Journal of World Englishes and Educational Practices
ISSN: 2707-7586
DOI: 10.32996/jweep
Journal Homepage: www.al-kindipublisher.com/index.php/jweep

JWEEP
AL-KINDI CENTER FOR RESEARCH AND DEVELOPMENT

| RESEARCH ARTICLE

Critical Thinking and Twenty-First-Century Skills: Exploring a Foundational Relationship

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| ABSTRACT

The rapid transformations of the twenty-first century have significantly reshaped educational priorities, emphasising the development of skills necessary for success in an increasingly complex social, economic, and professional environment. Among these competencies, critical thinking has emerged as a fundamental skill for effective learning and lifelong success. This article examines the concept and importance of critical thinking in contemporary education by reviewing key theoretical perspectives and definitions proposed by leading scholars. Critical thinking is commonly understood as a rational, reflective, and analytical process that enables individuals to evaluate information, assess arguments, solve problems, make informed decisions, and justify conclusions. It involves advanced cognitive abilities such as reasoning, analysis, evaluation, and interpretation, which are essential for addressing complex challenges. In the context of modern global issues, including climate change, natural disasters, and security concerns, the ability to think critically has become increasingly important for students. Developing strong critical thinking skills equips learners to navigate information critically, generate effective solutions, and achieve success in academic, professional, and personal contexts. Therefore, fostering critical thinking can be considered a central objective of twenty-first-century education and a key component of preparing students for the demands of contemporary society.

| KEYWORDS

Critical thinking, twenty-first-century skills, education, higher-order thinking

| ARTICLE INFORMATION

ACCEPTED: 01 January 2026 **PUBLISHED:** 12 February 2026 **DOI:** 10.32996/jweep.2026.8.2.4

1. Introduction

The 21st century has brought about significant changes across various aspects of life, particularly in education. As a result, students of this era must develop skills that differ from those of the previous century. Schools in the 21st century should prepare students for a unique social and economic environment and a more demanding, skill-oriented professional world by developing students' 21st-century skills. Essentially, students in the 21st century must acquire essential skills tailored for this era, and among these skills, critical thinking is a fundamental component of learning in the 21st century (Trilling & Fadel, 2009).

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

To elaborate on the necessity of the above-mentioned skills, Binkley et al. (2012) emphasised that such skills play a critical role in achieving success across academic, professional, and social spheres. Among these competencies, critical thinking emerges as a foundational skill that is indispensable in today's world. Analysing information, evaluating sources, and constructing reasoned

arguments are becoming essential for academic achievement and informed decision-making in everyday life (Binkley et al., 2012). Cooper and Patton (2001) noted that the ability to think critically involves assessing situations from multiple perspectives and approaching problems creatively. They emphasise that individuals need to think both critically and creatively to achieve success (p. 4). This highlights that cultivating critical thinking skills goes beyond mere academic performance; it enables people to navigate complex societal challenges and make meaningful contributions to their communities. In summary, as the demands of the 21st century continue to evolve, developing these essential life skills, particularly critical thinking, becomes imperative for students. Therefore, educational systems need to prioritise teaching these skills in order to make students capable of shaping a future which is more successful and fulfilling (Cooper & Patton, 2001).

To effectively prepare young learners in Morocco for the challenges of higher education and the job market, it is very important to revise the English Language Teaching curriculum. In the same context, Ketelhut et al. (2010) added that a thorough revision of the curriculum should focus on establishing a solid foundation in critical thinking skills, which are increasingly recognised as vital due to the rapid pace of change in the world. Research conducted by Ketelhut et al. (2010) underscores the importance of educational curricula that prioritise inquiry-based learning and comply with national content standards. Such an approach creates varied opportunities for students to actively get engaged with the teaching materials, to ask relevant questions, and to hone their problem-solving abilities. Hence, critical thinking skills are essential to effectively and successfully address and cope with challenges encountered in the real world (Coughlin, 2010).

Since the labour sector is rapidly evolving, with numerous businesses prioritising critical thinking and analytical skills, young Moroccan learners must develop these skills early, which will be essential for their educational paths and future careers. Integrating critical thinking into the middle school curriculum is expected to empower children to become independent thinkers, more equipped to tackle complex issues, and contribute effectively to society. Consequently, specific steps and adjustments must be taken to guarantee that the teaching methods and resources employed in Moroccan middle schools effectively promote critical thinking. This initiative will enhance students' academic preparedness and aid them in developing essential abilities required to thrive in a dynamic and unpredictable environment (Ketelhut et al., 2010).

2. Twenty-first-century skills

The term 21st-century skills encompasses a range of competencies essential for success in current and future professional environments shaped by society's evolving needs. Voogt and Roblin (2010) define these skills as a comprehensive concept covering the knowledge, skills, and attitudes necessary for individuals to make meaningful contributions to a knowledge-based society. These skills are necessary to be competitive in the twenty-first-century workforce, use new technology, engage in a varied society, and adapt to quickly changing work environments (Scott, 2015).

In the current landscape of education, there is an increasingly urgent demand for skills specifically tailored to meet the challenges of the 21st century. This necessitates that classroom educators, being the primary facilitators of learning, not only have a profound grasp of these skills but also actively incorporate them into the curriculum, as they directly impact the overall quality of education (Larson & Miller, 2011). Therefore, imparting these 21st-century skills to students is vital to furnish them with the essential tools required to survive and thrive in the face of future obstacles. These skills encompass a wide array of abilities, including, yet not limited to, creativity, critical thinking, adaptive problem-solving, resilience in the face of adversity, and adeptness in collaborative endeavours (Duncan, 2009).

Different perspectives have addressed the specific content and meaning of 21st-century skills. However, they all generally highlight the potential actions that students can take with information and the crucial aspect of how they utilise their acquired knowledge in real-life situations. Their core attributes encompass proficient communication and collaboration abilities, technological experience, inventive and resourceful thinking and problem-solving skills (Larson & Miller, 2011).

The essential skills required in the 21st century are not entirely new but are relevant in the modern professional landscape. Contemporary professionals are expected to be able to locate and critically evaluate information from diverse sources. This skill set is crucial, enabling professionals to make well-informed decisions and innovate effectively. The historical significance of this requirement is substantial, as noted by Silva (2009). The roots of these competencies can be traced back to influential figures such as Socrates and the Sophists, who made pioneering contributions to formal pedagogy (Johnson & Reed, 2008).

Socrates and the Sophists' enduring influence on modern educational practices is evident in the continued use of Socratic circles. Socratic questioning is defined as systematically examining the ideas, questions, and responses underpinning human beliefs. The Socratic method, derived from the Greek philosopher Socrates's teachings, empowers instructors and students to move beyond primary yes-no responses and delve into critical analysis and insightful observations of a given text. Renowned for challenging his students to look beyond their initial beliefs, Socrates utilised questioning, critical thinking, and discussion to explore the pertinent issues of his. Socratic circles are still employed in modern classrooms to effectively foster the development of question generation and response skills in students while simultaneously incorporating both aspects and actively engaging students in rigorous inquiry and meaningful discourse, empowering them to take ownership of their learning experiences (Copeland, 2005).

In addition, Dewey (1933), a long time ago, suggested that education should be based on real-life experiences and that students should engage with the constantly evolving environment. This approach is considered to be essential for developing skills that are relevant for the future. With the help of the internet, modern students can participate in real-life projects that extend beyond

the boundaries of their classroom. Dewey (1933), a genuine visionary, clearly defines an educated individual as someone who takes thoughtful reflection before taking action, responds intelligently to challenging situations, and evaluates the outcomes of their chosen course of action. Undoubtedly, this definition also accurately characterises a learner in the 21st century (Johnson & Reed, 2008).

Moreover, Bloom (1956) established a cognitive classification system, which can be utilised to develop instructional plans across several fields of study. Originally, the Taxonomy was intended to help curriculum developers define their learning goals. It is also thought to be beneficial for instructors in creating lesson plans, accomplishing unit goals, analysing exams, evaluating textbooks and analysing classroom questions (Davis & Hunkins, 1966; Davis & Tinsley, 1967; Pfeiffer & Davis, 1965).

According to Bloom (1956), the taxonomy consists of six cognitive ability sections:

- Knowledge: The ability to recall and retain information.
- Understanding: comprehension of the knowledge.
- Application: practical use of the knowledge.
- Analysis: breaking down information into essential components and logically organising it.
- Synthesis: combining ideas to create new ones.
- Evaluation: determining the worth of something.

As initially outlined by Bloom and later refined by his colleagues in Anderson & Krathwohl (2001), the complexities of cognitive processes remain a focal point as educators create teaching methods that emphasise 21st-century skills. Today, educators need to improve students' communication and teamwork abilities as well as their technological and problem-solving skills. They should also encourage innovative and creative thinking, thus building upon the foundations laid by earlier educators (Anderson & Krathwohl, 2001). Therefore, as the world undergoes significant changes, educators must equip their students with the skills and knowledge needed to succeed in the future society. 21st-century skills must be incorporated throughout all subjects, as these skills directly impact teaching and learning. Classroom teachers must have a comprehensive understanding of and incorporate these tools into the curriculum (Larson & Miller, 2011).

3. Twenty-first-century skills and academic success

Based on the previously discussed literature, success in both personal and professional life requires specific 21st-century skills, including information and media literacy, communication and cooperation skills, and higher-order thinking skills (Binkley et al., 2012). These skills are also required because of globalisation. The 21st century is known as the century of knowledge because of the rapid development of globalisation, openness, and technology, which is changing every area of human life. As the twenty-first century progresses, everyone needs to prepare themselves for the globalisation period. In order to be a dependable worker in the twenty-first century, one needs higher-order thinking skills, such as critical, rational, reflective, metacognitive, and creative thinking skills. Accordingly, a college degree and higher literacy skills will be required for somewhere between one-half and two-thirds of new jobs in the future, as argued by Graham and Hebert (2010). Students must acquire these 21st-century skills in order to enter the workforce today (Larrson, 2017). In brief, the challenges placed upon students to obtain the necessary skills and knowledge for success and excellence are heightened by globalisation, the increasing economic imperatives, and a deficiency in civic participation (Levy & Murnane, 2004).

In the modern context of the twenty-first century, individuals are confronted with a myriad of intricate and multifaceted challenges that demand their utmost attention and adeptness. Meeting these challenges necessitates individuals to possess a range of competencies that are specifically pertinent to the demands of the current century. These competencies can be broadly categorised into three essential groups as delineated by various frameworks. The first category encompasses higher-order thinking skills, which are very important in exploring complicated matters and finding innovative solutions. The second category encompasses social, emotional, and civic skills, highlighting the importance of effective communication and collaboration in addressing societal and civic challenges. Lastly, the third category emphasises digital skills, including information and media literacy, which are indispensable for navigating the digital landscape of the 21st century (Trilling & Fadel, 2009).

4. Critical thinking and twenty-first-century skills

Critical thinking skills are among the life skills students need to possess in the twenty-first century. Thinking skills involve the cognitive and emotive domains as they analyse and evaluate information gleaned from experiences or observations. In this regard, Lai (2011) defined CT skills as pupils' capacity to assess or evaluate, reason through findings, analyse arguments, solve problems, or make decisions. Critical thinking is considered the fundamental component of learning in the 21st century (Trilling & Fadel, 2009). Contrary to the common assumption that critical thinking is a novel concept, it is a well-established notion that has recently attained importance (Hersh, 2009). Critical thinking has been defined in several ways. De-Young (2003) defined critical thinking as the capacity to identify a problem, determine the essential information required to solve the problem, interpret both explicit and implicit assumptions, choose trustworthy hypotheses, reach logical conclusions, and support the validity of inferences.

According to Ennis (1987), Critical Thinking is a rational and contemplative cognitive process determining beliefs or actions. Its primary objective is to create the most optimal logical decision attainable. Moreover, Ennis (1987) further delineates six primary constituents of critical thinking: concentration, rationality, deduction, context, elucidation, and summary. As per Baldwin et al. (2011), Critical Thinking uses managerial expertise to recognise problems, establish feasible strategies, evaluate those strategies, and follow a selected course of action. A further definition provided by Lovelace, Eggers and Dyck (2016) succinctly describes CT as the analysis and appraisal of circumstances and the suggestion of appropriate courses of action. From the given definitions, it can be concluded that critical thinking is an intricate procedure that necessitates persons to use advanced cognitive abilities for information processing (Choy & Cheah, 2009).

Critical thinking is increasingly imperative for students in contemporary society. As issues such as terrorism, natural disasters, and global warming continue to exert influence on our lives, the capacity to think critically and discern information is paramount for making well-informed decisions and addressing intricate challenges. Accordingly, developing strong critical thinking skills is crucial for students when it comes to devising effective solutions for the pressing issues they encounter in their academic, professional, and personal lives to succeed at school and in society (McMillan, 2015).

The cultivation of critical thinking skills holds significant importance across all educational levels (McPeck, 2016). Long et al. (2018) underscore the necessity for students to possess fundamental critical thinking competencies as they transition into university. University faculty customarily anticipate independent critical thinking from incoming freshmen. This expectation is rooted in the widely recognised understanding that fortifying students' critical thinking proficiencies is indispensable for academic prowess and fosters an elevated standard of education (Ren et al., 2020).

Proficiency in critical thinking skills does not come naturally; instead, it requires intentional development (Paul & Binker, 1990). According to Silva (2009), there is no universally defined age or developmental phase at which children are ready to acquire complex cognitive competences. This challenges the assumption that very young children are tangible and direct thinkers incapable of engaging in abstract thinking or acquiring a deep understanding of ideas. By the age of seven, children establish rules to resolve conflicts among themselves, use language including words such as "think," "know," "guess," and "remember," form hypotheses about future events, propose alternative actions, and suggest actions that may have been carried out previously (Taggart et al. 2005). However, the topic of critical thinking is so complex that even students who have an inherent interest in CT are unlikely to apply their CT skills to different situations unless explicitly instructed to transfer them by making students aware of the underlying problem structures and providing them with ample opportunities to practice CT skills in various fields (Lai, 2011).

One crucial aspect of critical thinking is whether critical thinking training aligns with students' inclinations. CT encompasses much more than just employing the appropriate skill in the appropriate situation. The disposition also includes the ability to identify the necessity of a skill and the willingness to make the necessary mental effort to use it (Halpern, 1999). Effective cultivation of abilities and attitudes was essential in forming accomplished critical thinkers (Facione, 1990b). Individuals with a solid positive inclination towards critical thinking are defined in the literature as having a critical spirit or as being thoughtful, contemplative, and meta-cognitive. Nevertheless, when it comes to addressing particular questions, issues, decisions, and problems, individuals who possess a weak or negative cognitive trance CT disposition are more inclined to be impulsive, disorganised in acquiring necessary information, prone to applying unreasonable criteria, give up promptly at the first indication of difficulty, and fixated on a solution that proved ineffective (Facione and Gittens, 2011).

When considering critical thinking, relying on a single skill or description is not advisable. Given the several descriptions of CT, it is logical to expect the existence of several sub-skills within CT. This is because CT is an integrated skill encompassing many sub-skills or component dimensions (Fisher, 2011). Watson and Glaser (1994) identified inference, recognition of assumptions, deductions, interpretation, and evaluation of arguments as the primary sub-dimensions of critical thinking. The sub-dimensions identified by Jones et al. (1995) include interpretation, analysis, assessment, inference, presenting argumental abilities, and reflection. While Facione (1990a) defines the sub-dimensions of CT as analysis, inference, evaluation, deductive reasoning, and inductive reasoning using multiple-choice items, Jonassen (2000) defines them as the process of gathering pertinent information, drawing logical conclusions, formulating testable hypotheses, rationally applying conclusions, and verifying the coherence of knowledge.

5. Reasons to teach critical thinking

The shift in society from the Industrial to the knowledge age has altered the requirements for becoming an educated adult, affecting traditional educational procedures (Trilling & Hood, 1999). In this regard, Levy and Murnane (2004) examined the job skills employees require in the workplace by examining job duties from 1969 to 1999. They concluded that good communication and expert thinking are essential. In addition, Levy and Murnane (2004) discovered a drop in occupations that mainly involve manual tasks and routines. Such activities are most amenable to computer programming, adding that an increasing percentage of the nation's workforce is employed in positions that computers are unable to execute because these tasks require high-order thinking skills (Levy and Murnane, 2004, pp.53-54).

According to Robinson (2001), there is a big difference between American schools' curriculum and the skills companies are looking for in potential hires. Friedman (2005) stated that future workers were not prepared for the specific occupations they will

probably encounter by the educational system. According to Junior Achievement (2013), because kids are not being taught skills essential for a global economy, only half of high school students are prepared with basic abilities, notably "communication, problem-solving, and critical thinking" (p. 1). Business leaders want for workers who can use their expertise rather than absorb data (Casner-Lotto & Barrington, 2006). In a study to assess workers' preparedness for the workforce, 69.9% of employers said recent high school graduates lacked critical thinking and problem-solving skills (Casner-Lotto & Barrington, 2006). Wagner (2008) agreed that high school pupils need to gain the critical thinking and problem-solving skills necessary for success. In the same context, Costa (2001) stated that people must be taught how to think independently to be ready for the future. Therefore, teaching students to think critically is essential for their professional, political, and personal development (Rothenstein et al., 2007).

Technology plays a significant role in the twenty-first century. However, it also makes higher-level thinking skills easier to develop, and changing one's thought process becomes a new life skill (Burkhardt et al., 2003). Independent thinkers and effective problem solvers are needed in America (Burke et al., 2007; Gardner, 2000; Wagner, 2008). Establishing self-sufficient adults who can consider circumstances carefully and make well-informed decisions is credited to critical thinking skills (Burke et al., 2007; Landsman & Gorski, 2007; Schafersman, 1991).

Additionally, imparting critical thinking abilities to kids can allow them the chance to master fundamental skills and content that is appropriate for their grades (Adler, 2003). Critical thinking abilities help students gain life skills and pave the way for success in their future occupations (Thomas et al., 2009). Hunt et al. (1999) assert that students who engage in critical thinking exercises can generate, transmit, and reorganise information. Critical thinking skills training increases students' ability to think critically and solve problems more successfully (Snyder & Snyder, 2008) and their likelihood of performing better on standardised examinations (Beyer, 2008).

6. Barriers to teaching critical thinking skills

The idea of teaching critical thinking skills in EFL classes questions the effectiveness of the typical training teachers receive regarding teaching language content in class, along with their knowledge about the strategies of teaching critical thinking. In this regard, it is strongly argued that teaching critical thinking should be based on training and practice (Templaar, 2006). Concerning this study, Abrami et al. (2008) and Templaar (2006) consistently argue that teaching practices based on students' memory, drilling, and repetition are far from being considered critical thinking-related teaching activities.

Reviewing the literature about teaching critical thinking, it is concluded that it can be demanding for teachers because several obstacles must be highlighted. In this regard, Broadbear (2003) sheds light on barriers to integrating critical thinking skills: teachers' lack of training, lack of necessary information, teachers' and students' preconceptions, and time constraints. Based on these obstacles, it is concluded that the teaching of critical thinking necessitates much on the part of the teacher and that it takes time to enable students to progress and perform well on this level, keeping in mind the idea that critical thinking-related tasks and all other traditional teaching activities cannot be dealt with similarly in class, especially in terms of preparation, correction and assessment (Broadbear, 2003).

Shedding more light on the last obstacle, time constraints, the use of portfolios can be regarded as a suitable teaching tool for developing critical thinking skills, as it provides enough time and space for students to reflect on what they have learned in class and beyond. In line with Templeaar (2006), using portfolios can effectively teach critical thinking because students' collections of work do not entail memorisation of content. Instead, portfolios should allow much room for free expression, invention, and creation for learners. However, it should be highlighted that the successful implementation of portfolios for critical thinking-based purposes is heavily dependent on teacher training and their knowledge about that (Broadbear, 2003).

Having gone through the literature review concerning critical thinking, it is concluded that there are different philosophical interpretations and conceptual models of critical thinking. The latter is a complex condition that challenges the definition of pedagogical practices. Accordingly, this investigation aims to closely examine how designed and aligned tasks can help foster critical thinking skills among students learning English as a foreign language in Morocco at an early age.

7. Conclusion

The rising interest in teaching critical thinking can be attributed to several factors, including the effects of globalisation, rapid advancements in technology, and the ever-expanding body of human knowledge. As the world becomes more interconnected, the demand for the acquisition of critical thinking skills grows, creating opportunities for learners across various countries and industries. In light of this trend, educators and language experts have increasingly focused on the importance of critical thinking skills as an essential element in second language acquisition and instruction. Therefore, there is a significant focus on recognising critical thinking skills as a key area of interest in second language learning and teaching. The development of such skills is vital for students to create practical solutions to the challenges they encounter in their academic, professional, and personal lives, ensuring their success in both educational and societal contexts (McMillan, 2015). These skills enhance a learner's ability to comprehend and communicate effectively in English and prepare them to navigate complex global challenges and engage in meaningful discussions within diverse cultural contexts. By prioritising critical thinking in EFL programs, educators aim to empower students to become more proficient, reflective, and adaptable communicators in an increasingly competitive world.

Critical thinking is an essential 21st-century skill that students must acquire; therefore, schools must integrate it into the curriculum (Trilling & Fadel, 2009).

Funding: This research received no external funding.
Conflicts of Interest: The authors declare no conflict of interest.
Publisher's Note: All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers.

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