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The Impact of Implementing a Multi-Level Teaching Approach on Front Crawl Swimming Technique and Emotional Intelligence

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ABSTRACT

Al- Dababseh M, AbuEid S, Abu Dari A, Abu Altaieb M, Bayyat M, Mazahreh J, Melhem Z. The Impact of Implementing a Multi-Level Teaching Approach on Front Crawl Swimming Technique and Emotional Intelligence. **JEPonline** 2024;27(6):1-11. This study evaluated the effectiveness of a multi-level teaching approach in enhancing the students' front crawl in swimming and emotional intelligence (EI). The study involved 21 students enrolled in a level-one swimming course who were randomly assigned to either the Experimental Group (n = 11) or the Control Group (n = 10). The Experimental Group received instructions through a multi-level teaching method, while the Control Group was taught using traditional methods. Over a 6-wk period, both Groups attended 3, 60-min sessions per week that focused on assessing swimming performance using standardized criteria with data reported as mean \pm SD, and EI levels were measured through validated surveys. Results showed that the multi-level teaching method led to a significant improvement in front crawl performance compared to the Control Group. However, no significant difference was observed between the Groups regarding their EI levels. The findings highlight the potential of multi-level teaching strategies to enhance swimming performance.

Key Words: Emotional Intelligence (EI), Front Crawl Swimming Technique, Swimming Performance

INTRODUCTION

In recent educational paradigms, a significant emphasis has been placed on centering the learning process around students to encourage their active participation. This shift in focus is seen as crucial for redefining the role of educators, who are now tasked with designing optimal learning environments, facilitating interactive exchanges between themselves and students, and promoting student engagement in both learning and assessment activities (27). Unlike traditional approaches that relied heavily on lectures, contemporary teaching methods prioritize guiding students towards resources, fostering self-directed learning. Educators are thus responsible for creating conducive learning conditions, supporting students in achieving predefined objectives, and evaluating their progress (3).

Arends (5) categorizes educational objectives into cognitive, emotional, and psychomotor domains, all of which are integral to human behavior. Johnson et al. (16) further highlighted the correlation between a learner's preferred learning style and their performance in skill acquisition, noting that individual differences in characteristics, desires, and cognitive abilities significantly influenced these preferences. Hanif and Mardesia (15) emphasized the necessity for teachers to employ diverse instructional strategies in developing students' swimming skills with the aim to achieve goals related to social, cognitive, motor, and psychological aspects. The effectiveness of swimming instruction is closely linked to factors such as self-concept, motivation, and emotional intelligence (EI), with a strong emphasis on motivating students to reach desired performance levels.

Effective swimming instruction requires students to recall stored information, as the body's motor responses are directed by the brain's commands to navigate various forces such as gravity, buoyancy, and muscular tension. Therefore, the ability to retrieve and apply information is a critical component of learning, underscoring the pivotal role of memory in the educational process (18). In Jordanian universities, swimming courses are mandatory for physical education majors, and the choice of teaching methods in these courses is paramount in enhancing the teaching-learning process (1,2,6,7,12).

The multi-level teaching method is particularly notable for its ability to bridge the gap between the students' ambitions and their actual performance levels. This approach accommodates various proficiency levels by providing each learner the opportunity to start at a level appropriate to his or her capabilities and to progress accordingly independent of their peers (25). Moston and Ashworth (21) describe the multi-level teaching method as one that targets different performance levels while engaging all students in the same task, thus addressing individual differences. This method is particularly effective in swimming, where students are encouraged to practice skills such as the front crawl according to their own abilities, fostering creativity and independent thinking.

The multi-level teaching method in swimming education is designed to allow the students to perform exercises at varying levels of difficulty, which enables them to choose tasks that aligns with their abilities and creative thinking. This method not only respects individual differences, it also encourages students to succeed by promoting self-assessment and self-reliance that enhances their enjoyment and engagement in the learning process. The instructor remains responsible for planning and teaching decisions, while the students are empowered to make choices regarding their learning pace and assessment (20).

Given these advantages, the multi-level teaching method supports learners in exercising autonomy in their educational journey, particularly in practicing front crawl swimming skills at levels suited to their abilities. Various instructional models emphasize different aspects of learning, including interest, achievement, and process with the researchers exploring the connections between the models, learning theories, and outcomes (31). For instance, Hanif and Mardesia (15) found that students who were taught the breaststroke using the multi-level method outperformed students taught with the conventional methods, suggesting a superior impact on skill acquisition.

Similarly, Boyce (9) demonstrated that the multi-level method is more effective than the reciprocal or homework methods in teaching specific sports skills. However, it is important to note that the teaching method alone does not guarantee success. Psychological factors, particularly emotional intelligence (EI), play a crucial role in the teaching-learning process. Emotional intelligence involves the ability to manage emotions effectively, which is essential for directing the students' behaviours in a desired manner (28).

Parker et al. (26) defined emotional intelligence as the capacity to accurately assess, express, and regulate emotions in oneself and in interactions with others. Goleman (13) expands this definition to include the use of emotions in making sound decisions during skill learning. Alkhawaldeh (4) argues that emotional intelligence is a key determinant of success, influencing one's ability to adapt socially and manage emotions constructively. In sports, emotional intelligence is particularly important since it affects how athletes perceive and control their emotional responses, which in turn can impact their performance (11). Sadri and Janani (28) found a strong relationship between emotional intelligence and self-regulation among male swimmers that further highlights the importance of EI in sports education.

The Purpose of this Study:

1. Evaluate the impact of conventional educational programs on the performance of front crawl swimming skills and emotional intelligence among sports science students at the University of Jordan.
2. Assess the effects of the multi-level teaching method on the same variables within the same student population.
3. Determine whether significant differences exist between the Control Group and the Experimental Group in terms of swimming performance and emotional intelligence, attributable to the teaching method employed.

Research Questions:

1. How does the multi-level teaching method compare to the conventional methods in influencing the performance of front crawl swimming skills among the sports science students at the University of Jordan?
2. In what ways does the multi-level teaching method influence the students' emotional intelligence (EI) compared to the traditional teaching methods in swimming instruction?
3. Are there significant differences in the improvement of front crawl swimming skills and emotional intelligence between the students taught using the multi-level method and those taught with the conventional methods?

METHODS

Subjects

This study employed an experimental design to assess the effects of different teaching methods on the front crawl swimming technique and emotional intelligence among university students. The sample included 21 students enrolled in a first-year swimming course at the School of Sport Sciences, University of Jordan, during the second semester of the 2023/2024 academic year. The participants were divided into 2 Groups: the Control Group of 10 students, who were taught using traditional methods, and the Experimental Group of 11 students, who received instruction through the multi-level teaching method. Prior to their participation, all the students were informed of the study's benefits and risks and provided written informed consent. The study adhered to the ethical guidelines set forth by the International Journal of Exercise Science (24) and aligned with the Helsinki Declaration to ensure the protection of participants' rights and well-being.

To determine the appropriate sample size, a power analysis was conducted using an effect size of $d = 0.5$, which aligns with Cohen's (10) recommendations for a medium effect size. This choice was informed by Kamran et al. (17), who reported similar effect sizes in their research on the impact of teaching methods on learning outcomes. Specifically, Cohen's d was calculated at 0.67, indicating a medium to large effect. The alpha level was set at 0.05, and a power of 0.80 was targeted, in line with standard practices in educational research (10, 14). These parameters were chosen to ensure adequate sensitivity for detecting significant differences between the Control and Experimental Groups.

Demographic data were collected, revealing that the Control Group had an average age of 23 ± 2.4 years, a mean weight of 71.7 ± 8.4 kg, and an average height of 1.74 ± 0.068 meters. The Experimental Group had an average age of 22.4 ± 1.2 years, a mean weight of 70.1 ± 12.3 kg, and an average height of 1.75 ± 0.079 meters.

The arithmetic mean, standard deviations, and t -tests were utilized to examine differences in front crawl swimming technique and emotional intelligence between the 2 Groups during the pre-assessment. The t -test results indicated no significant differences, confirming that the 2 Groups were equivalent, as shown in Table 1.

Table 1. The Arithmetic Mean, Standard Deviation, and (t) Value Denote the Differences in the Front Crawl Swimming Technique and the Emotional Intelligence Between the 2 Groups in Pre-Measurement.

Variable	Group	Mean \pm SD	t Value	Sign
Emotional Intelligence	Control	2.54 ± 0.65	0.07	0.37
	Experimental	2.52 ± 0.88		
Front Crawl Swimming Technique	Control	8.9 ± 2.7	0.65	0.5
	Experimental	7.9 ± 3.9		

*Significance $P > 0.05$

Procedures

The study involved a 6-week intervention that consisted of 3, 60-min sessions per week. These sessions were conducted by 2 researchers who remained consistent throughout the study to ensure methodological consistency. The front crawl swimming technique was assessed on a scale with a maximum score of 30 points. Additionally, emotional intelligence was measured using the Arabic version of the Schutte Self-Report Emotional Intelligence Test (SSREIS) (Table 2), a tool proven reliable and valid for this population (23). The SSREIS includes 16 items divided into 3 subscales: (a) Optimism (items 1, 2, 3, 6, 7, 8, 9, 10, and 14); (b) Awareness of Emotions (items 12 and 16); and (c) Use of Emotions (items 4, 5, 11, 13, and 15). The test was administered as a pre-test to establish baseline measurements, with reliability (Cronbach's alpha) for the subscales reported as 0.76, 0.72, and 0.55, respectively. The participants rated their agreement with each statement on a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Following the intervention, the front crawl swimming technique and the emotional intelligence were re-evaluated in a post-test under the same conditions as the pre-test.

Table 2. Bilingual English – Arabic version Schutte Self-Report Emotional Intelligence Scale (SSREIS).

	Variable	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I know when to speak about my personal problems to others					
2	When I am faced with obstacles, I remember times I faced similar obstacles and overcame them.					
3	I expect that I will do well on most things I try					
4	When my mood changes, I see new possibilities.					
5	Emotions are one of the things that make my life worth living					
6	I expect good things to happen.					
7	When I experience a positive emotion, I know how to make it last.					
8	I arrange events others enjoy.					
9	I seek out activities that make me happy.					
10	I present myself in a way that makes a good impression on others.					
11	When I am in a positive mood, solving problems is easy for me.					
12	By looking at their facial expressions, I recognize the emotions people are experiencing.					
13	When I am in a positive mood, I am able to come up with new ideas.					

14	I easily recognize my emotions as I experience them.					
15	When another person tells me about an important event in his or her life, I almost feel as though I experienced this event myself.					
16	I know what other people are feeling just by looking at them.					

Statistical Analyses

Data analysis was performed using SPSS software, focusing on the dependent variables of front crawl swimming technique and emotional intelligence, including its subscales of Optimism, Awareness of Emotions, and Use of Emotions. Arithmetic means, standard deviations, and *t*-tests were employed to compare pre- and post-intervention scores between the Control Group and the Experimental Group. The reliability of the emotional intelligence subscales was assessed using Cronbach's alpha. Statistical significance was set an alpha level of $P \leq 0.05$ to determine significant differences between the 2 Groups. Additionally, the study considered statistical power when determining the sample size, aiming for a power of 0.80 to ensure the sensitivity of the tests in detecting meaningful effects. This comprehensive statistical approach provides a detailed framework, facilitating the replication of the study's findings.

RESULTS

Table 3 presents the arithmetic means, standard deviations, and *t*-values for the study variables measured before and after the intervention in the Control Group. Significant differences ($P \leq 0.05$) were observed between the pre- and post-measurements for both the emotional intelligence and the front crawl swimming technique, with post-measurement scores showing improvement in both variables.

Table 3. The Arithmetic Means, Standard Deviations, and (*t*) Value of the Study Variables in Pre- and Post-Measurements in the Control Group.

Variable	Measurement	Mean \pm SD	<i>t</i> Value	Sign
Emotional Intelligence	Pre-Measure	2.54 \pm 0.65	3.46	0.001*
	Post-Measure	3.41 \pm 0.68		
Front Crawl Swimming Technique	Pre-Measure	8.9 \pm 2.7	3.2	0.001*
	Post-Measure	16.7 \pm 5.6		

*Significant difference at the $P < 0.05$

Table 4 provides the arithmetic means, standard deviations, and *t*-values for the pre- and post-measurements in the Experimental Group. The results indicate statistically significant differences ($P \leq 0.05$) in both the emotional intelligence and the front crawl swimming technique, with the post-measurement scores favoring improvement.

Table 4. The Arithmetic Means, Standard Deviations, and (*t*) Value of the Study Variables in Pre- and Post-Measurements in the Experimental Group.

Variable	Measurement	Mean \pm SD	<i>t</i> Value	Sign
Emotional Intelligence	Pre-Measure	2.54 \pm 0.88	5.1	0.001*
	Post-Measure	3.58 \pm 0.58		
Front Crawl Swimming Technique	Pre-Measure	7.9 \pm 3.9	11	0.001*
	Post-Measure	21.7 \pm 4.5		

*Significant difference at the $P < 0.05$

Table 5 compares the post-measurement results between the Control Group and the Experimental Group. No significant differences ($P > 0.05$) were found in emotional intelligence between the 2 Groups. However, significant differences ($P \leq 0.05$) were identified in the front crawl swimming technique, with the Experimental Group outperforming the Control Group. These findings suggest that while both teaching methods enhanced emotional intelligence, the multi-level teaching method was particularly effective in improving the front crawl swimming technique.

Table 5. The Arithmetic Means, Standard Deviations, and (*t*) Value of the Study Variables in Post-Measurements in the Study Group.

Variable	Measurement	Mean \pm SD	<i>t</i> Value	Sign
Emotional Intelligence	Control	3.41 \pm 0.68	0.63	0.53
	Experimental	3.58 \pm 0.58		
Front Crawl Swimming Technique	Control	16.7 \pm 5.6	2.2	0.03*
	Experimental	21.7 \pm 4.5		

*Significant difference at the $P < 0.05$

DISCUSSION

The study reveals notable improvements in both the front crawl swimming skills and the emotional intelligence (EI) following the intervention, particularly within the Experimental Group. This underscores the effectiveness of employing diverse teaching methods, including command-based and reciprocal approaches, which provide immediate feedback and correction. These methods enhance skill acquisition through consistent practice and peer observation, aligning with Mohammad's (22) emphasis on the significance of clear learning outcomes. Integrating these methods into the teaching process has enriched the learning experience, fostering both skill development and EI. As Goleman (13) notes, excitement—driven by emotional responses in the aquatic environment is a key component of EI.

Further analysis highlights the adaptability of the multi-level teaching method in addressing individual differences, significantly boosting both technical performance and EI. This method emphasizes personalized learning paths by adjusting difficulty levels, which encourages deeper engagement with the material. It also creates an optimal environment for both skill mastery and emotional growth. The ability to tailor learning experiences not only enhances performance, as evidenced by Beckett (8) and Salvara (29), but also helps learners better manage psychological challenges like fear and anxiety, which are often encountered in aquatic environments. This, in turn, improves their EI (11,19).

The comparative analysis between the Experimental Group and the Control Group further validates the superiority of the multi-level teaching method over traditional approaches. The method's effectiveness in achieving educational goals more efficiently is evident, supporting findings by Hanif and Mardesia (15), who also observed the advantages of the multi-level method in skill acquisition. This method's strength lies in its ability to support self-paced learning and self-assessment, accommodating the diverse abilities of students (21).

Interestingly, the study found no significant difference in EI between the Control Group and the Experimental Group, suggesting that both conventional and multi-level teaching methods contribute equally to EI development. This finding implies that the emotional challenges inherent to aquatic environments might play a critical role in shaping learners' EI, irrespective of the teaching method used. Both teaching approaches have proven effective in enhancing logical thinking, fostering interaction with the environment, and managing positive emotional responses, all of which are essential for mastering swimming skills and coping with the stressors associated with competitive sports (11).

CONCLUSIONS

While the multi-level teaching method distinctly improves front crawl swimming skills, its impact on EI highlights the complexity of emotional development within the physical education settings. This study enriches the discourse on teaching methodologies in sports science, advocating for integrating multi-level teaching approaches to address technical skill acquisition and the nuanced development of emotional intelligence, offering a comprehensive educational experience.

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