiness

Shenton (2004) suggests various provisions that could be taken into consideration by a researcher to promote confidence and credibility of data and data analysis. In this study, member checks and triangulation were central to ensure trustworthiness. Member checks are the checking of the accuracy of data during and at the end of data collection dialogues. As Shenton (2004) explains, their purpose is the verification of information by the participant regarding the intended meaning of the dialogue. The researcher would thus maintain the accuracy, validity, and credibility of the data collected and its interpretation. During my interviews with the participants, I included time for formative feedback and confirmation of spoken words and their actual meaning for precise understanding.

As for triangulation, the study adopted triangulation of informants. Perspectives of a variety of stakeholders were involved in the study from teachers, coordinators, and principals in both contexts of Lebanon and the UAE for the purpose of holistic and realistic view on integrating critical thinking in the primary program. This ensures the credibility and consistency of information on the practices applied in both contexts.

To ensure that the data analysis process is also trustworthy, rigorous thematic analysis was performed. Although there is a lack of research on how to apply thematic analysis and the coding of data specifically in a trustworthy manor, adhering to the six steps of thematic analysis in a careful and iterative process can ensure rigor (Nowell et al., 2017). This also involves presenting the data sufficiently and richly for readers to understand the connection between the research questions and the data presented, and thus achieving the readers' trust.

While traditional qualitative case studies often combine interviews with direct observations and document analysis, this study ensured rigor through careful

triangulation of perspectives and methodological transparency. Thus, trustworthiness was preserved by cross-verifying findings across two culturally distinct but curriculum-aligned educational contexts. This approach allowed the study to highlight patterns and inconsistencies that might otherwise go unnoticed in single-site or single- role studies.

3.6 Ethical Considerations

In order to ensure ethical research, the privacy, confidentiality, and anonymity of the participants were conserved and prioritized. All participants that willingly agreed to participate in this study were informed about the purpose of the study and its importance to the education sector of both Lebanon and the UAE. Prior to every interview, participants were provided with an agreement ensuring their privacy and informing them of the procedures of the interview, and thus they voluntarily decided to participate. Written and verbal consent from each participant were secured for the recording of the interviews. No personally identifiable participant information is disclosed anywhere in the reporting of the findings or discussion of the study. Any recordings of the interviews were also only reached by the researcher and ethically stored. These measures are necessary for the ethics of research and the rights of the participants.

CHAPTER 4

FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents the data gathered through semi-structured interviews with teachers, coordinators, and principals of both case studies, Lebanon and UAE. The results are presented thematically, and tables are included to represent the data described in each theme. After the results are presented, a thorough analysis of the findings is discussed in the context of relevant literature.

4.1.1 Participant Overview

Table 4.1 presents the participant coding system that is followed in the presentation of the results. Participants from the case of Lebanon are referred to as 'A', and participants from the case of the UAE are referred to as 'B'. Principals from each case hold the initial 'P' and number '1' next to each of the letters accordingly. The coordinators from each case hold the initial 'C' and numbers '1' and '2' next to each of the letters accordingly. Teachers from each case hold the initial 'T' and numbers from '1' to '6' next to each of the letters, again according to the case they belong to. This brings the total number of participants to 18 as mentioned in the previous chapter.

Table 4.1 Participant Coding System

Case	Code	Role	Case	Code	Role
Lebanon	AP1	Principal	UAE	BP1	Principal

Lebanon	AC1	Coordinator	UAE	BC1	Coordinator
Lebanon	AC2	Coordinator	UAE	BC2	Coordinator
Lebanon	AT1	Teacher	UAE	BT1	Teacher
Lebanon	AT2	Teacher	UAE	BT2	Teacher
Lebanon	AT3	Teacher	UAE	BT3	Teacher
Lebanon	AT4	Teacher	UAE	BT4	Teacher
Lebanon	AT5	Teacher	UAE	BT5	Teacher
Lebanon	AT6	Teacher	UAE	BT6	Teacher

4.1.2 Emergent Themes

Table 4.2 presents the major themes that emerged during the inductive coding of the interview transcripts and a description of what each theme includes.

Table 4.2 Description of Themes and Data Source

Themes	**Description of the Theme**	**Data Source by Role**
Understanding of Critical Thinking	The definitions, skills, and components of critical thinking as described by the teacher participants	Teachers
Perceptions and Significance of Critical Thinking	Participants' articulation of the importance of critical thinking as well as how they conceptualize its role.	Teachers, principals, and coordinators
Strategies to Integrate Critical Thinking	The strategies and tools adopted by participants to integrate critical thinking according to the role they hold in the school.	Teachers, principals, and coordinators
Assessing Critical Thinking	Assessment methods and tools that participants utilize to assess critical thinking skills and their integration in the curriculum.	Teachers, principals, and coordinators
Challenges and Barriers	Obstacles, barriers, and challenges faced by participants when integrating critical thinking.	Teachers and coordinators

Each theme will be discussed in the next section with a presentation of the codes that led to each theme's emergence.

4.2 Thematic Findings

4.2.1 Theme 1: Understanding of Critical Thinking

Teachers were explicitly asked to define critical thinking and list the components and skills that they believe are associated with critical thinking skills. Table 4.3 illustrates the codes that emerged within this theme as well as the frequency of the codes' application in the transcripts in each of the cases of Lebanon and the UAE.

Table 4.3 Theme 1 Codes and Frequency

Theme	**Codes**	**Frequency (Lebanon)**	**Frequency (UAE)**
Understanding of Critical Thinking	1. To think outside the box	3	2
	2. To analyze, apply, solve problems, question, judge, assess, evaluate, and create	9	9
	3. To reflect	0	10

Table 4.4 provides examples of direct quotations for each code. These quotations clarify how the codes were derived from the data.

Table 4.4 Theme 1 Codes and Quotations

Codes	Quotations (Lebanon)	Quotations (UAE)
1. To think outside the box	"It means to think outside the box. Think of ways to get to an answer. To find a solution," (AT5), "…to think further and beyond," (AT3)	"I would define critical thinking as teaching the students to think outside of the box, and teaching them how to think about the how and the why," (BT3), "It involves thinking outside the box, thinking in a different way, coming up with different solutions for the same problem," (BT5).
2. To analyze, apply, solve problems, question, judge, assess, evaluate, and create	"So it's a process in which students are able to evaluate, are able to create, they are able to have their own opinion about whatever you're teaching," (AT3), "Critical thinking is more like analyzing, having arguments, judging, based on facts, evidence, based on their observation. Formulating questions." (AT4)	"…involves students' abilities to analyze information, to question, to assess…" (BT1), "…taking the math concepts understood from the level of comprehension to the higher order thinking levels of application, analysis, and synthesis," (BT6).
3. To reflect	NA	"…encouraging them to reflect on what they've done," (BT2), "Critical thinking is … to reflect…" (BT1, BT3, BT5)

When teachers from the case of Lebanon were asked to define critical thinking, most teacher were able to give a valid definition. Most teachers repetitively highlighted the role of analyzing, applying information, solving problems, formulating questions, judging information, evaluating, assessing, and creating a product when it comes to defining critical thinking skills and the associated components. Teachers agreed that

critical thinking situates students in an active learning process, where the associated skills are applied: “It is the ability to problem solve and ask questions, also to assess and then produce a new outcome,” (AT1) and “The ability of a student to have a judgment over something to realize to try to find an answer without us giving it for him or her,” (AT6). Some teachers asked for clarification prior to answering or asked for reassurance after answering, yet some teachers felt unsure about their answers, such as AT2 who said, “I can maybe think of like an analysis or an evaluation, how to evaluate a certain text, some sort of instructions, how to look at them… how about a judgment?” (AT2).

In the case of teachers of the UAE, the data seems to be similar, except for one code, which is to ‘reflect’. The code ‘to reflect’ occurred around 10 times when teachers were discussing the definition and skills associated with critical thinking. In other words, every teacher mentioned students’ ability to reflect at least twice in the interviews, while teachers of Lebanon did not mention it once. All teachers had similar definitions and skills listed such as, “Critical thinking in primary education involves students’ abilities to analyze information, to question, to assess, and to reflect,” (BT1), and “Critical thinking in primary education refers to more teaching students how to analyze information, solve problems, make educated or reasoned or logic-based decisions, and it involves encouraging students to question assumptions that are maybe universal,” (BT2).

In general, most of the teachers’ answers were accurate and similar to the definition of critical thinking that is given in this study. However, it is evident from Table 4.4 that linking critical thinking with reflection in the case of Lebanon is completely absent in the teachers’ transcripts.

4.2.2 Theme 2: Perceptions and Significance of Critical Thinking

All participants in the interviews provided data that portrays how they conceptualize critical thinking in today's upper primary classrooms. Teachers were directly asked about how important they believe it is, while coordinators and principals were asked about their vision, purpose, and motivations for integrating critical thinking in the curriculum. Table 4.5 summarizes the codes that were applied within the theme 'Perceptions and Significance of Critical Thinking' and the frequency of the codes' occurrence in each case. Table 4.6 provides direct quotations of each code.

Table 4.5 Theme 2 Codes and Frequency

Theme	**Codes**	**Frequency (Lebanon)**	**Frequency (UAE)**
Perceptions and Significance of Critical Thinking	1. Very important	8	10
	2. Prepares students for the future	2	9
	3. Challenging and demanding to integrate	6	0
	4. Links learning to real life	3	12
	5. Promotes active learners	1	3
	6. Improves progress and attainment	0	5

Table 4.6 Theme 2 Codes and Quotations

Codes	**Quotations (Lebanon)**	**Quotations (UAE)**
1. Very important	"It is important," (AT1, AT2)	"It is very important," (BT1, BT3)

2. Prepares students for the future	"So if you teach them to think, then you are preparing them better for the future." (AP1), "The most important thing for integrating critical thinking skills is to prepare the students in the upper elementary classes for the next level in school, for the intermediate classes," (AC2).	"Elevate those students that are in elementary and make them more ready also for the coming stages," (BP1), "…because early on, when it becomes a habit for students, then it's easier for them throughout the upper middle school and high school to integrate that type of thought," (BT2)
3. Challenging and demanding to integrate	"It is important, but with grade five students, you don't see it that much…They lack this critical thinking in class. Half of the students do. So I think it's important, but I can't apply it" (AT2), "The critical thinking base that these students have is weak. We do find some difficulties in implementing it in the classroom nowadays." (AT5).	NA
4. Links learning to real life	"If you apply critical thinking in school, you are getting ready to apply it in real life," (AT8)	"You have to give them opportunities to exercise and link learning to the real world, like in research," (BP1), and "The students will make smart decisions in life since the benefits of critical thinking don't maintain in the classroom. It allows students to reflect properly, it allows the students to think differently, and it allows the students to think logically when facing situations in real life." (BT5)
5. Promotes active learners	"Without critical thinking, you are teaching robots to repeat things that they have heard, and they are repeating them without thinking," (AP1)	"It makes students active learners not passive learners," (BP1), "…promoting active learning by giving them space to discover things for themselves and to learn them," (BC1)

6. Improves progress and attainment	NA	"Now when we are seeing progress, for example, in MAP or NGRT in English, this is a result of elevated critical thinking skills in the classroom," (BP1), and "We use the MAP data to focus on the progress of the students… And it is critical thinking skills integration that makes this progress," (BT3).

For the first code, almost all participants from both cases mentioned in their interviews that 'critical thinking is very important'. All participants agree that critical thinking skills are essential and crucial to have. For example, BT1 mentioned that "Its's a key skill for today's young generation." BC1 emphasized on international assessments like PISA and TIMSS, clarifying that "These exams really target a lot of critical thinking questions. So it is important for us to have it within our mission and our vision."

The second code indicates the given justification of some participants on why critical thinking is important. Only the principal and one of the coordinators from the case of Lebanon elaborated why critical thinking is important. AP1 said, "Critical thinking, in my opinion, is very, very essential to any learning situation because it goes way above teaching content… So if you teach them to think, then you are preparing them better for the future." However, teachers from the case of Lebanon had more of a negative perception regarding integrating critical thinking skills in their teaching, as shown in the third code. For example, teachers mentioned that "It is demanding to involve students with critical thinking in every lesson, and this was actually something said to me as I was an intern by a teacher," (AT1), and "It is important, but with grade five students, you don't see it that much…They lack this critical thinking in class. Half of the students do. So I think it's important, but I can't apply it" (AT2). This code

occurred 6 times in the interviews in the case of Lebanon but 0 times in the case of the UAE, making the negative perception evident. Only one teacher (AT3) in the case of Lebanon had a positive attitude, believing that it is easy because you just have to focus on the "Why and how?"

The second code appeared 9 times in the UAE interviews, where all participants mentioned that critical thinking prepares students for the future; however, none of the Lebanese teachers acknowledged that. When asked about motivations, BP1 mentioned that the goal in integrating critical thinking is to "Elevate those students that are in elementary and make them more ready also for the coming stages in their life." BC1 also insisted that "There's no way we're going to be able to prepare the older students for critical thinking if we don't start in the foundations." As for UAE teachers' perceptions, five of the teachers agreed that critical thinking in the primary curriculum indeed prepares students for the upper levels and the future in their interviews. None of the teachers in the UAE viewed integrating critical thinking skills demanding for teachers. In fact, a few teachers expressed that it is very easy. For example, a teacher said, "I feel that critical thinking is very easily practiced by the student because the student can explore and discover the lesson instead of memorizing it, which makes them more engaged and interested." (BT6). Another teacher expressed that "Through time, students start finding this easier and start finding this more enjoyable for them. So students in general in grades five and six, they developed amazing science skills as they go to upper classes." (BT4).

Table 4.5 shows that the fourth code, 'links learning to real life', occurred 3 times in the case of Lebanon and 12 times in the case of the UAE. In fact, the 3 occurrences of the code in the Lebanon case were actually only in one of the teacher's interviews, whereas the code was applied in almost every interview at least once in the

case of the UAE (BP1,2,3,4,6,7,8, and BT6). AT5 stated that "If you apply critical thinking in school, you are getting ready to apply it in real life." Similarly, participants from the UAE explained the role of critical thinking in students' ability to link learning to real life. The following quotes illustrate the participants conceptualization of critical thinking: "And what does critical thinking look like in English? It's basically being able to make connections, first of all, that's at its most basic level. You know, make text-to-text connection, text-to-self connections, text-to-world connections," (BC1), and "When you face a challenge in your life, you have to think critically how to deal with this situation. So, when you teach the students this skill in class, they can transfer it in their real lives." (BT3).

The fifth code, 'Promotes active learners', did not explicitly emerge in any of the teachers' interviews when asked about the significance of critical thinking integration in the elementary classrooms. Both principals explained that critical thinking allows students to be "active learners" (BP1) by not passively memorizing material but actively engaging in lessons to become. Otherwise, you will be "teaching robots to repeat things that they have heard," (AP1). Also, BC1 discussed that to promote critical thinking, teachers promote "active learning by giving them space to discover things for themselves and to learn them," Critical thinking is thus essential in making active learners. When asked about examples of activities and lesson plans later on, many teachers, especially in the case of the UAE, described how they follow active learning and student-centered learning as required by the school. However, they did not make a direct link between the role of critical thinking in promoting active learning when asked about their perceptions of critical thinking integration, and this is why the teachers' data was not included under this code. This code provides valuable input as in to recognize the principals' vision and to analyze how teachers translate this vision into their classrooms through their teaching

strategies that will be discussed in the next theme.

One last code that occurred in the interviews was ‘Improves progress and attainment’. This code only appeared in the case of the UAE, where four participants mentioned this code 5 times in total. These participants linked integrating critical thinking in the upper primary classrooms to improving students’ progress and attainment by the end of the academic year. BC1 explained that “It will impact the students' performance in internal and external assessments. Now when we are seeing progress, for example, in MAP or NGRT in English, this is a result of elevated critical thinking skills in the classroom. If we don't work on this, we're never going to see the progress.” This quotation implies that teachers and their coordinators in the UAE specifically use standardized tests as evidence of how critical thinking is linked to attainment and progress. BC2 also had a similar remark on how critical thinking integration achieves higher engagement and higher attainment. Teachers of the case of the UAE had similar thoughts: “It really takes a whole year to see progress in critical thinking skills. It requires patience but it is definitely rewarding in terms of progress and attainment,” (BT1).

This theme demonstrates how participants conceptualize and perceive critical thinking. All participants agree that critical thinking is important. However, many participants from the case of Lebanon feel that it is demanding and challenging to integrate, whereas participants from the case of the UAE had a clearer perception of how it links learning to real life, prepares students for the future, and improves progress and attainment. The next theme, “Strategies to Integrate Critical Thinking,” discussed below, reveals that even though teachers can all agree that critical thinking is important, the strategies used to integrate critical thinking in the classroom differ between the two cases.

4.2.3 Theme 3: Strategies to Integrate Critical Thinking

4.2.3.1 Strategies practiced to integrate critical thinking in the case of Lebanon

This theme portrays the integration of critical thinking in the classroom, as reported by the teacher participants. Teachers shared the strategies they use as well as actual examples of lessons, methods, and routines used in efforts of integrating critical thinking. Teachers were asked about strategies they use in class, assessment methods, and real examples from their everyday class routines. Coordinators and principals also mentioned some strategies that they have seen teachers apply in their school, so their data is also included in Table 4.7 below.

Table 4.7 Theme 3 Codes and Frequency (Lebanon)

Theme	**Codes**	**Frequency (Lebanon)**
Strategies to Integrate Critical Thinking	1. Use of projectors and other resources	5
	2. Writing	3
	3. Discussions	9
	4. Hands-on activities	5
	5. Differentiation	1

Table 4.8 Theme 3 Codes and Quotations (Lebanon)

Codes	**Quotations (Lebanon)**
1. Use of projectors and other resources	"We use a lot the projector. It's very important. I cannot do without it. All of us, we use it. We use it for videos…" (AC1), "I only had an LCD in class with no Wi-Fi, so I had to alter my lesson plan to that. This is the only resource. I use the book, and I used to get some videos downloaded from YouTube," (AT6)

2. Writing	"Other than writing, as the process of writing, we believe that they should express themselves through, how do you say it, like free writing,' (AC1), "As for writing… We tend to brainstorm a lot… We do this as a whole class so everyone can follow with me and get the same product." (AT2)
3. Discussions	"Whenever we have a reading lesson, students start with predicting, which is a key component of critical thinking. …They also ask questions as they read," (AT1), "I would start the lesson with an activity so that students can think about it on their own, try to find the solution on their own, or the answer on their own, and then we can discuss what strategies they used, why they think the strategies they used work," (AT5)
4. Hands-on activities	"Students were able to use those base one blocks to model different numbers. I love to challenge kids to not only model two-digit or three-digit numbers, try to model four-digit numbers if they can," (AT5), "We show them lots of examples and we give them hands-on… You're getting them to think how to come up with the correct answer," (AT3)
5. Differentiation	"…allowing kids also to not all be doing the same thing in the classroom. That would be through using different thinking skills." (AP1)

All participating teachers from the case of Lebanon described their class instruction as either whole class instruction or individual work. Only a few mentioned incorporating group work to solve activities, and only on certain occasions not on daily basis. In contrast, teachers of the UAE described their daily class instruction as grouped work. Direct instruction could be 5-10 minutes at the beginning of every period, and sometimes it could only be small group instruction. The codes cited in Table 4.7 represent the specific strategies that are used by teachers in the case of Lebanon, and Table 4.8 presents direct quotations to exemplify the emergent codes.

The use of projectors and other resources was a common code occurring 5 times in the interviews to refer to the tools they find useful in integrating critical thinking in the class. LCD projectors are only available with no Wi-Fi connection, as all teachers

mentioned. Some quotes from teachers include: “We did have a projector, so that was really helpful in math, especially in math when you have to draw shapes and differentiate the shapes,” (AT5), and “I only had an LCD in class with no Wi-Fi, so I had to alter my lesson plan to that. This is the only resource. I use the book, and I used to get some videos downloaded from YouTube,” (AT6). Along with the use of projectors, many teachers mentioned the use of the online platforms of the books used, as they provide worksheets and activities for students to practice in class even without internet. However, there was no clear description or example by any teacher on how they use the projector to boost critical thinking skills.

The second code in Table 4.7 refers to using writing to target critical thinking. English teachers and coordinator (AC1) mentioned providing critical thinking opportunities through writing. AC1 referred to ‘free writing’ to allow children to be creative, while AT1 and AT2 mentioned ‘structured writing lessons’ in which they guide students through the writing process based on a specific prompt. AT1 stated that these writing sessions are isolated and a separate lesson on their own, but AT2 stated that this year, due to targeting accreditation, the English teachers are required to link these writing lessons to the unit being studied. Students can apply their learning through their writing task this way, and it allows them to think critically about the lesson’s topic. Again, teachers started linking reading to writing this year as requested by accreditors.

The third code refers to class discussion that includes questioning students with ‘how’ and ‘why’ questions, making predictions or observations for discussions, and linking previous knowledge with new one. This code occurred 9 times in interviews. It seems to be the most used technique for participants from the case of Lebanon to integrate critical thinking in the classroom. Some teachers similarly explained that they sometimes introduce lessons or new concepts through whole class discussions and

linking what they previously learned to introduce a new one, and they believe that they target students critical thinking through building such bridges (AT2, AT3, AT4, and AT5). AT1 explicitly mentions that since teachers acknowledge the importance of critical thinking, they try their best to integrate it through such a technique that requires no resources, when possible. In addition, many teachers, when asked on how they integrate critical thinking within their lessons, mentioned that they do it through allowing students to predict or by asking them questions. They could predict the ending of a story, or they could be questioned in a way to induce a grammar rule or a meaning of a word. For example, the coordinator, who is also a teacher, mentioned the following: "They came up to the board and they started saying the qualities, the adjectives… They were able to guess that our lesson is about adjectives … We try to make them think about what the lesson is going to be about," (AC1). AT4 explained that critical thinking in class is integrated mostly through questions that lead to class discussions or through worksheets that require application of knowledge. Although participants gave examples of the use of questioning and predicting, they also confirmed that such lessons are usually followed with traditional assessments that require mainly recalling, memorization, and repetition. For example, participants stated the following: "After that we work on comprehension questions that show that students understood the story, like text recalling questions," (AT1), "We repeat just to see that everyone clearly understood the instruction and the new concept," (AT2).

The fourth code involves the use of hands-on activities to promote critical thinking skills. This code occurred 5 times in the interviews. AC1 claims that it could be "just a piece of paper" to get students engaged in the learning process since resources are limited. AT6 also gave another example by saying, "There are so many activities that require easy-to-find material. We once did bowling to teach fractions as

well. The students had a lot of fun. They were definitely engaged," (AT6). The quotes presented by AC1 and AT6 describe the use of hands-on but for the purpose of student engagement rather than critical thinking. The quotes presented by AT3 and AT5 in table 4.8 refers to using hands-on to teach student different strategies, specifically in teaching Math, but there was no elaboration on how students' understanding of 'how' to find answers targets higher-order thinking and allows students to think critically.

Differentiation is the last code that, although it occurred only once, provides valuable input to this study. Out of all participants, it is only the principal (AP1) that believes that differentiation is an important strategy that shows critical thinking integration and mentions that it is "allowing kids also to not all be doing the same thing in the classroom. That would be through using different thinking skills." AP1 also added that, "All of it has to be aware that this takes time and it cannot happen overnight." This shows the principal's awareness of the impact that differentiation can do to students' critical thinking but also that it is not implemented much by teachers and that it would require time and effort to implement, if it is to be implemented. None of the teachers in this case reported the use of any kind of differentiation as a strategy.

In conclusion, teachers in the case of Lebanon admitted that since they most of the class time is whole-class instruction and direct teaching, they mostly rely on class discussions to integrate critical thinking opportunities. However, when possible, they try to include hands-on activities to also boost engagement, share previously downloaded videos for educational content, and link critical thinking to their writing lessons.

4.2.3.2 Strategies practiced to integrate critical thinking in the case of UAE

In the case of the UAE, a wider variety of effective strategies were reported by participants, resulting in 10 codes to be noticeably and consistently occurring. These codes are summed up in Table 4.9 along with the frequency in which they occurred in the UAE context followed by Table 4.10 for direct quotations for each code.

Table 4.9 Theme 3 Codes and Frequency (UAE)

Theme	Codes	Frequency (UAE)
Strategies to Integrate Critical Thinking	1. Use of online platforms	12
	2. Research	5
	3. Reflection	13
	4. Question Formulation Technique (QFT)	6
	5. Active learning methods	12
	6. Differentiation	10
	7. Rigorous tasks and questions (DOK3 and 4)	11
	8. Scaffolding and tiering	5
	9. Communication	6
	10. Social Emotional Learning (SEL)	12

Table 4.10 Theme 3 Codes and Quotations (UAE)

Codes	Quotations (UAE)
1. Use of online platforms	"I use a platform called IXL and I specifically pick categories or questions that promote critical thinking," (BT2), "We also gamify learning by using many tools such as Nearpod and Blooket... High achievers are also challenged to create games themselves for example using Scratch which is a fun coding program that fourth grade students love," (BT6)
2. Research	"You have to give them opportunities to exercise and link learning to the real world, like in research," (BP1), "We try our best to include research-based activities because in order to foster critical thinking, they need to see information and be able to evaluate it themselves," (BT2)
3. Reflection	"Reflection is a major part of critical thinking. I mean to be able to think about the way you think, to think about the way you perform, to set for yourself next steps… the self-reflection, the peer reflection…" (BC1), "Teachers are also encouraged to use reflection sheets, after lessons or after assessments, to allow students to self-evaluate," (BC2).
4. Question Formulation Technique (QFT)	"It involves questioning and then evaluating the questions and then researching. Researching and then sharing." (BT5), "I ask them to use the QFT method where they write down questions about some information…" (BT2)
5. Active learning methods	"I never stood in front of the class and just explained, then they practice what I have explained. No, my strategy was through the task without any of the knowledge, you will be able to reach to the conclusion that I want you to reach to. It is very student centered," (BT4), "Mostly during my science lessons, I implement the POE technique, which is predict, observe, explain. They experiment and explore the lesson independently," (BT3)
6. Differentiation	"One of the most important teaching strategies that we use is the differentiation…. Each student will be able to reach at the end to do or complete the I CAN statement through different tasks according to their critical thinking levels," (BT4), differentiated according to pre-assessments or standardized tests results. This allows all students of different abilities to reach their suitable level of higher order thinking and critical thinking." (BT6)

7. Rigorous tasks and questions (DOK3 and 4)	Now during our lesson, I do interview questions… the questions range from DOK one to DOK three…Are they able to challenge themselves and think more critically by answering the DOK-3 questions?" (BT3), "Another teaching strategy is mainly the level of questions," (BT4), "It's a must to provide rigorous questioning types that reach DOK 3 and 4 not only 1 and 2… Students need to be challenged every lesson," (BT6)
8. Scaffolding and tiering	"Without enough scaffolding and tiering, they won't be able to get there," (BC1), "students are tiered and scaffolded according to their abilities, and thus they are challenged to reach higher levels of Bloom's taxonomy accordingly," (BT1)
9. Communication	"As students work in their groups, communication is always encouraged as well as collaboration," (BT1), "We try to do Socratic seminars, for example. They also help promote critical thinking..." (BT2).
10. Social Emotional Learning (SEL)	"We integrated the social-emotional learning (SEL) in every single math class and lesson…So we link it to real life," (BC2), "The SEL social-emotional learning, we link it through our lessons by like asking the students about the real-life activities that they do…" (BT5)

The use of online platforms such as Zearn, IXL, Nearpod, RAZ, and others is the first code in Table 4.9. It occurred 12 times in the interviews, and it was referred to by every participant at least once. Participants agreed that the use of online platforms during class time has facilitated the daily integration of critical thinking in the classroom. The school principal (BP1) indicated that they "allocate funding to useful digital tools that facilitate critical thinking" when asked about allocations and funding. Coordinators similarly require teachers to use "Nearpod, RAZ, SAVVAS, and IXL" to target students' critical thinking skills according to their levels on daily basis. Teachers also explained the following: "I usually use platforms such as Nearpod or RAZ in class to give both high and low achievers opportunities where they can practice their critical thinking skills," (BT1, describing how students use online tools to work independently), and "We give the students the resources they need, like say, IXL practice that gives

personalized skill plans to improve," (BT3, discussing the use of online tools to enhance students' progress in standardized tests). Some teachers gamified learning to target critical thinking, and they also described using online tools that allow students to explore up to middle-school skills individually. Therefore, the use of online platforms in class is one of the most used strategies, and it plays an integral role in class routines to develop students' critical thinking skills according to their learning levels and styles.

The second code indicates the use of research in class to develop critical thinking skills in upper elementary students. Participants in the case of the UAE mentioned 'research' 5 times in the interviews. The principal (BP1) shed light on the role of research and said, "You have to give them opportunities to exercise and link learning to the real world, like in research." BP1 also added examples of how this is applied in school, where they offer students programs such as "Little Explorers" that allow young learners to engage in research and exploration in real-world problems. Teachers also discussed their use of research in daily lessons. The following direct quotations describe their use of research to integrate critical thinking in their lessons: "Lessons could include a rigorous writing task based on a rubric where they have to do their own research and follow the writing process without plagiarizing. Students also research and present arguments on a topic along with evidence. This really encourages them to think critically about complex issues since they need to decide whether they agree or not and defend their decision in the presentation," (BT1) and "We try our best to include research-based activities because in order to foster critical thinking, they need to see information and be able to evaluate it themselves," (BT2). The term 'to evaluate' was listed in the definition of critical thinking as provided by most teachers in the interviews. Therefore, these quotations link the definition given for critical thinking and the UAE teachers' actual practices, where the verb 'to evaluate' is evident in practice in the case of the UAE.

Research is mainly highlighted by English teachers, but other subjects also had different ways to include research, which is presented in the fourth code.

The third code refers to promoting reflection as a strategy to boost critical thinking in students. This code occurred 12 times, being the most used strategies although it never occurred in the case of Lebanon. As most participants used the term reflection when defining critical thinking, it is evident that the integration of reflection in teaching is consistent. The principal (BP1) claims that critical thinking integration is very strategic and clear, and he highlighted the following: "You give them time to reflect. You give them exchange of roles to assess and evaluate. … Self-reflecting, you know, self-evaluating. All of these things are critical thinking." In accordance to that, coordinators also agreed that reflection is essential for critical thinking to happen, as indicated in Table 4.10. Similarly, all teachers recorded their use of reflection sheets or reflection strategies within daily lessons, and they all addressed the link between reflection and critical thinking. For example, one teacher noted using reflective journals as a key strategy in promoting critical thinking, where she uses Nearpod to collect data on students' daily reflections on questions of a critical type at the end of lessons (BT2). Another teacher also shed light on 'goal-setting' as a reflective practice that allows students to critique themselves and to evaluate what they need to improve (BT6). In addition, a teacher (BT1) mentioned using 'two stars and a wish', where she provides students with stems that involve students in a dialogue of reflection and positive peer-evaluation. Therefore, as the importance of reflection is translated from the principal to the coordinators to the teachers' classrooms, it becomes an inevitable strategy in the case of the UAE.

The fourth code involves using student question formulation method called the QFT to target critical thinking in students, which occurred 6 times in the interviews. QFT refers to

'Question Formulation Technique', and it is a strategy adopted by many teachers after learning about it in one of the workshops given by the coordinator, BC1, for all subjects. The principal highlights the role of 'what if questions' to engage students in critical thinking, where students are the ones asking questions in this case and exploring the answers. The 'what if?' strategy that BP1 mentions is implemented through the QFT method; teachers describe this method as "providing students with a concept or an idea and letting them form their own questions, eliminating the closed-ended ones, evaluating the necessary ones, and then researching for answers." (BT5). One of the coordinators (BC1) explained the purpose of such a method saying, "If you can create the right question, that means you are already thinking critically. We had many PDs on this technique to make it work for all levels starting from elementary." This quotation not only links this method to critical thinking but also clarifies the reason behind its consistency and success. The following direct quotation from one of the teachers (BT2) specifically describes and sums up the use of QFT: "I provide them with reliable resources they can explore… I ask them to use the QFT method where they write down questions about some information that they might not maybe agree with and I ask, I encourage them to discuss it together as a group… after everybody has questioned some of the data that they have researched, they go on to research their questions to help make the data much more unbiased and as objective as possible. And that also helps promote their critical thinking abilities."

The fifth code refers to active learning strategies, such as the use of hands-on activities, flipped classroom, and POE (Predict, Observe, Explain) in science classes to involve students in critical thinking opportunities in class. This code emerged 12 times in the interviews. As previously mentioned, teachers from the case of Lebanon mainly used hands-on activities for engagement purposes, where some of them doubted whether they were targeting critical thinking or not. On the other hand, in the case of the UAE,

teachers believe that hands-on activities definitely boosted engagement but were also used carefully to target their critical thinking, especially students that are mid or low achievers. For example, one of the English teachers (BT1) gave the example of providing low achievers with a vocab boardgame, where students had to assess each other's answers since they worked independently in groups. Other groups "created their own crossword puzzles", which also boosted their critical thinking. In fact, teachers explained that since 'Word Work' is a daily station in their class routine, hands-on activities happen daily. Another teacher describes the use of hands-on activities for 'kinesthetic learners' (BT4) to boost their learning experience in Science classes, and she either takes students for lab visits or she is provided with any necessary material for class demonstration. This method is used at the beginning of lessons through the POE method to allow students to explore scientific concepts rather than receive information from the teacher, which in turn targets the students' critical thinking skills. Furthermore, participants explained that, because class routines most of the time include providing students with resources and allowing them to explore instead of directly teach, most of the class time looks like a flipped classroom. There is no more of 5- 10 minutes of direct teaching, if not only "modeling" or "thinking aloud". Unlike a flipped classroom, students are not requested to explore the lesson material at home to come apply in class. However, most teachers in class provide students resources and provide them with the time to explore, possibly in groups, to then move on to the tasks. The following direct quotations exemplify this method: "Giving them space to discover things for themselves and to learn them, flipping the scenario, having like a flipped classroom, where I'm giving you the resources, what can you do with it?' (BC1), and "The guidelines are very specific and the resources are plenty to make sure that students work independently with what they have," (BT1). These are some of the examples provided by teachers to

describe their active teaching strategies.

The 6th code is 'Differentiation' and it emerged 12 times, making this strategy also one of the most used strategies in the context of the UAE. It is applied in every class. As both coordinators expect to see differentiated instruction that is "data-driven" from the standardized tests or preassessments, all teachers indicated that they implement differentiation on daily basis. The following direct quotes describe how participants use differentiation to promote critical thinking: "We divide students' abilities and skills into four levels according to preassessments and standardized tests that KHDA requests us to do," (BT1) and "Some of the groups, I challenged them as I give them the materials without any instruction. They have to make their own experiment… Others, I just differentiate between them and they can do it based on the instructions given," (BT3). In addition, one of the teachers mentioned catering to students' needs not only through knowledge but also through 'learning styles', thus dividing her students into visual, auditory, and kinesthetic. All these differentiation methods allow critical thinking to be suitably targeted by everyone.

The 7th code, 'DOK 3 and 4 questions', marks 11 instances in the interviews. DOK stands for Depth of Knowledge, and it includes four levels of thinking. The first level involves recalling, the second level involves applying and basic reasoning, the third involves strategic thinking, while the fourth involves extended thinking. Teachers noted that their coordinators require reaching DOKs 3 and 4 in every lesson, and coordinators reported on this strategy as well believing that it allows every student to enhance their critical thinking. Almost every teacher noted that they must include DOK 3 and 4 questions in their lesson plans and DOK 3 questions in their assessments. For example, a teacher (BT1) mentioned that whenever students read a text, they are presented with DOK 3 questions, whether they are high achievers or low achievers, to target their

critical thinking. Another teacher (BT6) explained that "It's a must to provide rigorous questioning types that reach DOK 3 and 4 not only 1 and 2… Students need to be challenged every lesson." Other teachers also clarified that they target DOK4 questions either through writing lessons or through performance tasks.

The 8th code in this theme for the case of the UAE is 'Scaffolding and tiering', occurring 5 times in the interviews. The coordinator explained the need to "scaffold and tier" low achievers to reach that higher order thinking. Since all students are challenged throughout the lessons with rigorous questions, low achievers also need to be engaged in "productive struggle" (BT6), which is where scaffolding comes in. All teachers of English, Math, and Science also follow similar routines, where students move from one station to another throughout the lesson; one common station in all subjects is meeting the teacher, and this where small group instruction and scaffolding happens. The coordinator, BC1, insists that, "Without enough scaffolding and tiering, they won't be able to get there." This strategy is absent in the case of Lebanon due to the whole class kind of instruction. If a student needs help to reach a concept, the whole class receives 'scaffolding' even though many do not need it.

The 9th code refers to 'Communication and collaboration' as a strategy to integrate critical thinking in the classroom. 6 teachers discussed the importance of communication and grouped work in class to further enhance different students' critical thinking abilities. A teacher (BT1) explained, "As students work in their groups, communication is always encouraged as well as collaboration." BT1 further explained that students are given stems to make sure they communicate positively. Another teacher shed light on giving roles in groups as they explore the lesson saying, "In each group, I divide the tasks. We have a group leader, timekeeper, and a volume monitor to keep track of the group volume," (BT2). This allows students to explore and make

predications effectively. A teacher also mentioned that peer teaching is an effective communication method that allows all students to reach higher order thinking, and he calls 'Math Talk'. "I do like peer teaching where I have like heterogeneous groups, like the students with different levels sit with each other like and then they have like the math talk. They talk math about the problems and how to handle them and like the high achievers try to help the low achievers how, how to solve and the strategies and so on," (BT5). Another collaborative strategy is described as the following: "We try to do Socratic seminars, for example. They also help promote critical thinking… You give students a specific topic and you split your class into two groups and each will have a specific point of view. They will try to convince the other up. I have learned this from my PDs and applied them in my teaching." (BT2). Thus, the teacher explained that 'Socratic seminars' create opportunities to engage in critical thinking through dialogue and argumentation.

The last code in the theme *'Strategies to Integrate Critical Thinking'* in the case of the UAE involves 'SEL" or social emotional learning, and it was recorded 12 times in the interviews. This strategy is also one of the most used strategies to integrate critical thinking in upper elementary classes. Participants similarly believe that SEL has many benefits such as boosting engagement, linking learning to real life, and thus boosting critical thinking skills in young learners. BT6 described how even a math lesson can somehow include SEL: "By exploring questions related to real life, students can develop strategies for regulating their feelings, which is crucial for effective learning and interpersonal relationships. For example, in Math in a lesson about numbers through millions we do real life problems like about Sultan Al Niyadi, the UAE astronaut." Other teachers noted using Teams, which has a built-in emotions tracker, to check in on students' feelings on daily or weekly basis and engage in discussions to allow them to

self-evaluate situations and make smarter decisions. The benefits of SEL are clarified by a coordinator that said, “The students tell us that we can hear each other, we can get to know each other better, and also so many things, we respect each other, and they like to talk about themselves. They get to critically relate what they are learning to their real life.”

In conclusion, there is visible consistency in the application of strategies to integrate critical thinking in the upper elementary classes. Most of these strategies are derived from the school’s workshops that are given by the coordinators and approved by the principal. Teachers’ attitudes about these strategies also seem to be very optimistic and positive, where their high belief in the strategies’ value in promoting critical thinking is clear.

4.2.3.3 Administrative Strategies to integrate critical thinking

Under the theme ‘Strategies to Integrate Critical Thinking’ emerged the subtheme ‘Administrative strategies to integrate critical thinking’. This subtheme presents the coordinators and principals’ perspective on the actions they take to integrate critical thinking in their schools. Coordinators and principals were asked multiple questions on how they direct their teachers and staff to integrate critical thinking as well as how they allocate resources. Data was gathered that shows the role that the leadership plays in the successful integration of critical thinking in the upper primary classrooms. Table 4.11 depicts the results of the data that was gathered from principals and coordinators in both cases, Lebanon and the UAE. Table 4.12 provides sample quotations for each code. The codes that emerged include planning and meeting (yearly plans and weekly meetings), workshops and support (professional development and guidance), coaching (peer coaching or role modeling), observations, and parental

support.

Table 4.11 Theme 3: Administrative Strategies (Codes and Frequency)

Theme	Codes	Frequency (Lebanon)	Frequency (UAE)
Strategies to Integrate Critical Thinking	1. Planning and meeting	8	13
	2. Workshops and support	2	9
	3. Coaching	1	5
	4. Observations	2	5
	5. Parental support	2	3

Table 4.12 Theme 3: Administrative Strategies (Codes and Quotations)

Codes	Quotations (Lebanon)	Quotations (UAE)
1. Planning and meeting	"The best way is first of all through setting a plan, it can be a yearly plan," (AP1), "By the weekend, they send me their plan for next week,' (AC1)	"The teachers send us the lesson plans so that we can follow and see what kind of questions they are asking, what kind of activities, the rigor of the activities…" (BC2),

2. Workshops and support	"You need to provide many sessions in many, many forums to show it is important," (AP1), "When I first came to school, we didn't do any workshops to enhance learning. But now we do it because of accreditation," (AC2), "I try my best to find resources online," (AC2)	"Workshops are focused on what strategies can be applied in the classroom so that we emphasize on critical thinking…," (BC2), "We have so many resources, be it the technology, the resources from Savvas, our publisher, Pearson…. We provide strategies that are trending in education and up to date… Also, we have manipulatives. They are provided by the school," (BC2), "It starts with us observing and learning ourselves and being inducted in PD ourselves and getting those best practices that can be shared with teachers," (BC1)
3. Coaching	"…inviting teachers, to attend other teachers' classes," (AP1)	"If I see a teacher who's doing really well in this, I can invite another teacher to come and attend his class. Class modeling…" (BP1), " "…but it was actually a lesson from their curriculum and the teachers were observing to see what do I mean by integrate critical thinking within your lessons," (BC2)
4. Observations	"…a strong teacher, I would go in and observe but you can't see something. I mean, it's hard to find. So, at this time, I can observe a fresh graduate," (AC2)	"We observe their classes to see what went wrong, what went well and analyze and then meet again," (BC2), "We do a PD about whatever it is that we want to teach. And then to set timelines to observe," (BC1)

5. Parental support	"I strongly believe in asking parents to come to school and present the same technique of critical thinking in the classroom that we do with students," (AP1), "We tried and invited the parents for a meeting at the beginning of the school. For example, if you have 100 students per class, 20 will come for the meeting," (AC2)	"We have webinars, we have parent-teacher meetings. We have assemblies with heads of the school. There are surveys that we send, parent council," (BP1), "We have the Parent Academy. Educating parents also on understanding what you're trying to achieve… You can get the certificate that you graduated from this academy. So you are putting parents on a learning curve." (BP1)

The first code, 'Planning and meeting', occurred 8 times in the case of Lebanon and 13 times in the case of the UAE. This seems to be the most used strategy by both cases to follow up on the integration of critical thinking in the elementary classrooms. In both cases, principals indicated that setting a yearly plan is essential. They also both set meetings on regular basis whether weekly or monthly as a time allocation to set goals. BP1 specifically indicated the need for a school improvement plan "that identifies their priorities" and accordingly fund resources to reach these goals, such as online tools and resources. AP1 did not mention funding any resources that can support in critical thinking integration but only time to communicate with teachers on the importance of integrating critical thinking. BP1 also added meeting staff and students as well to communicate the school's goals for the year. As for coordinators, they all agreed that they set weekly meetings with their teachers and are provided with their weekly preparation or lesson plans. Coordinators in the case of Lebanon discussed that they meet either to discuss lesson plans or discuss activities and assessments with parallels.

Coordinators in the case of the UAE clarified that following up consistently on lesson plans is necessary to ensure critical thinking integration, but they do not meet with their teachers to check lessons plans since they can provide feedback

asynchronously. “Backward planning” also makes it easier for teachers to know the rigorous level of tasks that is required, as BC1 explained. Thus, they have biweekly meetings that are to share best practices and what needs improvement. For example, BC2 mentioned the following: “We have the innovative community meeting… We have our researcher. She's always providing them with what's the most recent finding in teaching mathematics in elementary. So when we provide them with the resources of the new implementations, the next meeting is about them explaining if they tried it and the impact that they've seen on their students.” This provides teachers with the skills to improve their plans and teaching practices. BC1 also reported that KHDA requires yearly evidence of lesson plans that include rigorous questioning, reflection, real-life situations, social emotional learning, and basically all the strategies that were listed to target students’ critical thinking.

The second code, ‘Workshops and support’, emerged twice in the case of Lebanon but 9 times in the case of the UAE as a strategy for the school’s leadership to integrate critical thinking. In the case of Lebanon, the school principal AP1 reported that you “start with workshops” after you set a plan for the year so that teachers integrate what they learned in the classroom. AC1, the coordinator in the same school, did not mention anything about workshops to train for new practices. AC2, the coordinator in the second school in Lebanon, mentioned that they never had consistent professional development or any workshops, but only this year because, as mentioned earlier, the school is aiming for an accreditation for a specific program and it’s a must to fulfil a specific number of workshops. However, AC2 tries to support her teachers with useful worksheets from the book’s website, other schools’ worksheets, or any free websites she finds to support them in integrating critical thinking in their lesson plans. As for the case of the UAE, the principal and coordinators described the following: “And we had a lot

of professional development. That was a key. PD was a key in order to ensure that teachers have enough training on how to ask such questions, how to create such an environment." (BP1), "…being inducted in PD ourselves and getting those best practices that can be shared with teachers… We do a PD about whatever it is that we want to teach. And then set timelines to observe…" (BC1), "We had many PDs on this technique (QFT) to make it work for all levels starting from elementary," (BC1), and "At the beginning of the year, they have to do PD for a week. Some teachers will go for more training, especially the new teachers. So the workshops are focused on what strategies can be applied in the classroom so that we emphasize on critical thinking in our learning process," (BC2). BC1 also mentioned offering new teachers support asynchronously by providing with sample lesson plan, research articles, and how-to videos on how to use all the resources funded by the school. Teacher already mentioned previously that many of their strategies are developed from the PDs that they attended, and they also confirmed that they were empowered to present their own forums on their best practices. On the other hand, many teachers in the case of Lebanon do not recall linking a workshop they attended to critical thinking skills, that is if they attended any. Some of these teachers are sent to workshops organized by specific university departments or online forums, but they rarely know how it could be implemented in their context.

The third code in this theme refers to coaching teachers through demonstrating lessons, modeling for teachers, peer-teaching, and co-teaching. This code emerged only once in the case of Lebanon but 5 times in the case of the UAE. The principal AP1 mentioned once that she recommends peer-teaching and said, "I strongly believe in inviting teachers, to attend other teachers' classes where it is happening, and then you can discuss it." AP1 thus believes that this strategy can empower teachers to integrate critical thinking in their classes, but it was not mentioned by any coordinator or teacher

in the case of Lebanon. Furthermore, when asked about how critical thinking is reflection in the school's vision and mission, AP1 added, "I can tell you that in many, many Lebanese schools it is there, but how much of it is translated into the classroom is still questionable. And in my very, very modest opinion and my experience, you would see it definitely in some classes more than in others… So it does take time to change. Especially in the Lebanese context." As for the case of the UAE, the principal and both coordinators each mentioned coaching teachers at least once, for a total of 5 instances. The following quotation describes this practice: "There are times with teachers when we agree that I will interrupt and add to what he or she is doing because I feel like they need it. So the co-teaching is very important. And the peer observations, having a teacher attend with another teacher to do this. And then obviously the follow-up is important…" (BC1). The quotations provided in Table 4.12 illustrate the consistent leadership that starts from the principal's vision and mission and moves forward to subject coordinators and so on, and to add to that, the principal, BP1, illuminates the following: "KHDA even check our mission, vision, and values and they evaluate to what extent it is being practiced and reflected in everything we do. Therefore, consistency is key."

The fourth code involves observing teachers as an administrative strategy to ensure critical thinking integration, and it emerged 2 times in the case of Lebanon and 5 times in the case of the UAE. In the case of Lebanon, one coordinator discussed classroom observations and clarified that she does not attend classes of strong teachers because "…you can't see something. I mean, it's hard to find." Therefore, she only attends fresh or struggling teachers to help them, and only this year that they started filling in questionnaires about their observations for the sake of getting an accreditation, as mentioned. In the case of the UAE, the principal and coordinators explained that observations are required twice per term for every teacher. Observations start after

discussing the "appraisal form" (BP1) with teachers to set classroom expectations, and critical thinking integration is definitely consistent in the criteria. This form provides teachers with scores of 1 to 5 to know what they do well and what needs improvement, making observations always meaningful. BC1 also mentioned that observations need to be mostly consistent as a follow up on PDs and meetings, to ensure the successful integration of the strategies that target critical thinking.

The last code that emerged in this theme is 'Parental support'. This code marked two instances in the case of Lebanon and 3 instances in the case of the UAE. Principals were directly asked how they communicate with parents as a way to lead for critical thinking integration. AP1 mentioned asking parents to come for a meeting where she personally demonstrated critical thinking techniques in teaching specific Math lessons as well as discussing the importance of positive reinforcement on children's brains. BP1, on the other hand, created 'Parents' Academy' so that "you are putting parents on a learning curve," and it involves setting parents in forums created by heads of sections, teachers, or the principal, and they receive certificates for that. BP1 added the following as well: "We have webinars, we have parent-teacher meetings, we have assemblies with heads of the school, there are surveys that we send, parent council…" Coordinators were not asked about parents' involvement directly, but one coordinator (AC2) mentioned that the school did put effort to invite parents for a meeting, but "only 20 out of a 100 would attend."

As principals and coordinators are the driving source of the school's mission and vision, their leadership strategies to ensure critical thinking integration offer valuable insights. Participants from both cases mostly acknowledge the important role they play. However, the leadership in the case of Lebanon do not provide consistent professional development, follow ups, and observations, whereas the leadership of the case of the

UAE shed light on consistency and innovation as key to continuous development. The administrative strategies that the UAE participants follow have become a regular routine that is strategic and structured (workshops, observations, and appraisal forms), and although the leadership of the case of Lebanon recognize the same strategies, their approach to applying these strategies in the school is not identically regular and structured, as indicated by coordinators and confirmed by teachers. Teachers in the case of Lebanon discussed the lack of meaningful and relevant professional development, leadership support, parental support, and follow up, whereas teachers of the case of the UAE validated the administrative strategies taken at their school, aligning with the statements given by their coordinators and principal. These issues will be further discussed in 'Theme 5: Challenges and Barriers'.

4.2.4 Theme 4: Assessing Critical Thinking

Table 4.13 Theme 4 Codes and Frequency

Theme	**Codes**	**Frequency (Lebanon)**	**Frequency (UAE)**
Assessing Critical Thinking	1. Project-based Learning	4	7
	2. Rubrics	1	5
	3. Standardized assessments	0	6
	4. Formative assessments	6	16

	5. Summative assessments	2	7
	6. Bonus questions	6	0

Table 4.14 Theme 4 Codes and Quotations

Codes	Quotations (Lebanon)	Quotations (UAE)
1. Project-based Learning	"One powerful method is to have performance tasks," (AP1), "And I do some sort of project. They prepare at home and they come and present it in class," (AT2)	"I assess critical thinking skills through written assignments … usually in a form of a structured one-week performance task in class based on DOK 4 like a multimedia presentation." (BT1), "Project-based critical thinking assessments can be writing-based or, for example, they have to pick a specific topic and present it in the form of a PowerPoint." (BT2)
2. Rubrics	"You really need to have very specific criteria. You have to have a rubric." (AT3)	"I can based on, of course, a rubric," (BT2), "I use rubric a lot on LearnOnline, the website we use as the school platform. I upload my own rubric, and it has criteria for critical thinking skills," (BT5)
3. Standardized assessments	NA	"We make use of the international assessments such as Measure of Academic Progress (MAP) tests that are requested by the government, along many different other standardized tests that give us insights to analyze and assess students' abilities," (BP1), "And also we have the MAP exams in grades 3, 4, 5, the International assessments. And NGRTs we analyze these also CAT4," (BC2)
4. Formative assessments	"If I ask a question in class, I can test their critical thinking," (AT4), "Watching them work in groups is kind of a formative assessment,"	"I interview each student and the questions range from DOK one to DOK three," (BT3), "This self-awareness through reflection is a foundational purpose of critical

	(AT5)	thinking that promotes personal growth and goal setting," (BT6)
5. Summative assessments	"In the quiz or in the test, even if we use critical thinking questions, they're not as hard as the ones I give in class. But mainly, I evaluate using the quizzes and tests," (AT4), "The only assessment I've known is the summative assessment," (AT5)	"An assessment that you are satisfied with the level of questioning there…" (BP1), "We do summative assessments where we have MCQ questions and we have open- ended questions to help the students think more critically. Mostly they are like problem solving, they have a specific case or a scenario," (BT3)
6. Bonus questions	"Challenging questions can sometimes cause a clash with parents, so when it's a bonus we do not get any complains about the test being challenging," (AT5), "We give bonus questions, just to make the child think about them. But we can't test them," (AC2)	NA

The theme *'Assessing Critical Thinking'* emerged from six codes that were articulated based on the different assessment techniques for critical thinking that participants discussed: Project-based Learning, rubrics, standardized assessments, formative assessments, summative assessments, and bonus questions. It was evident that most participants from the case of Lebanon felt uncomfortable in assessing critical thinking, as some mentioned that it is not really possible perhaps because it's 'theoretical' (AT2) or that it is really hard to do so since their assessments require only recalling and applying skills learned in class as is (AT1, AT4, and AT6). Another teacher said it would be "unfair" (AT3) to put a grade on critical thinking. Therefore, even though participants provided data on how they assess critical thinking as shown in Table 4.13 and Table 4.14, participants in the case of Lebanon mostly were skeptic and

uncertain of critical thinking assessments in comparison to participants from the case of the UAE, where none showed any doubt or confusion.

Project-based learning is a code that appeared 4 times in the case of Lebanon, where the principal, coordinator, and two teachers referred to the use of projects and performance tasks. AP1, the principal, indicated that performance tasks are a "powerful method" that allows students to situate learning and think critically about everyday situations. AC1 also reported that they use performance tasks to allow students to "analyze", but not all students can achieve that and time is a constraint since they have many other elements to tackle in teaching English. AT2 and AT6 similarly elaborate on the use of projects to target critical thinking and allow students to take what they have learned in class to another level. However, both teachers reported that, because these projects are to be done at home and only presented in class, it is evident that most of the time students only "memorize" what they need to present, and it is usually the "parents who prepare their projects" for them. Again, this is due to the time constraint where teachers in the case of Lebanon often find it very difficult to dedicate class periods to such work on such projects, as AT6 explicitly states, "Usually they do the projects at home and their parents end up doing it for them, so it's not very reliable." On the other hand, this code occurred 7 times in the case of the UAE. Teachers explicitly mentioned that performance tasks only happen during class time since teachers need to observe and follow students' work step by step not only for guidance but also for credibility. These tasks require one to two weeks of class time, and they usually require students to create a project that synthesizes the unit studied.

The second code refers to the use of rubrics, where only one teacher (AT3) in the case of Lebanon reported the significance of using rubrics because it has "very specific criteria" that allows teachers to really assess students' critical thinking skills. However,

five teachers from the case of the UAE reported using rubrics as an efficient way to assess students' work for critical thinking, especially in Project-based Learning. For example, BT5 said, "I use rubric a lot on LearnOnline, the website we use as the school platform. I upload my own rubric, and it has criteria for critical thinking skills." Thus, teachers in the UAE use technology to provide effective feedback in the form of rubrics.

The third code, 'Standardized assessments', was only mentioned by participants in the case of the UAE with an occurrence of 5 instances. This code refers to using tests like Measurement of Academic Progress (MAP), New Group Reading Test (NGRT), and Cognitive Abilities Test (CAT4). Coordinators explained that these national standardized tests provide teachers with valuable data on every student's level in English, Math, and Sciences, and they are required by the government who ask for data analysis of these tests every year. Teachers noted that these tests take three times per year, so they analyze the results to track students' progress since they require critical thinking skills.

The code 'Formative assessments' includes different assessments techniques that participants mentioned when asked how they assess critical thinking. In the case of Lebanon, formative assessments only included class observations, whole class or small group questions, or homework with a frequency of 6 instances. The principal AP1 mentioned that she assesses critical thinking integration through observing students' work in class. AC2 indicated that this year, for the accreditation, they are trying to use technology by sending homework on 'Google Forms', which can include games or critical thinking questions. However, teachers have determined that is unreliable as parents tend to support their children. AT1, AT4, and AT5 all mentioned that they rely on observing students as they work individually or in groups, and they tend to ask questions in class that require critical thinking to check for students' skills. However,

the teachers did not report using any documentation method to track students' level and progress in these skills.

In the case of the UAE, the principal BP1 shed light on observing classes for rigorous questioning techniques to assess critical thinking integration. Teachers reported using progress tracking sheets (BT1 and BT3) on Excel during one-on-one interviews with students that involve rigorous questions of the lesson targeted. It is a weekly routine that teachers to do to note on students' progress in skills that require analysis, problem-solving, making comparisons, and evaluation. BT4 and BT5 mentioned using formative assessments through rigorous pre and post assessments during the week that make progress visual. BT1 and BT2 also highlighted the role of debates in teaching English as an assessment of students' critical thinking, where students use their argumentation skills. One last formative assessment that was also only mentioned by participants of the UAE case is reflection. BC1, BT2, BT4, and BT6 mentioned reflection in multiple instances to assess students' critical thinking. For example, BT6 said, "This self-awareness through reflection is a foundational purpose of critical thinking that promotes personal growth and goal setting," and BC1 also noted, "Even the reflection sheets have been very helpful in assessing how students have been thinking. That is, reflection is a major part of critical thinking. I mean to be able to think about the way you think, to think about the way you perform, to set for yourself next steps."

The fifth code 'Bonus questions' only appeared in the case of Lebanon with a frequency of 6 instances. One coordinator as well as two other teachers of the same subject (Math) reported testing students' critical thinking through bonus questions in summative assessments. Most participants from the case of Lebanon agree that the summative assessments that they use do not include critical thinking opportunities due to

parents' involvement being a barrier, so they include bonus questions as a solution to assess students' critical thinking. Surprisingly, both teachers reported that students "love these questions because they are interesting," and that they usually tend to "solve bonus questions first because they love the challenge." However, not all students have time to solve the bonus question in the test, and some do not care for the extra grade. Therefore, teachers are not able to rely on bonus questions to assess all of the students' critical thinking.

The last code that occurred to form the theme '*Assessing Critical Thinking'* is 'Summative assessments', with a frequency of 2 instances in the case of Lebanon and 7 in the case of the UAE. As mentioned earlier, most participants from the case of Lebanon denied that their summative assessments include any measure of critical thinking, as illustrated by the principal's admission that "I'm not at all talking about tests and those, because some tests really have to be done and they hardly have any critical thinking." Teachers also expressed that their tests have to be very identical to what has been practiced in class, which limits critical thinking opportunities. However, two participants did merely mention tests and quizzes when asked about how they assess students' critical thinking, with no clarification. In the case of the UAE 7 out of 9 participants discussed how their summative assessments test students' critical thinking. The principal (BP1) explained evidence of critical thinking is when you have "an assessment that you are satisfied with the level of questioning there and then you look at the data of the students and you see, ah! They did well they are they are at the level where they are attaining this kind of level of knowledge, then you can have it." The following quotation by BT6 exemplifies all of the teachers' practices: "Only few questions are supposed to target lower levels of thinking. The rest should target application and analyzing where critical thinking is needed. All questions are

linked to real life scenarios, especially in the context of the UAE. The coordinator checks every assessment to make that the students are challenged and the questions asked are rigorous and target DOK 3." Therefore, consistency is clear in how the principal's vision in assessing critical thinking is translated in teachers' practices through the role of coordinators in the case of the UAE.

In conclusion, participants from the case of Lebanon expressed their struggle to assess critical thinking, referring mostly to formative assessments and bonus questions that barely seem to provide teachers data on every student's critical thinking skills. On the other hand, participants in the case of the UAE are trained on specific ways to use numbers in Excel sheets and rubrics to track students' critical thinking skills and level, and they also make use of both internal and external assessments as they include higher-order thinking questions. These strategies are adopted and consistently innovated through the professional developments that teachers undergo on a regular basis for best practices.

4.2.5 Theme 5: Challenges and Barriers

During the interviews, teachers and coordinators were directly asked about the challenges they face while integrating critical thinking in the upper elementary classrooms. Many participants expressed their hardship in integrating critical thinking all through-out the interview, not only when asked about it.

4.2.5.1 Challenges and barriers faced by coordinators

Table 4.15 includes direct quotations from each of the two coordinators from the case of Lebanon and the case of the UAE regarding the challenges and barriers that they

face when integrating critical thinking opportunities. The issues do not intersect as each case has its own set of barriers. Participating coordinators from the case of Lebanon had different views. One coordinator (AC1) claimed that there are no issues faced since all teachers in her department follow the same strategies and methods, even though the coordinator is also a teacher and did not mention performing observations to ensure consistency other than checking lesson plans. The other coordinator (AC2) indicated that there are mainly two issues: lack of resources and parental involvement. In the case of the UAE, one coordinator (BC1) suggested that resistance and inconsistency are the main issues that they face as a department, while the other coordinator suggested struggling with new teachers that are not trained enough to integrate critical thinking in the classroom. When asked how they address such challenges, AC2 reported the following: “We’re trying to address the issue as Google Forms by trying to implement at least technology at home… As for the parents’ issue, it's very difficult to address… It takes a lot of time to change the thinking.” However, they still try to invite parents for meetings at the beginning of the year and incorporate critical thinking through bonus questions, as mentioned before. For the case of the UAE, BC1 suggested the following solutions: “Coordinators, principals, as well as the KHDA of course are strict about the application of such new strategies. So teachers end up integrating them as much as possible on a daily basis to become comfortable with them, they eventually end up finding it useful and trusting the process.” BC2 also addresses the issue of struggling new teacher by providing intensive training, professional development, and peer observations.

Table 4.15 Theme 5: Coordinators' Challenges and Barriers

Challenges and Barriers		
	Case of Lebanon (A)	Case of the UAE (B)
Coordinator (1)	"I don't know. Honestly, no. Really, because we're all on the same page, and we all think the same, we all believe in it."	"Teachers who are much more experienced, who are resistant to strategies that promote critical thinking, it's very tricky to break that habit."; "When I go into a class, a lot of teachers pull all the strings and they do amazing work when there's a visitor, but on a day-to-day basis, is it really happening? Not really."
Coordinator (2)	"The first challenge is not having internet in the class that provides opportunities to many resources and activities."; "Another problem is that the parents want their kids to take full grades. You cannot add a word problem that needs critical thinking in the test. We have to give familiar questions during the test."	"Usually, the challenges are when we have a new teacher… So, they can't come up with critical thinking questions or strategies that can make the students think beyond just what is taught."

4.2.5.2 Challenges and barriers faced by teachers

When teachers were also asked about the challenges they face when integrating critical thinking, teachers from the case of Lebanon expressed much more frustration and struggles than teachers of the UAE. Table 4.16 presents the codes that emerged under this theme and the frequency of occurrence of each code, while Table 4.17 provides sample quotations for each code.

Table 4.16 Theme 5 Codes and Frequency

Theme	Codes	Frequency (Lebanon)	Frequency (UAE)
Challenges and barriers faced by teachers	1. Parental involvement	7	2
	2. Limited Resources	10	0
	3. Lack of training	7	0
	4. Students' backgrounds	6	4
	5. Restrictive curriculum	6	0

Table 4.17 Theme 5 Codes and Quotations

Codes	Quotations (Lebanon)	Quotations (UAE)
1. Parental involvement	"Parents also seem to find this hard because questions that are not from the book, exactly from the book, they find it really hard and they start complaining about it," (AT4), "If I give them a higher-level question the parents start to complain," (AT6)	"…parents are accustomed to more traditional teaching methods. They refuse differentiation." (BT1), "they consider that the best way of teaching is to explain the concepts, then applying the concepts. They're used to traditional thinking," (BT4)
2. Limited Resources	"Students also don't have the resources and you have to take them to the computer lab each time, and that's not practical because we only have one in the school," (AT2), "I can't do this always because we lack resources and the support for more experiments and activities," (AT6)	NA

3. Lack of training	"Teachers find it hard to actually apply critical thinking and usually, they only receive theories about critical thinking," (AT1), "The school should do more like workshops for their teachers on teaching strategies to help them in their classes," (AT4)	NA
4. Students' backgrounds	"Students are not ready for this or we have different levels of students," (AT2), "Many students now, they lack critical thinking. They want everything ready," (AT4)	"The fact that some students have different levels, different levels of, let's say, their background when it comes to their English background, that can hinder the ability," (BT2), "We have so many different levels,' (BT5)
5. Restrictive curriculum	"I would say if the scope and sequence was adjusted to actually involve critical thinking, I wouldn't have this as a problem," (AT1), "Some units are a bit challenging for grade five students in the curriculum…" (AT2)	NA

The first code indicates 5 instances of negative parental involvement in the learning process in the case of Lebanon. Teachers in the case of Lebanon reported that if they integrate critical thinking questions in assessments, parents tend to always complain about 'difficulty' because they want full grades. Teachers also clarified that their coordinators usually solve the issue by trying to keep parents satisfied, so they avoid integrating challenging questions that require higher order thinking. That is why teachers decided to keep such questions as bonus questions. On the other hand, two teachers in the case of the UAE reported instances where parents interfered in their teaching practices and refused the teaching strategies implemented in class; however, these issues were quickly resolved through a parent-teacher meeting with head of sections to reassure parents that teachers are following innovative strategies to foster

their students' critical thinking.

The second code refers to the lack of resources available in the case of Lebanon only. This code emerged with 10 instances. Teachers in the case of Lebanon shared a deep struggle with being supported with resources. The following quotations describe the situation: "Technology is used commonly in today's world and missing it in our school environment is a huge weakness," (AT1), and "All you can do is grab your marker and explain on the whiteboard… So, you feel you're still in the traditional teaching," (AT5).

The third code, 'Lack of training', occurred with 7 instances in the case of Lebanon only. Teachers feel that they do not feel comfortable applying new strategies with students, while others struggle with very dependent students who are not used to exploring alone because other teachers do not practice such strategies in their classes. In addition, around three teachers mentioned that most workshops they received were "theoretical" (AT1, AT3, and AT6) and did not fit with the context of their classrooms, so they still lack suitable training and feel the need for more. As many teachers in the case of the UAE expressed their wishes to explore even more AI tools to facilitate their teaching practices, teachers in the case of Lebanon still lack the basic training to integrate critical thinking properly in the classroom.

The fourth code indicates the different backgrounds of students whether it is cultural or intellectual. In the case of Lebanon, this code occurred 6 times as teachers expressed the constant struggle with students' levels of critical thinking. One teacher said, "We have different levels of students. So, I tend to repeat many times and give them maybe easier examples than the ones that I was giving… I do this for the whole class." Another teacher claimed that, "Nowadays, they're not like old times. It's so hard

with them, the critical thinking. They want everything ready." Thus, teachers either found difficulty in handling the different levels of critical thinking, or they struggled with introducing the suitable strategies to cater to their levels. As for the case of the UAE, most teachers (BT2, BT3, BT4, and BT5) mentioned that the different cultural backgrounds of newly registered students created a challenge to integrate critical thinking in their teaching, but differentiation helps them overcome such an issue and provide the needed scaffolding to improve.

The last code is 'Restrictive curriculum' which involves the issues that teachers from the case of Lebanon face as they follow the required scope and sequence. The issues include no proper time allocation, excessive material, difficult topics, and no critical thinking opportunities. The following quotations illustrate the struggle with the curriculum: "I have to finish a specific number of lessons by a number of weeks, so I do find myself actually overwhelmed with the time, and sometimes I find it faster to give information to students rather than giving them a chance," (AT1), and "The curriculum is already really packed, so the school does not prioritize critical thinking opportunities. The content is the most important especially after the COVID. I'm just trying to catch up with the curriculum," (AT6). Thus, many teachers feel restricted from implementing what they believe students need and do not feel that they have the freedom to alter the content or assessments.

In conclusion, even though teachers in the case of Lebanon try their best to find ways to handle the challenges they face, their efforts are not put into how critical thinking can actually be integrated but rather on how to keep students and their parents satisfied with their teaching. This indicates the role of the leadership in redirecting teachers to what is important and prioritized.

4.3 Summary of Key Findings

This section provides a summary of the major findings that were provided in section 4.2. These findings will later be analyzed in depth with relation to literature in section 4.4.

The first theme, 'Understanding of Critical Thinking', shows that teachers from both cases recognize that critical thinking involves analyzing, questioning, evaluating, judging, and problem solving. However, the term 'to reflect' was completely missing in the case of Lebanon but frequently occurring in the case of the UAE.

The second theme tackles the participants' perceptions of critical thinking, where both cases find it equally significant. Participants of the UAE seem to be more positively aware of the impact of critical thinking on preparing students for the future, linking learning to real life, and most evidently, improving students' progress and attainment. On the other hand, participants from the case of Lebanon expressed how challenging and demanding they find it to integrate critical thinking in their everyday teaching.

The third theme, 'Strategies to Integrate Critical Thinking', includes insights on strategies practiced in class by participants from both cases, as well as administrative strategies practiced by coordinators and principals to ensure the integration of critical thinking. The main strategy that participants from the case of Lebanon rely on is class discussions since most of class time is whole- class instruction, but writing tasks were also linked to critical thinking. Even though they mention the use of projectors and hands-on activities, they mostly linked such strategies to boosting engagement rather than critical thinking. On the other hand, participants of the UAE referred to active learning methods and other specific strategies that allow students to analyze, apply, question, evaluate, and problem solve. Reflection strategies and SEL were also major findings that allow students to boost critical thinking skills through reflection. These strategies illustrate how the definition provided in the first theme was linked to the

classroom practices in this theme. As for the administrative strategies, coordinators and principals mainly rely on workshops and professional development that are strictly followed by coaching and observations; such workshops and observations seem to be much less frequent in the case of Lebanon.

The fourth theme involves the assessment methods used by the participants to evaluate students' critical thinking skills. Although some codes were in common between both cases, the methods are used differently. Project-based Learning is an in-class assessment approach in the case of the UAE always followed by a rubric, but it is completed at home in the case of Lebanon with minimal reference to using rubrics to assess. Standardized assessments give major insights on students' progress through the year in the case of the UAE, and they are similarly linked to internal summative assessments; however, participants from the case of Lebanon explained that they may only use bonus questions in their tests to include critical thinking opportunities. Moreover, both cases rely mostly on formative assessments, yet these assessments only involve class observations in the case of Lebanon but progress tracking on Excel sheets in the case of UAE.

The last theme, 'Challenges and Barriers', expressed the issues that participants face in integrating critical thinking as per their role. Findings show that teachers from the case of Lebanon struggle more with parental involvement and pleasing, limited resources, lack of training, and a restrictive curriculum. Coordinators either acknowledged similar issues or none at all. To resolve such issues, the school's leadership find ways to address some of the issues by contacting parents and providing some free resources. However, their attempts remain ineffective and issues remain unresolved. As for the case of the UAE, teachers mainly expressed the difficulty of catering to students of different backgrounds, but the differentiation method mainly

resolves this issue. Coordinators expressed challenges that involve resistance from traditional teachers or recruitment of new teachers that are not well trained. However, consistency in follow up and observations often resolve such challenges.

The key findings summarized above describe the teachers' understanding and perceptions of critical thinking in the primary curriculum from the lens of each of Lebanon and the UAE, providing insights on the strategies used by teachers, principals, and coordinators of both cases to integrate critical thinking in the elementary classrooms. The following section will link these findings to existing literature, highlighting the implications for future educational practices in Lebanon.

4.4 Discussion

4.4.1 Discussion of the findings as they relate to research question one

The majority of the teachers of both cases in this study acknowledge that the skill of critical thinking involves mainly analyzing, synthesizing, and evaluating information. Literature on critical thinking describes its components as: apply learning, to analyze, to question, to problem solve, to synthesize, and to judge and evaluate (Facione, 2011). One key term that was only introduced by teachers of the case of the UAE is 'reflection', which was thus missing from the transcripts of the case of Lebanon. However, John Dewey recognizes reflection as a major part of critical thinking that is of huge importance (Padmanabha, 2018). Therefore, reflection can not be omitted or neglected.

All participants from both cases believed that critical thinking integration in the upper elementary classrooms is important and essential. Teachers of the case of the UAE perceive that critical thinking is important because it prepares students for the future and

links learning to real life, creating lifelong learners. Teachers of the case of Lebanon find that critical thinking is valuable but very challenging and demanding to integrate into daily practice in the elementary classrooms, where only one teacher connected critical thinking to lifelong learning. AlJaafil and Sahin (2019) found similar results in South Lebanon as teachers also believed that critical thinking is an important skill to develop in the primary years, but private school teachers had more of a positive opinion in comparison to public school teachers in their study. Ghamrawi et al. (2017) also found that teachers in Lebanon have positive perceptions toward critical thinking, but their perceptions did not align with their actual practice. These findings thus indicate that teachers' perceptions of critical thinking may be positive, but these perceptions are not enough for the successful integration of critical thinking in the classroom.

Only participants from the UAE acknowledged the connection between critical thinking and students' progress and attainment. Teachers in the case of the UAE find that improving their students' critical thinking skills through the different active learning approaches and reflective practices allows students to improve throughout the year in both internal and external assessments. When students are involved in active learning and think critically about the content taught, students tend to achieve better on the long term (Lunenburg, 2011). Reflection also plays a major role in academic success, as students who are trained to self-evaluate tend to improve their critical thinking skills and achieve a better student attainment (Ghanizadeh, 2017).

Therefore, it is evident that teachers in the case of Lebanon do have an adequate definition of critical thinking and its key components as much as teachers of the case of the UAE do. However, the term 'reflection' is not mentioned in any of the teachers' interviews in the case of Lebanon, which could be a key factor that is allowing students in the UAE to develop better critical thinking skills. Students must be trained to reflect

on their learning (Padmanabha, 2018). As all participants seem to find critical thinking equally important, negative opinions and attitudes were only perceived in the case of Lebanon, where some found that they cannot see it in such young levels. Massa (2014) argues critical thinking integration in primary levels is essential and beneficial. Teachers' perceptions are key factors in the amount of effort put to nurture students' critical thinking, and that is why it is matter of importance (AlJaafil & Sahin, 2019).

4.4.2 Discussion of the findings as they relate to research question two

Teachers as well as their coordinators and principals from both cases provided teaching strategies that happen in the schools' elementary classrooms to develop students' critical thinking as well as to assess it. The following sections illustrate the major findings on how teachers nurture critical thinking in each of the cases and link it to literature to draw valuable insights on the research question proposed.

4.4.2.1 The case of Lebanon

This study found that teachers in the case of Lebanon depend on two main methods to target students' critical thinking: class discussions and writing lessons. Math and Science teachers did mention other methods such as using the class projectors and hands-on activities, but they were mainly linked to a better visualization and better engagement rather than nurturing students' critical thinking. Therefore, they depend mainly on class discussions to allow students to think critically through posing intriguing questions for a whole-class discussion. In addition, teachers admitted that they rely on class discussion the most since the rest of the class time is led by the textbooks, as relevantly described by the Educational System Overview (2022). Group discussions are positively correlated with developing students' critical thinking, but such discussions

should be in small groups and pupil-led (Lombardi et al., 2022). Teachers in the case of Lebanon made it clear that they are the center of discussion, where they pose questions and some of the students raise their hand to participate in the discussion while others listen. Therefore, professional teacher training on collaborative approaches to target critical thinking is beneficial (Lombardi et al., 2022).

Most English teachers in specific tend to depend on writing lessons to develop students' critical thinking skills. These writing lessons can either involve 'free writing' or follow a structured process through whole-class instruction, as described by English teachers. However, it is important that critical thinking is specifically targeted through these writing lessons since many traditional writing classes in schools sometimes overlook critical thinking and rather focus on improving students' grammar and lexical knowledge (Liu, 2021). Integrating writing in Project-based Learning can improve students' writing skills and critical thinking since it situates students in an active learning process of exploration, investigation, collaboration, and synthesis (Suteja & Setiawan 2022). Teachers in the case of Lebanon do not implement such writing lessons due to challenges that include a restrictive curriculum, lack of training, and lack of resources and technology. Therefore, the extent to which critical thinking is developed through writing lessons in the case study conducted in Lebanon can be questioned.

When it comes to assessing critical thinking, many teachers in the case of Lebanon did mention the use of Project-based Learning. One downfall was that the projects were mainly taken as a homework and only presented in class. Project-based Learning is based on hands-on learning and collaborative work that situates students in research and analysis (Siregar et al., 2019). When students completed these projects individually at home, the purpose of PBL was thus overlooked. Teachers graded these projects based on how well students presented them, which was often based on

recitation and memorization of the work that was done at home with the very possible help of a parent. In order to nurture students' critical thinking and develop it, constructivist learning approaches should shift learning from memorization to collaboration and active engagement (Bada & Olusegun, 2015). This suggests that teachers in the case of Lebanon need professional training on how to successfully implement PBL.

Another assessment method that teachers of the case of Lebanon suggest involves formative assessments that happen in class informally. These assessments are based on class observations and discussions. Teachers described such assessments as happening through teachers' perceptions of students based on classroom interactions, discussions, and observations during tasks. Teachers did not mention the use of any specific tool to track each students' critical thinking development or provide any feedback. This method was used more for teachers' own understanding of their students' abilities. However, evidence-based tools should be used to assess students' critical thinking development, such as a rubric that can provide valuable formative feedback for improvement (Reynders et al., 2020). Therefore, teachers should find a suitable rubric, such as the one presented by Reynders et al. (2020), to make assessments more meaningful and targeted.

To conclude, teachers in the case study conducted in Lebanon did not provide a variety of strategies that target critical thinking meaningfully and purposefully. The definition they presented was not translated into classroom practices. Most teachers did not clearly describe how they allow students to engage in exploring, applying, problem solving, synthesizing, and evaluating. This implies that many schools in Lebanon still face barriers that hinder teachers from connecting their knowledge or perceptions with actual their actual classroom practices, and need professional training to improve their

teaching practices.

4.4.2.2 The case of the UAE

Teachers in the case of the UAE provided a wider variety of strategies that are structured to thoughtfully improve students' critical thinking throughout the academic year and assess the development of critical thinking. This study found that the main teaching approach was active learning or Activity-Based Learning (ABL), which involves many strategies that were presented such as hands-on learning, flipped classroom, Question Formulation Technique, Predict Observe Explain method, debates, etc. These strategies were followed by specific assessment tools that can assess students' progress in utilizing critical thinking skills.

Teachers in the case of the UAE reported using some of ABL approaches such as Question Formulation Technique and debates, which align with some of the strategies mentioned in the study conducted by Aljaafil and Beyhan (2021) in South Lebanon. This could mean that even though many schools in Lebanon are still behind on innovative strategies that prioritize 21st century skills, private schools in Lebanon can shift their traditional teaching approaches to active ones with proper training and leadership. ABL can show development in students' critical thinking in contrast to traditional teaching (D'souza, 2017). In addition, strategies such as flipped classroom, debates, questioning, and problem-solving target the specific components of critical thinking that were listed in the teachers' definition of critical thinking. This shows how teachers are capable to translate their perceptions into successful classroom practices in the case of the UAE. Teachers in the case of UAE reported that they learned the strategies mentioned earlier through professional development conducted in the school that targets how to teach and

how to develop students' critical thinking skills. This aligns with research conducted by Lombardi et al. (2022), where teachers in Europe also found strategies that are analytical, collaborative, and reflective boost critical thinking after being professionally trained to apply such strategies in the classroom. Therefore, teachers in the case of Lebanon would definitely make use of more workshops, as will be discussed in the next section.

Reflection or reflective strategies were another major finding as strategies used by teachers to integrate critical thinking in the primary curriculum. Teachers in the case of the UAE strongly believe that integrating reflective strategies and worksheets in their daily lessons helped students develop their critical thinking skills and achieve better academic results as well. However, reflective strategies seemed to be overlooked by teachers in the case of Lebanon. As mentioned in the literature, John Dewey emphasizes that critical thinking is reflective thinking (Padmanabha, 2018). Reflective strategies are thus crucial to students' critical thinking development (Ghanizadeh, 2017). Reflective practices are also an integral part of active learning strategies such as PBL, so it is an important stage that students need to be situated in to develop their critical thinking skills (Wiratman et al., 2023). Workshops on reflective strategies can thus be very useful in empowering teachers to integrate critical thinking in their classrooms (Lombardi et al., 2022).

To nurture students' critical thinking, teachers of the case of the UAE also prioritize differentiation as a key strategy to cater to all of the students' needs and abilities. Differentiation helps students reach higher order thinking whether they were low achievers or high achievers. Teachers in the case of the UAE differentiate learning according to learning styles, pre- and post- assessments, or standardized assessments to acknowledge students' critical thinking levels and track their progress throughout the year. These assessments were required by KHDA as their reform plan seeks nurturing

students' 21st century skills such as critical thinking (Dawood & Hirst, 2014). Differentiating instruction according to students' abilities will allow students to reach higher order thinking and foster their critical thinking (D'souza's, 2017; Ouyanj & Ye, 2023).

Furthermore, major findings on strategies to integrate critical thinking involved utilizing technology and online platforms as suggested by teachers in the case of the UAE. This study found that teachers in the case of the UAE benefit from integrating technology in the classroom to foster students' critical thinking. A majority of teachers recommended using technology for a variety of purposes such as gamification, research and inquiry, collaboration, and evaluation. This aligns with research conducted by Jannah et al. (2020), and this is because the skills practiced such as observing, analyzing, questioning, and collaborating are all components of critical thinking. Gamification also increases students' critical thinking (Yang and Chang, 2013). Therefore, learning how to use technology for the benefit of critical thinking is necessary (Mejia & Sargent, 2023). Digital literacy has become essential in the 21st century, and it is positively linked with improving students' critical thinking (Amin & Adiansyah, 2023; Siregar et al. 2019). Teachers in the case of the UAE also showed interest in utilizing AI in their lesson planning as well as in their teaching. This finding aligns with the work of Du Plessis and Van Den Berg (2023), which explored how AI tools can positively influence teachers' practices in lesson planning and teaching to creatively target critical thinking. These findings suggest that private schools' allocations and funding in Lebanon should prioritize integrating the use of technology in the classroom and provided workshops on how to use AI to the teachers' benefit.

One last strategy to integrate critical thinking in the elementary classroom was found to be through Social Emotional Learning (SEL). This finding suggests that

teachers found that developing students' emotional and social aspects had a positive effect on their critical thinking skills. As the work of Bailin et al. (1999) suggests that critical thinking in instruction involves open-mindedness and respecting others during discussion, this study elaborates this point in which teachers described one aspect of SEL as listening to others' experiences and respecting them. Furthermore, as research conducted by Kaspar and Massey (2023) suggests that SEL boosts students' interpersonal skills through collaboration, problem solving, and decision-making, findings of this study extend these results by linking such skills to critical thinking as they develop students' reflective thinking. Integrating SEL into a curriculum would require a great amount of training, support, and follow up observations for the successful implementation to benefit students' cognitive and behavioral abilities (Lawson et al., 2019). However, Kaspar and Massey (2023) suggest that, "As social-emotional learning grows in popularity, the research supports these notions. School leaders should seriously consider evaluating their current practice and determining a place for social-emotional learning in their buildings," (p. 649). In light of these findings, it is recommended that private schools in Lebanon put more effort into considering SEL opportunities in their curriculum.

In terms of assessment, this study revealed that teachers in the case of the UAE refer to formative assessments or PBL most of the time for assessing critical thinking, just like the case of Lebanon. However, one main difference is the use of evidence-based tools such as rubrics, higher- order questioning during one-on-one interviews, and skill-based excel sheets to track students' progress and provide meaningful feedback for improvement. Results of this study shows that teachers in the case of the UAE use rubrics to make sure that students are aware of the skills that they are being assessed on and how to improve these skills in the future. When implementing PBL in the classroom,

teachers ensured that students not only engage in the process of exploration, communication, investigation, synthesis, and reflection, but also are assessed on this process through a rubric. These results align with the work of Reynders et al. (2020), who also concluded that rubrics clarify the relationship between the intended outcome and the assessment, and thus rubrics improved students' process skills such as critical thinking. Bissel and Lemons (2006) suggest that critical thinking can be assessed by targeting the higher levels of Bloom's taxonomy in assessments through open-ended questions along with the use of rubrics. These results align with the findings of this study in which teachers of the case of the UAE also refer to using DOK3 and DOK4 questions in their in- class formative assessments to nurture students' critical thinking and develop it. These assessments take place through one-on-one interviews on weekly basis, whether during PBL or ABL. The results thus emphasize the role of educators in being aware of formative critical thinking assessment techniques to provide accurate feedback to students for future improvement.

This study also found that teachers in the case of the UAE also utilized both internal and external assessments to nurture students' critical thinking. In other words, teachers make data-driven decisions based on standardized assessments as well as in-class skills assessments by aligning the level of questioning. Therefore, teachers in the case of the UAE found that they can rely on in-class assessments because they include a good level of questioning that targets critical thinking. Furthermore, since internal assessments are similar to external assessments, they are also similar to international assessments such as PISA and TIMSS. International assessments include higher-order questioning levels that target students' critical thinking (OECD, 2013). These results highlight the role of educators in prioritizing the kind of questions asked in their tests and quizzes to bridge the gap between students' achievement in local tests and in

international tests. The results also could explain TIMSS 2019 scores, where UAE scored an intermediate benchmark in comparison to Lebanon's low benchmark, as presented by Mullis et al. (2020).

Findings of the teaching strategies presented by the case of the UAE follow constructivist learning methods. Such methods are important to foster critical thinking because they nurture students' critical thinking through meaningful classroom experiences built on application, analysis, synthesis, and reflection through collaboration and exploration (Bada & Olusegun, 2015). For reform to take place, it should include both of teachers' perceptions and their daily teaching practices as well (Jia, 2010). Moreover, the results of this study call for not only teachers to be aware of their views and practices but also highlights the role of effective leadership in taking the responsibility to make their teachers capable and innovative.

4.4.3 Discussion of the findings as they relate to research question three

This study found that critical thinking is successfully integrated in the elementary curriculum in the case of the UAE because results show how the principal's mission is translated into an action plan by coordinators and thus successfully implemented in the classroom by teachers. This shared vision aligns with Ng and Wong's (2020) research on constructivist leadership as the necessary approach to adapt to the 21st century. The leadership of the school takes huge responsibility as a key factor in deciding teachers' views and practices (Bhuttah et al., 2024). As for the case of Lebanon, the principals and coordinators try to find ways to integrate critical thinking, yet there are discrepancies found in actual practice as well as barriers.

The school leadership of the case of the UAE adopt a constructivist leadership approach, as described by Lambert (2009), which was cited in Ng and Wong's (2020)

research on the role of school leadership in preparing students for the future. To explain, results of this study found that there is a shared mission and vision among the principal, coordinators, and even teachers to prioritize innovation and technology integration to target 21st century skills readiness. Similar to the case of Lebanon, lesson plans and meetings are the starting point to ensuring the successful integration of critical thinking. However, the principal and coordinators also majorly highlighted the role of strategic professional developments, observations, and coaching to train teachers on innovative strategies to integrate critical thinking successfully. These findings align with research conducted by Mangali et al. (2019) on the role of coordinators in improving curriculum delivery, where mentoring, observations, and professional development were essential. The results thus suggest that schools should encourage a culture of mentoring for best practices, professional development for acquiring new teaching methods, and frequent observations based on a shared appraisal form for proper feedback and improvement. In addition, the principal's vision to integrate critical thinking successfully ensured the alignment of other stakeholders such as parents in trusting the learning process and being part of it as well through parental workshops, councils, and activities. These finding align with the description of Oostdam and Hooge (2013) on active parenting in an innovation-oriented school, where parents are involved in their children's learning process through innovative strategies and practices. Furthermore, the findings of this study imply that parental involvement needs to be prioritized in order to successfully integrate innovative teaching practices that nurture students' critical thinking skills and prepares them for the future.

In comparison, results of this study in the case of Lebanon show that principals and coordinators believe that critical thinking is important, yet they do not have an action plan to lead teachers to implement active learning approaches successfully to

target students' critical thinking intentionally. The results of this study found that the school leadership mainly relies on meetings for lesson planning to track how teachers are designing their lessons, where observations or mentoring seem to be minimal. Resources are also limited due to uncertain factors that are out of the scope of this study. The Lebanese curriculum that schools follow seems restrictive, which is similar to what teachers discussed in the study of AlJaafil and Beyhan (2021) in South Lebanon. This study also underscored that professional development is not as effective with either being 'theoretical' or not provided as much as needed. Consequently, teachers expressed the need for more training and support on how to properly integrate critical thinking in their classrooms. Research shows that teachers continuously need more training and support on best practices (Lombardi et al., 2022). However, one coordinator believes that they are doing well and face no challenges in integrating critical thinking. Therefore, the school leadership in schools of Lebanon should provide a lifelong learning environment to make teachers and even coordinators aware on how to integrate innovative teaching methods that cater to the 21st century skills such as critical thinking. Although the study found the school does put effort in meeting with parents to keep them aware of the teaching methods, many teachers and one of the coordinators still suffer from negative parental involvement in decision-making, especially when it comes to the students' achievement as a priority. However, literature shows a positive relation between students' achievement, active learning strategies, and critical thinking (Lunenburg, 2011; Ghanizadeh, 2017). Furthermore, research also shows a positive correlation between parental involvement in encouraging meaningful learning and student achievement (Hacıeminoğlu & Ertepınar, 2009). These findings call for a shift in the approach to leadership to face the current challenges and align the schools in Lebanon with the future of education.

In conclusion, Lebanon falls very much behind the UAE in term of international assessments such as TIMSS (Mullis et al., 2020). TIMSS and PISA are putting more attention on life skills such as critical thinking (OECD, 2013). Therefore, results of this study have important implications for school leaderships in Lebanon to acknowledge their role in adopting innovative strategies that nurture students' critical thinking to lead for its successful integration in the school's teaching and learning. This should be done through a clear vision and an action plan that prepares teachers for meaningfully integrating critical thinking in their classrooms. Innovating the classroom practices in schools of Lebanon means that students will be better equipped with the 21st century skills.

CHAPTER 5

CONCLUSION

This study explored teacher perceptions on integrating critical thinking into upper primary classes in two distinct cases, Lebanon and the UAE. The study also investigated the different strategies utilized by teachers in each of the cases as well as coordinators and principals to integrate critical thinking into the curriculum. Finally, the study also examined the actions taken by the school leadership, specifically principals and coordinators, to ensure the successful integration of critical thinking in the upper elementary classrooms. This chapter will present the answers to the research questions of this study. The chapter will also acknowledge the limitations of this study, recommendations for future research, and implications for practice in the Lebanese context.

5.1 Research Question One: How Do Elementary Teachers Conceptualize Critical Thinking in Each of Lebanon and the UAE?

The majority of teachers in both cases similarly have a good understanding of critical thinking and the set of skills that critical thinking involves. However, all teachers from the case of Lebanon completely omitted one major component of critical thinking, which is reflection. In contrast, all teachers from the case of the UAE emphasized the role of reflection as a key component of critical thinking. Therefore, data revealed that there is a gap in the understanding of critical thinking in the case of Lebanon that is not present in the case of the UAE.

Teachers in both cases also recognized the important role of critical thinking

integration in the upper elementary curriculum. However, the responses of the teachers in the case of Lebanon, in opposition to the case of the UAE, reflected that they do not have a good conceptualization of why critical thinking is important, especially in its role in improving students' achievement.

5.2 Research Question Two: How Do Teachers Nurture Critical Thinking in the Upper Elementary Classrooms in Each of Lebanon and the UAE?

In the case of Lebanon, teachers provided a few approaches such as including hands-on activities and utilizing the projectors, but teachers also described the purpose of such approaches as one for engagement. The study thus found that teachers mainly focus on either whole class discussions or writing tasks to develop students' critical thinking, and the components of critical thinking that were well articulated in the definition provided by teachers was not translated into practice. Teachers also expressed their lack of confidence in intentionally targeting critical thinking through the strategies mentioned, and they also felt that they do need more training on the variety of strategies that they can practically include in their everyday practice. Moreover, teachers mainly rely on a few ways to assess students' critical thinking, but their assessments lack the correct structuring. They involve students in PBL, but it is done as homework to be presented in class, which eliminates the many advantages of PBL from reflection to collaboration that boost critical thinking. Teachers also heavily rely on formative assessments to track students' critical thinking skills, but do not follow a specific criteria or tool. In addition, teachers expressed deep frustration in parents' involvement, which hinders their freedom to assess critical thinking.

In the case of the UAE, teachers expressed more of a positive attitude and confidence toward the strategies that they use to nurture students' critical thinking. The

results of the study demonstrated that teachers use active learning methods to target students' critical thinking on daily basis. They also find time to include reflective strategies to nurture students' critical thinking. Teachers also utilize many technological tools during class time for both engagement and cognitive stimulation. The data also revealed that all teachers opt for differentiation in the classroom to target all students' different critical thinking levels. Differentiation also helps teachers address students' diverse language and cultural backgrounds, which were identified as one of the challenges faced in the UAE. In addition, many teachers nurture SEL to boost students' critical thinking skills. To track their students' progress on critical thinking skills, teachers situate students in the process of PBL during class time, use rubrics for proper feedback, align external and internal assessments through rigorous questioning, and take note of students' progress through formative assessments.

5.3 Research Question Three: What Role Do Principals and Coordinators Play to Ensure the Successful Integration of Critical Thinking in Each of Lebanon and the UAE's Upper Elementary Classrooms?

This study provided insight into the important role of school leadership, specifically principals and coordinators, in ensuring the successful integration of critical thinking in the upper elementary classrooms, suggesting that the school leadership plays the most important role in either allowing teachers to succeed in integrating critical thinking or not. The administrative strategies taken by the school leadership in the case of Lebanon are found to be minimal, involving mainly regular lesson planning meetings only. However, in the case of the UAE, the findings shed light on the role of meaningful

professional development that is followed by class observations, support, and coaching to ensure the correct implementation of the strategies trained on in the professional development. Consistency in the translation of perceptions of critical thinking into actual practice was evident due to the proper follow up provided by the school leadership. The school leadership also clearly ensures the allocation of the time and funding to integrate critical thinking into the elementary classrooms. The school leaders play a pivotal role in planning and providing workshops, technological tools, professional training, resources, programs, and activities designed to intentionally nurtures students' critical thinking. Such allocations are prioritized to support teachers in integrating critical thinking effectively into their daily practice.

5.4 Limitations

One major limitation of the study is the geographical constraint, which in turn imposed a few limitations. As this comparative study examines the case of two different countries, class observations were not conducted since it was not physically possible. Class observations could have provided additional data that would have complemented the interview findings, potentially contributing to a more comprehensive understanding. The geographical constraint also limited some of the interviews into online interviews instead of face-to-face. Face-to-face interviews could possibly provide participants with a better understanding of the questions as it allows further elaboration.

Another limitation is the case studies that are chosen in the case of Lebanon. The first school chosen in the case of Lebanon is very small in comparison to the case taken in the UAE. Only very few participants agreed to participate, so another school that is in the same region and of the same curriculum had to be merged with it to make one case study of nine participants in North Lebanon. Future research can investigate larger

schools in other regions in Lebanon for their practices in integrating critical thinking in the elementary classes.

5.5 Recommendations

The study did not examine the backgrounds of the participants such as their educational degrees, their age, or their teaching experiences. These factors may play a role in how teachers perceive critical thinking and how they integrate it in their classrooms. Therefore, it is recommended that future studies investigate the role of the teachers' backgrounds in implementing active learning strategies to target critical thinking.

Another recommendation for future studies would be to look into students' acquisition of critical thinking skills. Teachers' views and beliefs might differ from what students actually acquire. Examining students' acquisition of critical thinking skills through specific frameworks or tools can provide a better insight into the effectiveness of the strategies implemented by the teachers. It is also beneficial to explore students' awareness of their acquisition of critical thinking skills that their teachers are targeting. Students' points of view can reveal further how they utilize the skill of critical thinking in and out of the school environment.

This study highlights the role of professional development and technology integration to enhance teachers' ability to integrate critical thinking in the classroom. Therefore, it is recommended that future studies assess the effectiveness of such actions in improving students' critical thinking skills. A mixed-method approach could provide deeper insights on how students' critical thinking skills are fostered by examining their performance data, conducting observations, and exploring teachers' and student' perceptions. Future studies can

also look more specifically into the role of school principals in Lebanon in allocating time and funding, and the factors that influence their decision-making process.

Lastly, reflection and collaboration where both terms that were linked to critical thinking in this study. These major components of critical thinking require more narrowed research on how each term is linked to critical thinking specifically. Therefore, it is recommended for future studies to analyze how teachers' integration of reflective strategies and collaboratives approaches can enhance students' critical thinking skills.

5.6 Implications

This research provides useful implications for educators and school leaders in Lebanon. The results of the comparison of Lebanon and the UAE show that teachers are overlooking an important component of critical thinking, which is reflection. Teachers in Lebanon thus need training on how to include reflective strategies in their everyday practice to improve students' critical thinking. The study also revealed that teachers in the case of Lebanon do not have knowledge of active learning strategies to put their perceptions of critical thinking skills into practice. Curriculum coordinators and policy implementers need to look further into trends in education that would keep their teachers' practices aligned with international standards. In addition, since teachers feel frustrated with parental involvement, school leaders in Lebanon should seek strategies to foster partnership with parents to guide them toward the school's vision and goals with respect and commitment. School leaders also should prioritize technology integration in the elementary classrooms. In this 21st century, learning with technology has become an essential part of lifelong learning. School leaders in Lebanon may consider prioritizing the securing of funding to equip their schools with technology.

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