Effect of Social and Emotional Learning Approach on Development of Executive Functions (EF) for Students with Learning Disabilities[1]

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Abstract

Students with learning disabilities have been reported to have difficulty in a number of different executive functions, this study aimed to examine the effect of a social and emotional learning approach on executive functions in students with learning disabilities. The study was conducted using a quasi-experimental design with a pre-test and post-test on 207 middle school students enrolled in the third grade. Students were divided into two groups: an experimental group and a control group. The experimental group was taught using a social and emotional learning approach, while the control group was taught using a traditional teaching approach. Executive functions development was measured using a questionnaire we assessed three aspects of EF at the beginning and end of classes. These included the following: (a) working memory with a recall and sequencing task (number of items recalled and correct sequence), (b) inhibitory control with a flanker task (reaction time and accuracy), and (c) cognitive flexibility with the dimensional change card sort task (reaction time and accuracy). T-test results showed that students in classes using a social and emotional learning approach demonstrated significantly better executive functions performance compared to students in the traditional teaching group. Therefore, the social and emotional learning (SEL) approach provided important insights into how students can integrate and apply Social and Emotional Learning strategies to enhance executive functions. The implications of integrating a social and emotional learning approach into teaching and learning for students with learning disabilities are discussed .

Keywords: Social and emotional learning, executive functions, learning disabilities

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Introduction

Executive functions (EF) is viewed by some as a comprehensive concept that describes the cognitive and metacognitive processes students use in the classroom (Anderson, 2002). In contrast, McCloskey, Perkins, and Van Diffner (2009) view executive functions as a set of cognitive abilities that operate in concert to guide students' actions in an organized, strategic, and goal-oriented process. The primary role of executive functions is to regulate various cognitive processes during complex problem-solving tasks (Neisser, 1967). Furthermore, there is general agreement in the literature that executive functions comprise these multiple cognitive processes or skills that enable students to "initiate and maintain behaviour, inhibit competing actions or stimuli, select relevant task goals, plan and organize problem-solving strategies, flexibly change strategies when necessary, and monitor and evaluate one's own behavior" (Gioia, Asquith, Kenworthy, & Barton, 2002, p. 122). Executive functions are not the actions themselves (e.g., perceiving, thinking, and acting), but rather the issuance of commands or signals that guide perception, thoughts, and actions. In conjunction with working memory, executive functions also help students hold active information so that it can be sorted, discarded, practiced, processed, or retained. Students with learning disabilities (LDs) experience difficulties with a number of different executive functions processes, which impacts their academic performance in the classroom (Singer & Bashir, 1999). These difficulties cause students with LDs to struggle with complex academic tasks, such as reading, writing, and note-taking (Denckla, 2007). Among students with LDs, Meltzer & Krishnan (2007) found that executive functions difficulties hinder students' ability to use effective strategies and prevent them from using them flexibly during problem-solving tasks. Furthermore, they claim that these difficulties explain why students struggle with self-regulation and strategy monitoring during complex learning tasks. In addition to these problems, Anderson (2002) reported that students also experienced difficulties in the areas of impulse control, reasoning ability, responding to feedback, and holding information in working memory. Students with learning disabilities have been described in the literature as "incompetent" or "passive" learners, having difficulty applying strategies naturally, using them flexibly, failing to monitor their use, or not using a new strategy when it is ineffective (Ellis & Lenz, 1996; Evers & Spencer, 2007; Meltzer, Katzer, Miller, Reidy, & Roditi, 2004; Yang, 2011). These difficulties include selecting and employing an effective strategy and using it smoothly and flexibly while completing learning tasks (Gunston, 1994). Students who use effective strategies are able to integrate newly learned strategies with prior content (Yang, 2011). Flexible

use of strategies enables students to switch to a new strategy or devise an alternative strategy when the current strategy fails, as well as to learn from mistakes and understand the role of the strategy used in the error (Anderson, 2002). This shift reflects students' use of inhibition during problem-solving activities. In complex problem-solving activities, students must inhibit inappropriate strategies and task-irrelevant information and select more appropriate strategies in an effort to successfully complete the task (Toll, van der Veen, Croesbergen, & van Luyt, 2011).

The Role of Executive Functioning During Academic Tasks

According to Meltzer and Krishnan (2007), the primary executive functions students use during academic tasks includes planning, goal setting, organizing, prioritizing, memorizing, navigating flexibly, and self-monitoring/checking. These primary functions are used in a variety of written language tasks, from essay writing to note-taking. Planning and goal setting enable students to consider task requirements to identify appropriate strategies and define the goals of the task itself. These two executive functions play a key role in the early stages of writing, as students brainstorm and plan the writing task (Taft & Mason, 2011). They are also used in note-taking, for example, when students use a pre-organizer to plan how to record their notes during a lecture. Unfortunately, students with disabilities struggle with planning, organizing, prioritizing, and elaborating during writing tasks, including note-taking (Boyle, Rosen, & Forchelli, 2014; Harris & Graham, 1999).

Organization is an ongoing process that begins during the planning process and continues after task completion. During complex tasks, students organize and coordinate multiple cognitive activities simultaneously (Meltzer & Krishnan, 2007). Organization before or during a task involves visual planning and understanding the bigger picture before beginning the task so that information can be organized, processed, and stored. Furthermore, organizing verbal information is essential to learning and can present difficulties for students with learning disabilities during complex activities that involve storing and processing information, such as note-taking (Crick & Lockhart, 1972; Polychroni, Economou, Brentesi, & Cutlidi, 2011). Organization also involves sorting and categorizing information, particularly as students transition between understanding the task as a whole and engaging with its details (Krishnan & Filler, 2010).

During each academic task, students must also prioritize information, which involves identifying and attending to the most important information in the task Meltzer, 2010). Students often have to decide which parts of an

assignment to start with, which parts to devote the most time to (e.g., major projects and tests), which lecture points to record and which to ignore, and how much time to devote to different aspects of writing a research paper (e.g., how much time to spend reading versus writing) (Meltzer, 2010).

In addition to planning, organizing, and prioritizing, students utilize other executive functions while memorizing information, changing problem/task-solving strategies, and self-monitoring/checking the success/completion/progress of a task. Students must mentally process information and direct their attention to different aspects of a task to retain it. For example, using effective study strategies can help students better connect important new concepts and make new connections with previously learned concepts (Meltzer, 2010). Kincaid and Trautman's (2010) study on memorization identified four common techniques: attention to detail, repetition/rehearsal/review, connecting meaning, and chunking information. Many of these techniques are used during note-taking and increase information recall and retention (Swanson & Hoskin, 1998). Using appropriate strategies enables students to perform learning tasks efficiently. This cognitive flexibility is essential during learning, yet it can be difficult for students with disabilities to master (Meltzer & Krishnan, 2007; Meltzer, Cohen, Miller, & Roditi, 2001). In tasks such as note-taking and studying, navigating between topics/subtopics and using strategies flexibly (i.e., using certain parts of a strategy more extensively than others) are important executive functions used to learn content information efficiently (Meltzer & Bignato, 2010). Finally, self-regulation of behaviours is important for students as they work to complete complex tasks. For example, during writing tasks (such as note-taking), students must continually monitor their writing to ensure it is organized in a logical and understandable order. Executive functions play an important role in students' success in completing schoolwork. During complex learning tasks, these executive functions are used to plan, set goals, prioritize, and organize information. Similarly, as students work on classroom tasks and activities, elements of memorization, transfer, and self-regulation help students learn content efficiently and correct errors or difficulties. It is the skilful coordination of these elements that ensures successful learning in academic tasks.

Although most students are proficient and successful in using executive functions, students with disabilities often struggle with their executive functions and therefore do not perform well on note-taking tasks. For example, in a study examining the note-taking skills of students with and without learning disabilities, students with learning disabilities performed significantly worse than their non-disabled peers in their ability to record

notes from a lecture (Boyle, 2010). This particular study found that, compared to their peers, students with learning disabilities scored lower on the lecture task (18% for students with learning disabilities versus 42% for students without disabilities), lower overall lecture points (e.g., 13% versus 24%), and fewer words in notes (57 words versus 131). Additionally, students with learning disabilities scored approximately 20% lower on a measure of lecture comprehension than their non-disabled peers. Other studies have found similar results (Hughes & Soreski, 2004), further confirming the cognitive demands placed on students with disabilities during note-taking.

Furthermore, teaching in Egyptian secondary schools places great emphasis on developing cognitive academic skills; the system neglects the social and emotional aspect, which is an essential component of human development (Jaditawi, 2019). Consequently, students' potential is not fully realized in Egyptian secondary schools, and young people face countless societal experiences that negatively impact their social and emotional development. For example, the country is today more disturbed than ever before, grappling with issues such as interpersonal violence, student riots in schools, indiscipline, and a general sense of insecurity and fear. Therefore, schools are key sites for promoting student well-being (Domitrovic, Durlak, Staley, & Weisberg, 2017; Vostanis, Humphrey, Fitzgerald, Deaton, & Wolpert, 2013); they are the primary developmental environments in which many concerns arise and can be addressed effectively (Greenberg, 2010). In line with this, schools are encouraged to improve the teaching and learning process by integrating cognitive, social, and emotional competencies (Farrington et al., 2012; McCormick et al., 2015) These competencies can prevent maladaptive outcomes and make students more aware of themselves, their strengths and weaknesses, feelings, and other behaviours. This will help them understand the perspectives of others in order to negotiate effectively, interact positively, solve problems, and make responsible life decisions (Nielsen, 2015; Bashir, 2013). Enhancing these competencies can make students competent and resilient individuals, able to overcome crises and difficulties that occur in society and in the learning environment (Ee, Cho, & Wang, 2014; Suratno, Kumaria, Yuchardi, Davik, & Wikasono, 2019). Therefore, to address these challenges, teaching and learning activities in schools are expected to implement approaches that enhance social and emotional competence.

These experiences impact their ability to develop social and emotional skills. Therefore, to achieve these competencies, teaching social and emotional skills should be considered a core task for school systems (Durlak, Weisberg, Deminiecki, Taylor, & Schillinger, 2011). In line with the above, this study examines the effects of a social and emotional learning approach on

enhancing executive functions in students with learning disabilities.

Social and Emotional Learning

Developing executive functions (EF) as a result of social and emotional learning (SEL) enables learners to acquire the ability to monitor behaviors, control emotions, establish and maintain positive relationships, and regulate learning. This is reinforced by emotional intelligence theory, which considers the aforementioned competency pattern as a manifestation of the social and emotional competence students acquire through emotional literacy (Izard, 2002). That is, students receive direct instruction in social and emotional learning to recognize, understand, label, express, and regulate emotions. These are essential abilities for improving students' social and emotional competence. Therefore, through social and emotional learning, children and youth learn and effectively use the acquired knowledge, attitudes, and abilities to understand and manage thoughts, set and achieve positive goals, feel and demonstrate empathy for others, build and maintain positive relationships, and make responsible decisions (Weisberg, Durlak, Domitrovich, & Gulotta, 2015). The knowledge, skills, and attitudes necessary to demonstrate social and emotional competence require the integration of emotional, cognitive, and behavioral systems and relevant teaching methodologies (Beauchamp & Anderson, 2010; Greenberg, Weissberg, O'Brien, Zenz, Fredericks, Resnick, & Elias, 2003). The learning approach in educational systems translates a set of principles related to the nature of learning into the classroom, creating a connection between students and everyday life. These ideas can enhance the overall competence of all schoolchildren and guide them to healthy lives in and outside the school community (Durlak et al., 2011). Therefore, students spend a significant portion of their time in school during the day. Therefore, teachers should help students develop competencies that promote mental health and healthy behavior, in addition to positive academic skills. While students learn reading, mathematics, and science through regular instruction and practice in school, social and emotional skills should be explicitly taught and regularly reinforced.

Emotional competence education plays a vital role for students in a variety of ways. For example, it ensures that all students have the opportunity to learn the basic skills necessary for future success. Furthermore, exposing students to social and emotional skills helps improve their competencies, behavior, and attitudes toward school, enhancing their learning (Durlak et al., 2011). For these reasons, learning curricula play a leading role in helping students develop in all aspects of themselves (cognitive, physical, social, emotional, and moral). Therefore, the social and emotional learning approach integrates

principles capable of promoting understanding and managing emotions, showing empathy for others, and building and maintaining positive relationships through teaching procedures used to achieve the mission of enhancing students' sense of self-awareness, self-management, social awareness, relationship management, and responsible decision-making. These skills can ultimately develop students' social and emotional competence.

Furthermore, the context of this study is the final years of middle adolescence (14–16 years), which corresponds to the final years of middle school (9th grade). This period is a significant time of developmental and contextual changes that lay the foundations for successful adolescent social and emotional adjustment . For example, this stage witnesses cognitive developments that enhance children's ability to reflect on their successes and failures, and an expansion of their social worlds, with broader and more complex peer relationships becoming increasingly important in their lives (Panayiotou & Humphrey, 2017). Furthermore, the end of this period provides opportunities to strengthen self-regulation and other social and emotional skills that typically developed rapidly in the preceding years. More broadly, middle adolescence is characterized by a continued desire for competence, independence, and connection. Social-emotional learning is complex and hard to define as it encompasses a multitude of interconnected concepts that influence one another . The Collaborative for Academic, Social, and Emotional Learning (CASEL) offers another SEL It outlines five core competencies: self-awareness; self-management; social awareness; relationship skills; and, responsible decision-making

Statement of the Problem

This study addresses the following questions:

1- Are there differences between the mean scores of the control and experimental groups on the executive functions scale in the post-test?

2- Are there differences between the mean scores of the experimental group on the executive functions scale in the pre- test and the post-test?

3- Are there differences between the mean scores of the experimental group on the executive functions scale in the post-test and follow-up measurements?

Method

Design: A quasi-experimental design, a pre-test and post-test design with nonequivalent groups, was used to collect data on the executive Functions of middle school students. This type of design assumes that the groups are equivalent from the outset to control for the possibility of prior competence (Pallant, 2011; Creswell, 2012). This design aims to demonstrate that the

difference between the initial and final score in the experimental group is a result of the treatment, in a controlled setting, increasing the external validity of the design. Two groups of classes from two different middle schools were subjected to two different teaching approaches. One group was exposed to social and emotional learning (experimental), and the other was exposed to a traditional teaching approach (control). Executive functions were measured before and after the intervention to determine the effect of the intervention on the experimental and control groups.

Population and Sample

This study was conducted on third-grade (ninth-grade) students during the first semester of the 2024/2025 academic year, over a period of ten weeks, using the Arabic language curriculum. The study included 207 students from two full semesters in two middle schools: 117 students (experimental group) and 90 students (control group). It was not possible to ensure random access to all students; therefore, the sample consisted of a full semester of third-grade students enrolled for the academic year. The students ranged in age from 15 to 16 years old and were in their first semester. All of these students were enrolled in both schools.

Procedures

Data were collected in two different ways. First, students were informed of the nature of the study and assured that the results of both the pre- and post-tests would not be disclosed to anyone, and that only the research team would be able to access them. In this study, we limited our sample to students in grades not subject to the study who agreed to participate. After completing these procedures and obtaining approval from the heads of the relevant departments, a pre-test was administered to all groups, and a post-test was administered to all groups after twelve weeks of intervention. Students in the treatment group were introduced to the social and emotional learning curriculum. The teaching units used in this study were limited to eight topics and one hour per lesson from the Arabic language curriculum. Students were given opportunities to present a practical activity to demonstrate their mastery of the skills. The same units and time were used for the control group. The traditional teaching method was used to teach the control group students.

Instruments

- Social and Emotional Learning (SEL) approach (RULER)

RULER is a Social and emotional learning intervention for students in kindergarten through intermediate/Junior secondary that develops social and emotional abilities through teaching on social and emotional related ideas and

the introduction of anchor tools for leveraging emotions in the classroom. The experimentation uses a "top-down" approach and comprises professional development training for school staff on improving the skills and knowledge of the adult to create positive learning setting and incorporation of student skill-building for handling and leveraging emotions within the context of a usual teaching and learning curriculum. Social and emotional learning approach (RULER) is founded on the achievement model of emotional literacy (Rivers& Brackett, 2010) which suggests that emotional literacy is acquired through experience and develops through: (a) acquiring emotion-related knowledge and competences; (b) creating climate that are secure and supportive for experiencing a varied range of emotions; (c) providing steady opportunities to practice and get feedback on utilizing emotional intelligence so that their benefits become improved; and (d) frequent exposure to adults who model emotional intelligence (Rivers et al., 2013).

- Executive Functions: The researcher assessed three aspects of executive functions using the National Institutes of Health (NIH) Toolbox iPad application, which is empirically validated and nationally standardized (Slotkin et al., 2012). These aspects included: (a) working memory with a recall and sequencing task (number of items recalled and sequence corrected), (b) inhibitory control with an alignment task (reaction time and accuracy), and (c) cognitive flexibility with a dimensional change card sorting task (reaction time and accuracy). In the previous analysis, convergent validity ranged from 0.48 to 0.93, and test-retest reliability ranged from 0.78 to 0.99.

Data Analysis

Using a quantitative approach, the data were analyzed using SPSS to calculate mean scores, standard deviation, and a t-test. This analytical technique was chosen because the study tested the effects of a social and emotional learning approach introduced on a categorical variable, the independent variable (experimental group), on a continuous dependent variable (executive functions), while controlling for the effects of other selected variables (pretest) that covered with the dependent variable. This technique reduces within-group variances (or error variances), increasing the effectiveness of the test (Pallant, 2011). The pretest and posttest data for the Social and Emotional Competence Scale were analyzed using SPSS (version 25). Since the distribution of the pretest and posttest was normal, and n >30, a parametric test was used (Pallant, 2011). A t-test was conducted to determine whether there was a statistically significant difference between the variables after controlling for the covariate.

Results

Question 1: Are there differences between the mean scores of the control and experimental groups on the executive functions scale in the post-test? Table 1; shows the results of the t-test for the differences in the mean post-test scores between the experimental and control groups on the Executive Functions Scale dimensions. According to Table 1, a statistically significant difference was found in the mean post-test scores between the experimental and control groups on the Executive Functions Scale dimensions in favor of the experimental group.

Table 1: T-test results for the differences in the mean post-test scores between the experimental and control groups on the Executive Functions Scale dimensions.

Test	Experimental	Control	T	Sig.
Working memory	**96.31**	**86.93**	**12.18**	**0 .01**
Inhibitory control	**89.49**	**83.02**	**6.55**	**0 .01**
Cognitive flexibility	**97.30**	**89.16**	**9.73**	**0 .01**

Question 2: Are there differences between the mean scores of the experimental group in the pre- and post-tests in the dimensions of the executive functions scale. Table 2 shows the results of the t-test for the differences between the mean scores of the experimental group before and after the test in the dimensions of the executive functions scale. According to Table 2, a statistically significant difference was found between the mean scores of the experimental group before and after the test in the dimensions of the executive functions scale in favor of the mean scores of the experimental group after the test.

Table2. T. test results for the differences in pre- post-test scores mean of the experimental group on the dimensions of the executive functions

Test	Pre-test	Post-test	T	Sig.
Working memory	**87.31**	**96.31**	**11.07**	**0 .01**
Inhibitory control	**83.49**	**89.43**	7.**58**	**0 .01**
Cognitive flexibility	**89.37**	**97.30**	**9.93**	**0 .01**

Question 3: Are there differences between the mean scores of the experimental group on the executive functions scale in the post-test and follow-up measurements? Table 3 shows the results of the t-test for the differences between the mean scores of the experimental group on the post-test and follow-up measures of the executive functions scale dimensions. According to Table 3, there is no statistically significant difference between the mean scores of the experimental group on the post-test and follow-up measures of the executive functions scale dimensions.

Table3. T. test results for the differences in post- and follow-up test scores mean of the experimental group on the dimensions of the executive functions

Test	Post -test	follow-up	T	Sig.
Working memory	**96.31**	**96.93**	**0.18**	**Not sig.**
Inhibitory control	**89.49**	**89.12**	**0.51**	**Not sig.**
Cognitive flexibility	**97.30**	**97.16**	**0.43**	**Not sig.**

Discussion and Conclusion

Based on the study results, the findings confirm that social and emotional learning plays a role in improving students' executive functions. This is consistent with the findings of Weisberg, Durlak, Domitrovich, and Golota (2015), who reported that students' social and emotional skills significantly increased as they understood their strengths, weaknesses, emotions, and other situations. These skills are taught in social and emotional learning classes to enhance their executive functions. In the social and emotional learning curriculum, students have the opportunity to collaborate and participate in activities to receive accurate feedback on their emotions by regularly recording their moods and using a mood scale to determine their level of happiness, vigor, or energy. This enables students to build their self-regulation and relationship management skills. It also helps them interact with others with confidence and learn more effectively by working with their peers. This is demonstrated by classroom activities that significantly impacted students' learning experience (Ee, Chu, & Wong, 2014; Suratno et al., 2019). In other words, by providing them with opportunities to understand others' perspectives, negotiate and interact effectively, and learn how to solve problems and make responsible life decisions, their social awareness, relationship management, and self-regulation skills are enhanced (Bashir, 2013; Ee, Chu, & Wong, 2014; Jaditawi, 2019). These assertions support previous relevant studies, including Loukatari et al.'s (2019), Beauchamp and Anderson's (2010), and Greenberg et al.'s (2003), which reported that students taught through a social and emotional learning approach developed better

communication and connection with others than students taught in a traditional setting. Similarly, in the current study, the students' thoughts and feelings (the control group) remained unspoken, and the group exhibited high levels of stress and fear of a kalari attack. Meanwhile, the experimental group, which underwent social and emotional learning, demonstrated significant improvements in their social and emotional competencies. The findings also support other studies indicating that social and emotional skills are fundamental to holistic human development, including social interaction, building effective teacher-student relationships, and tolerating social and emotional stress. Therefore, in addition to academic cognitive skills, students must learn to recognize, understand, label, express, regulate, and identify emotions, develop empathy, and establish and maintain healthy relationships in order to develop social and emotional competence (Weisberg, Durlak, Domitrovich, & Gulotta, 2015; Durlak et al., 2011). Additional evidence supporting the findings of this study comes from a study by Ee, Chu, and Wong (2014), which revealed that a social and emotional learning approach improves students' social and emotional outcomes compared to a traditional teaching approach. The study revealed that a social and emotional learning approach is a prerequisite for fostering a sense of self and social and emotional balance in students compared to a traditional teaching approach (O'Connell, Butt, & Warner, 2009; Jones, Greenberg, & Crowley, 2015). The study demonstrated that leveraging emotions through a social motional approach leads to effective outcomes. The findings support the importance of using a broader social motional intervention to address more competencies in a clear manner. These findings are consistent with the competencies formulated within the framework of emotional intelligence theory, which suggests that recognizing, using, and understanding emotions appropriately in relation to oneself and others, as well as managing them effectively, are linked to social and emotional competencies for handling intense emotional situations (Mayer & Salovey, 1997). Thus, this study makes a significant contribution to the field by empirically confirming some of the ways in which social and emotional learning is perceived to improve students' executive functions (Durlak et al., 2011). This finding suggests the importance of supporting social and emotional learning interventions in efforts to increase students' social and emotional competence. From a social and emotional learning perspective, this study demonstrated that improving executive functions through a social and emotional learning (SEL) approach is feasible. This is because the tools and features of this approach that support the development of social and emotional competence can engage students in meaningful social and emotional activities that enhance their social and emotional skills. If properly planned as part of an educational curriculum or

teaching method, the same basic tools and features of the RULER approach will be able to facilitate the improvement of effective and purposeful executive functions for students in middle and high school.

Implications and Future Suggestions

Researchers, educators, and academics have made significant efforts to improve schoolchildren's cognitive skills. However, education as a process is defined as "educating the whole child" (Weissberg, Durlak, Domitrovic, & Golota, 2015; Durlak et al., 2011). This means that the process must also integrate the development of cognitive, social, and emotional competence skills to nurture all stages of human development. Therefore, the findings of this study provide insight into a new teaching approach that can be used to improve students' executive functions. Stakeholders, such as the Ministry of Education, as well as teachers and students, will be informed about the importance of this approach in enhancing teaching and learning activities. For example, recognizing the importance of this approach in enhancing students' executive functions, the Ministry of Education should seek to revise secondary school curricula to incorporate it into teaching and learning activities. This will help provide a conducive and friendly learning environment and foster self-discipline and respect for others, all of which are attributes of executive functions. Furthermore, the study provided teachers with a better understanding of the teaching methodology and essential skills for enhancing students' social and emotional competence. Therefore, teachers can integrate a social and emotional learning approach into their teaching to help students improve their executive functions. For students, this approach can help them recognize, understand, label, express, regulate, and identify their emotions, develop empathy, and establish and maintain healthy relationships. This can be achieved by encouraging students to apply perspective-taking, problem-solving, and self-management strategies through role-playing, which provides them with opportunities to practice and identify their own and others' emotions, as well as brainstorm potential solutions to problems. Furthermore, these findings will benefit researchers currently working on social and emotional development, focusing on strategies to enhance executive functions competence. This study also contributes to the current literature on social and emotional competence in general. Therefore, this research is not exhaustive; therefore, some directions for future research are suggested.

Future researchers may replicate a similar study elsewhere in Egypt to confirm the findings for generalizability purposes. This study was conducted exclusively over a 12-week period; Therefore, the complex nature of students' changing social and emotional traits cannot be fully understood. Future

studies may replicate a similar study over a period of one or more years to gain in-depth knowledge of the dynamic nature of social and emotional competence and its association with students' cognitive competence. The current study also focused on the impact of social and emotional learning on students' executive functions, using a quantitative research design and the executive functions scale as the source of data collection. Therefore, future studies are recommended to conduct longitudinal, mixed-method studies that incorporate interviews to capture learners' views on "how they are improving their executive functions over time." These studies are likely to explore the different learning strategies learners use to enhance their executive functions.

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تأثير مدخل التعلم الاجتماعي والانفعالي على تنمية الوظائف التنفيذية لدى الطلاب ذوي صعوبات التعلم

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ملخص

وجد أن الطلاب ذوي صعوبات التعلم يواجهون صعوبات في عدد من الوظائف التنفيذية المختلفة. هدفت هذه الدراسة إلى دراسة تأثير مدخل التعلم الاجتماعي والانفعالي على الوظائف التنفيذية لديهم. أُجريت الدراسة باستخدام تصميم شبه تجريبي باختبار قبلي واختبار بعدي على ٢٠٧ طلاب من المرحلة الإعدادية المسجلين في الصف الثالث. قُسّم الطلاب إلى مجموعتين: مجموعة تجريبية ومجموعة ضابطة. دُرّست المجموعة التجريبية باستخدام مدخل التعلم الاجتماعي والانفعالي، بينما دُرِّست المجموعة الضابطة باستخدام مدخل التدريس التقليدي. تم قياس تطور الوظيفة التنفيذية باستخدام استبيان، حيث قام الباحث بتقييم ثلاثة جوانب من الوظائف التنفيذية في بداية الحصص الدراسية ونهايتها. وشملت هذه الجوانب ما يلي: (أ) الذاكرة العاملة من خلال مهمة التذكر والتسلسل (عدد العناصر المُستدعاة والتسلسل الصحيح)، (ب) التحكم المثبط من خلال مهمة التداخل (زمن رد الفعل والدقة)، و(ج) المرونة المعرفية من خلال مهمة فرز بطاقات تغيير الأبعاد (زمن رد الفعل والدقة). أظهرت نتائج اختبار "ت" أن الطلاب في الفصول التي تستخدم مدخل التعلم الاجتماعي والانفعالي أظهروا أداءً أفضل بكثير في الوظائف التنفيذية مقارنةً بالطلاب في المجموعة التعليمية التقليدية. لذلك، قدم مدخل التعلم الاجتماعي والانفعالي (SEL) يقدم رؤى مهمة حول كيفية دمج الطلاب وتطبيق استراتيجيات التعلم الاجتماعي والانفعالي لتعزيز الوظيفة التنفيذية. وقد تم مناقشة آثار دمج مدخل التعلم الاجتماعي والانفعالي في التدريس والتعلم للطلاب ذوي صعوبات التعلم.

الكلمات المفتاحية: التعلم الاجتماعي والانفعالي، الوظائف التنفيذية، صعوبات التعلم