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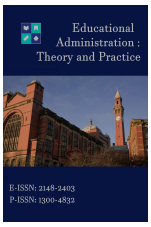

The Relative Contribution of Self-regulation Skills in Motivational Styles According to the ARCS Model for Students with Learning Disabilities

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Abstract

The current study aimed to investigate the relationship between self-regulatory learning skills and motivated learning styles with learning disabilities using the Keller (ARCS) model. The study further investigated gender differences in these two variables. The original sample consisted of (40) students with learning disabilities in elementary schools in Saudi Arabia. Their ages ranged between 11 and 12 years, with an arithmetic mean of (11.6) years and a standard deviation of (1.3) years. The findings showed that despite the general effectiveness of motivation models, people with learning disabilities face numerous obstacles and challenges in discovering themselves, as well as the ability to plan for achievement and academic excellence. This occurs due to the gap between latent abilities and actual performance in front of others. A significant correlation between self-regulation skills and motivational methods of learning was established using the ARCS model. Furthermore, there is statistically significant differences between self-regulation skills and motivational styles in favor of females. In addition, predicting motivational methods according to the ARCS model through self-regulation skills has proven effective. The findings are discussed in the context of related literature and suggestions are provided.

Keywords: Self-regulation Skills; Motivational Styles; ARCS Model; Learning Disabilities

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Introduction

Several psychological domains have studied motivation, and a few studies have evaluated the relationship between self-regulation skills and the motivating styles of students with learning disabilities (Sideridis, 2006). The modern world is undergoing numerous scientific, technical, cognitive, and educational advancements. We can keep up with educational advancements by reconsidering our curricula and teaching methods in our schools, as well as shifting the role of the teacher from a tutor to a guide, facilitator, and mentor. In it, the student becomes the focal point of the educational process and relies on himself for fact and information acquisition. This is required by modern education as well as the adoption of modern methods and strategies, leading to the development of student self-regulation as a critical component of academic success, minimizing the hurdles experienced by students with learning disabilities (Tseng et al., 2006).

Given the importance of motivation to learn as a precondition for learning, students must strengthen their self-regulation strategies and increase their motivation to learn to reduce learning difficulties and their consequences, which can be caused by individual characteristics, psychological and cognitive structures, or external factors such as social and technological changes.

Many models have recently been developed for boosting motivation to study; all of which adopted a set of tactics that allow the learner to develop their abilities in different areas of learning in general, and the field of educational and psychological guidance and counselling, in particular.

Motivation, as defined by value-expectancy theory, explains people's desires and choices, whereas self-regulation is what people do to achieve their goals. Furthermore, self-organization is thought to have two components: the first is a commitment or tribal planning, and the second is active control. One of the most significant aspects of satisfaction is intrinsic motivation. Internal happiness will be higher in students if they believe they have achieved a desired level of accomplishment in situations that are relevant to them (Keller, 2010). Despite the effectiveness of motivation models in general, people with learning disabilities face numerous obstacles and challenges in discovering themselves, as well as the ability to plan for achievement and academic excellence, due to the gap between latent abilities and actual performance in front of others, which is more prominent in people with learning disabilities in general. Early intervention in the early phases of learning, on the other hand, decreases the repercussions of learning challenges, whose symptoms might manifest and worsen in scholastic, psychological, and social aspects (Fetsco & McClure, 2005).

People with learning impairments experience many difficulties and challenges in identifying their hidden abilities and applying self-regulation skills, regardless of their general mental aptitude, and they require a great deal of support from school counselors. The premise is that, with direction and assistance, people with learning difficulties can motivate themselves to study in the context of improving self-regulation skills. This is based on their performance and general intelligence.

Many people consider that these pupils lack the necessary knowledge and skills to comply with the demands of the school stage to which they belong, which are frequently unreal. Individuals with learning disabilities face a specific set of difficulties linked to academic, social, and emotional development, according to the literature, which must be addressed in schools and communities (George & Varvara, 2014). According to some studies, investing in motivation and stimulating it within an organized framework of self-regulation skills achieves good results and proves the interaction of students with learning difficulties, which reduces the dangers arising from these difficulties and their repercussions on the psychological, social, and life aspects of this group that lives and interacts with their peers within and outside of the classroom in a normal manner.

Learning-disabled students deal with developmental challenges in the same way that their classmates do. The way children learn new things, process information, communicate with others, and solve issues are all examples of these obstacles. Learning disabilities affect how basic academic aspects such as reading, writing, and mathematics are learned, as well as how high-level skills such as organization and time planning, abstract thinking, and the development of long memory or short-term memory, and these neurological factors affect the individual's self-esteem,

education, occupation, social adjustment, and in the adolescent and adult years (Tannock, 2014).

Lacking the ability to control their behavior, students with learning disabilities frequently behave impulsively and recklessly in the classroom, forget to bring their school supplies, and pay little attention. All of these behaviors increase the likelihood that they will fail academically. Many of of research have shown that self-regulation can successfully organize its procedures in a variety of age groups and samples, including children with learning disabilities. These are some of the studies conducted by Zimmerman,2007, andBail et al., 2008. Self-regulation, on the other hand, was found to be successful in addressing some of the behavioral issues that persons with learning disabilities face, as well as in improving and growing their behavioral skills, academic accomplishment, and reading and writing skills (Reid, 2005).

In the teaching-learning process, motivation is critical. Students will not progress in numerous courses if they do not have them. We find the teacher looking for various ways and means to sharpen their enthusiasm, raise their morale, and draw their attention to the elements of the material and preserve it because he cannot present the educational material if he believes that his students are not motivated to receive it.

The importance of a student's learning self-regulation skills stems from the fact that it transfers responsibility for learning to the individual, which is known as individual learning. It also makes the individual directly responsible for his learning and the outcomes of that learning, which provides a strong motivation for the individual to exert maximum effort to achieve the best results. This comprises the student working to organize his effort and time, as well as using techniques and tools to boost motivation and methods of self-acquisition of knowledge, such as summarizing, repeating, reciting, and self-testing, as well as planning, monitoring, and evaluation (Van Den Hurk, 2006).

In a study by Veysi et al., (2015), which aimed to compare the strategies of self-regulation and cognitive failure for those with learning difficulties to write and the normal ones. The results of the study found that the cognitive failure of students with learning difficulties is due to their lack of self-regulation skills. Panadero and Tapia (2014) point out that the use of self-regulated learning strategies is important to the student's academic performance, and self-organized learning models provide a comprehensive theoretical background, and all of this contributes to providing a more holistic approach to the use of learning strategies. By accustoming the student to self-organization of learning, the teacher ' s ability to help his student learn will be achieved on purpose and independence, and other studies that have linked self-organized learning to the student's ability to do homework, and therefore to its great role in responsibility and academic performance (Zimmerman & Kitsantas, 2005; Panadero, 2017) states that self-regulatory learning includes cognitive, meta-cognitive, behavioral, motivational and emotional aspects of learning. Thus, self-organized learning is an umbrella that brings together many variables affecting learning, such as self-efficacy, will, and cognitive strategies, all within a holistic approach.

Research question

Despite the importance of studying the impact of self-regulation abilities on motivation, there is a paucity of previous research, since the researcher was unable to locate any studies on the association or prediction of those factors to his knowledge. In light of the ARCS model of motivation, the current study examines the relationship between self-regulation skills and motivational styles for students with learning disabilities. This study aimed to address the following questions based on the preceding presentation:

- According to the ARCS model, what is the nature of the interaction between self-regulation abilities and motivating learning styles?

- There are differences between males and females in self-regulation abilities and motivating learning styles?

- Can self-regulatory learning skills predict motivational types according to the Keeler Model of Motivation to Learn (ARCS)?

Literature Review

Self-regulation skills

Self-regulatory behaviors are not a learning disability, but these behaviors can influence learning difficulties; therefore, the interest in training children on self-regulation skills effectively affects the treatment of these difficulties. In addition to that, in self-organized learning, the student is the decision-maker in choosing the appropriate strategies for him in an application, transferring to others, or modifying them. The student is the mainstay in treating the learning difficulty that he faces. The learner who has little self-regulation often has difficulty understanding the causal relationships between behavior and its outcomes, and the importance of self-regulation skills increases with the student in the advanced stages of study with the increase in assignments and homework. Therefore, it is imperative to pay attention to self-organized learning because it makes the learner more effective and participates in the learning process by organizing the mental effort, achieving communication between his ideas and his achievement, and achieving a greater understanding of the academic courses, he studies (Kang, 2010).

Self-regulation has long been thought to support the cognitive, motivational, regulatory, and interpersonal mechanisms required for academic success in the classroom (Zhou et al., 2012). The improvements start with a kindergartener's developing attentional management, which predicts higher proficiency in early literacy, numeracy, and language (McClelland, 2007). Self-regulatory youngsters perform better in a range of scholastic topics in elementary school (Blair & Razza, 2007).

Self-regulation is defined as the ability to control one's activity or behavior, including emotional, behavioural, and cognitive self-regulations (Al Bustan, 2021). Self-regulation also has an indirect impact on academic performance by fostering high-quality connections with educators and peers. Self-control helps academic adjustment by assisting in the formation of positive relationships with teachers (Eisenberg, 2003).

Teachers are more likely to respond positively to self-regulated children (possibly because they cause fewer disruptions in the classroom), which helps academic performance even more (Keller & Suzuki, 2010). Combining the research, it appears that self-regulation issues contribute to learning problems via behavioral and cognitive components of self-regulation (e.g., attention and executive functioning), as well as contextual factors such as parental and teacher responses.

Motivational methods According to the (ARCS) Model

Students' motivation and self-efficacy are critical aspects of their ability to self-regulate in independent learning. Keller and Suzuki (2004) further, believe that, while technology's unique characteristics may increase the attractiveness of learning materials, once the novelty impact wears off, the initial appeal may fade. As a result (Keller, 2010; Keller, 2008). Recognizes challenges with the motivational side of teaching and learning, particularly in terms of motivating and maintaining students' enthusiasm.

Keller's ARCS model is based on current studies on the psychology of human motivation, and it identifies four primary elements that build/encourage motivation: attention, relevance, competence, and satisfaction. A system that is seen as beneficial in terms of assisting users in achieving their objectives is more likely to motivate the user. A system must be goal-oriented, motive-matched, and use known concepts to be relevant. People do not like taking on a task that has little or no chance of accomplishment.

Although success is never assured and people enjoy being challenged, a challenge that is above a user's capability may demotivate them. Users' levels of confidence are frequently linked to their motivation and the amount of effort they put in to achieve a goal. Satisfaction: To keep users motivated, they need to feel satisfied and rewarded for their efforts. For both teachers and students, the ARCS model offers a novel method to overcome academic challenges. People like a certain level of variation, according to Keller (2000), and they will lose interest if teaching tactics, even good ones, do not alter. Furthermore, capturing a learner's attention through tactics that retain curiosity and interest is critical to a successful learning process The ARCS model of improving motivation in instructional design was developed by Keller.

Students' attention can be improved by including activities and tasks that involve regular interaction, according to (Johnson, 2012; Jokelova, 2013; Pinchevsky-Font & Dunbar, 2015) including visual components such as films, photos, and graphics. Change up the way you teach (font, graphics, etc.) and encourage debate by introducing inconsistencies. Allow pupils to ask each other questions. Use questions to pique people's interest, and don't be afraid to use comedy.

At the same time, individuals will not have this drive as long as they have increased activities, because attention is a prerequisite for learning motivation. More stimuli in the educational environment had a big part in minimizing excessive activity, and once we reach this level of attention, we move on to activities geared at generating the issue that raises the query. The second criterion is relevance, which is determined by the level of motivation.

Then there is relevance by way of the curriculum should be based on real-world issues and experiences, and adapt content to the needs of the learner. Encourage students to create connections between course topics and their long-term ambitions. Relevancy refers to a person's attraction to desired results, ideas, and other people as a result of their motivations and values. As a result, confidence by establishing credibility, choose a visually appealing professional design. The lecture makes use of a minimal user interface. Include questions/reviews for practice. Activities make grading rubrics available. Furthermore, satisfaction can be improved by providing positive feedback. Encourage and congratulate them. Allow for hands-on training.

Although using noise or movement to gain attention is natural, these tactics have limited application in perceptual arousal. To appeal to the learner's emotions, suggested using concreteness and specific individuals and events. As a result, we recommend three simple tactics for capturing the attention of children with learning difficulties, including employing films, visuals, and comic strips.

Keller (2010) argued for learners' familiar experiences/ideas to be linked to instructional content. Instructors may make content more relevant by linking it to current events, which makes an online scavenger, hunt, and exercise with this theme a great idea. The information offered could also be useful for achieving other learning objectives. If the content of one course may be applied to another (for example, within a program), this might be brought to the learner's notice to boost motivation (Table 1).

Table 1. Keller's (2010) ARCS subcomponents and process questions

Dimension	**Descriptive**	**Practically questions**
Attention	Get learner's interest, stimulate learning motivation	How can I make this learning experience fun and stimulating?
Relevance	Meet the student's needs and goals to influence him positively	How can this experience be made educationally valuable to my students?
Confidence	Help students that they will succeed and control their own success	How I can make, through teaching, help my students succeed? Then control this success?
Satisfaction	Enhance achievements with rewards (internal and external)	What can I do to help my students enjoy a learning experience that motivates them to want to continue their education?

Both extrinsic and intrinsic motivation are likely phrases that many instructors are familiar with. Extrinsically motivated pupils pursue an activity to receive a reward (such as a good grade or recognition), not because they enjoy the task itself (Keller J, 2010). Learners may feel less in control of their learning and may feel less satisfied with it when extrinsic motivators are utilized in the classroom.

"People with intrinsic motivation engage in projects for the pleasure that comes from them," the statement goes. Students that are intrinsically motivated tend to seek out difficulties, participate actively in class and are focused on learning rather than an external objective, therefore instruction that fosters intrinsic motivation is essential. By including difficulty, curiosity, learner control, and fantasy in activities, intrinsic motivation can be increased (Reynolds, 2017).

Methodology

Research Sample

In this study, the survey method was used. The sample size was forty students taken from 5th and 6th grade. Age of the participants ranged between 11 and 12 years. The original sample consisted of 20 male students and 20 female students with Learning disabilities in elementary schools in Saudi Arabia. They had an arithmetic mean age of 11.6 years and a standard deviation of 1.3 years.

Data Analysis

Self-Regulation Skills Scale (SRL-SRS)

Self-Regulation of Learning Self-Report Scale (SRL-SRS) was prepared by Toering et al. (2012), and it aims to measure self-regulation, and it consists of 45 items, divided into six dimensions: The subscales of planning (8 items), self-monitoring (6 items), effort (10 items), and self-efficacy (10 items) were scored on a four-point Likert rating scale: (1) almost never to (4) almost always. The subscales of evaluation (6 items) and reflection (5 items) were scored on a five-point Likert rating scale. In accordance with the original scales, evaluation ranged from (1) never to (5) always, and reflection ranged from (1) strongly agree to (5) strongly disagree. Before data analysis, reflection scores were reversed to make them correspond to the scores on the other five subscales. Total scores were calculated with higher scores indicating higher levels of self-regulation. The total degree of Cronbach ' s alpha was found to be between 0.756-0.827, an indication of high internal consistency. In addition, test-retest reliability is between 0.726-0.801.

Instructional Materials Motivational Survey (IMMS)

Developed by John Keller (2010), it aims to measure learners' motivation to enjoy the educational material and consists of 36 items. These items are divided into four dimensions:

Attention: It consists of 12 items, which measure the effectiveness of the educational material in attracting attention, developing curiosity toward learning, and maintaining its positive and active involvement in learning activities.

Relevance: It consists of nine paragraphs that measure the effectiveness of the educational material in linking the content to the learner's goals, environment, learning style, and previous experiences.

Confidence: It also consists of nine paragraphs and measures the effectiveness of the educational material in enhancing the learner ' s confidence in his ability to achieve success, building positive expectations for success, and attributing his success to his efforts and abilities.

Satisfaction: It consists of six statements that measure the effectiveness of the educational material in eliciting satisfaction in the learner from the results obtained from the learning process, by rewarding his efforts by providing external incentives and positive appreciation of his achievements while meeting his internal motives by giving him an opportunity to apply what he has learned.

Results

We reviewed the study results using regression analysis to predict motivational styles from the components of self-regulatory skills. If proper interactive methods involving and motivating the learners with learning disabilities are followed considering students' skillsets and special needs, self-evaluation skills show a lowest standard error 0.021 and the variable of identifying goals skills shows the highest standards error (0.216). Self-monitoring skills show the SD error of (0.054). This data reveals that in the model self-monitoring skills and self-evaluation skills occupy more importance for better learning outcomes in the students.

The response to the paragraphs is done through a five-point Likert scale exactly correct (5 points) and incorrect by one point. Based on the results, the correlation coefficient value was found to be (0.86) and the test-retest reliability after two weeks was found to be (0.79) ($p < 0.01$)

which is statistically significant. Moreover, the reliability of Cronbach's Alfa coefficient is between (0.89) and (0.92) (Table 2).

Table 2. Correlations Values between Self-regulation Skills and Motivational styles.

Dimensions	Attention	Relevance	Confidence	Satisfaction
Identification of goals skills	0.653	0.664	0.781	0.642
Self-learning skills	0.785	0.708	0.653	0.823
Self-monitoring skills	0.694	0.693	0.724	0.676
Self-evaluation skills	0.623	0.735	0.756	0.635

According to Table 2, a statistically significant positive correlation ($p<0.01$) between the dimension of self-regulation skills and motivational styles is noticed.

Table 2 shows that there is a statistically significant positive correlation ($p<0.01$) between the dimension of self-regulation skills and motivational styles. Review of the results shown in Table 2 that the participants score a minimum (0.635) on satisfaction under self-evaluation skills whereas, under the identification goals dimension, confidence scores the highest with the value of (0.781). However, under the same skill, relevance values are minimum (0.664). Thus, a review of Table 2 shows among the 4 dimensions of the ARCS model proposed by Keller, self-learning skills are most important for the students with disability (Panadero & Alonso-Tapia, 2014). Therefore, it becomes imperative for trainers, instructors, or teachers to focus more on motivating the children to self-learning.

Table 3. Differences between Self-regulation Skills and Motivational Styles According to Gender

Variables	Sex	M	Sd	T. value
1-Self-regulation skills	Male	9.55	2.78	5.013 **
	Female	10.80	1.77	
2-Motivational styles	Male	5.35	2.30	3.258 **
	Female	7.80	1.64	

Table 3. shows that there is a statistically significant difference ($p<0.01$) between self-regulation skills in favor of females, and motivational styles in favor of females..

Table 4. Regression analysis to predict motivational styles from components of self-regulatory skills.

Predicting variables		R	R2	Regression coefficient	Standard Error	Beta	T. value	S. g
1	Identification goals skills	0.73	0.51	0.211	0.216	0.526	5.634	0.01
2	Self-learning skills			0.123	0.053	0.529	6.231	0.01
3	Self-monitoring skills			0.054	0.029	0.276	4.552	0.05
4	Self-evaluation skills			0.049	0.021	0.445	5.553	0.01

Table 4 also shows that Identification of goals skills variable has a maximum regression coefficient of (0.211). Table 4 demonstrates that self-monitoring skills are the most influential in predicting, self-learning skills, self-motivation, and self-evaluation skills. In addition, their t-values were (6.231), (5.634), (5.553), and (4.552) where the percentage of the explained variance was (51%). Predicting motivation styles through self-regulation skills, by using multiple regression analysis depending on the method of stepwise regression helps determine the relative importance of the independent variables (self-regulation skills) and to quantify the variance in the value of the dependent variable (motivational methods).

Discussion

Motivation plays an important role in the learning process and in increasing academic achievement in directing the individual to the goals he wishes to achieve, as it is driving energy for behaviour that includes the inner desire, the achievement of the academic task, and the search for educational excitement, as well as the desire to accomplish academic work in a better way to avoid a sense of inefficiency. Motivation is a prerequisite for the occurrence of learning, the absence of motivation in a learning situation prevents the occurrence of learning, and the motivation for learning is enriched through the availability of curiosity, self-efficacy, and efficiency.

Due to inadequate interpersonal skills for self-regulation, poor ability to self-control, as well as attention, memory, and internal motivation, students with learning disabilities have low levels of structuring social relationships and skills of interaction and communication with others. Self-organized learning procedures have shown a significant association with achievement and achievement motivation whenever they are applied.

Then there is relevance in way of the curriculum based on real-world issues and experiences. Adapt content needs to be adapted to the needs of the learner. The learners should be encouraged to create connections between course topics and their long-term ambitions. Goals should be outlined. Relevancy refers to a person's attraction to desired results, ideas, and other people as a result of their motivations and values. As a result, Confidence means establishing credibility and choosing a visually appealing professional design. Lectures make use of a minimal user interface. Questions/reviews should be included for practice. Activities make grading rubrics available. Furthermore, satisfaction can be improved by providing positive feedback. Students need to be encouraged and congratulated for good work and satisfactory progress and hands-on training should be provided.

The more students with learning disabilities are distracted, the lower their self-motivation to learn because the difficulties of maintaining focus on the tasks at hand lead to frustration, poor achievement, and low motivation, as well as a slow response to the completion of assignments with slow cognitive functions, which necessitates guidance programs and training in self-regulation skills.

Although self-regulation is linked to academic performance, individuals with learning disabilities are not suited for self-regulatory learning in the classroom because they struggle with self-regulation skills. Emphasized the importance of using proper strategies to assist students with learning disabilities in stimulating motivation, which improves self-esteem, critical thinking skills, behavioral problems, social efficiency, and learning motivation.

This result can be explained in the light of many results, it is possible to predict motivational methods through self-regulation skills. On the other hand, motivation is related to the dimensions of self-regulation. In addition, those students with learning difficulties can improve their motivation through self-regulation skills.

The result of this hypothesis indicates that there are statistically significant differences in the degree of application of self-organized learning strategies among students with learning difficulties in favor of gender among females, as the application of self-organized learning strategies is higher among females, and this result is consistent with the study of (Abbaszadeh & Sardoie, 2016; Abbasnasab et al., 2012), which aimed to compare the skills of self-regulation and self-efficacy between each of the students with learning difficulties and the normal ones. The results of the study concluded that there were statistically significant differences in the skills of self-regulation and self-efficacy due to gender in favor of females.

The results of some research indicated that there were statistically significant differences that all levels of motivation were in favor of females, as it appears from the arithmetic averages that females are superior to males in all dimensions. Perhaps the reason for this is that they challenge their abilities to do business and achieve efficiently and effectively despite the difficulties they face, as well as their desire to reach success and excellence and obtain social status. Self-regulation skills explained roughly 51% of the variance in motivating styles, according to the findings. Students for themselves and their emotions, and the school environment, with its competition and social friction, allows them to better understand the self, which leads to improved awareness of the

individual's attitudes toward learning, which works to stimulate motivation by activating self-regulation skills. According to some studies, investing in motivation and stimulating it within an organized framework of self-regulation skills achieves good results and proves the interaction of students with learning difficulties, which reduces the dangers arising from these difficulties and their repercussions on the psychological, social, and life aspects of this group that lives and interacts with their peers within and outside of the classroom in a normal manner (George & Varvara, 2014; Eisenberg et al., 2010; Grebe, 2021).

Conclusion

Summing up, it can be concluded that teachers and those interested in the educational process can obtain correct models and examples for training in self-regulation skills to raise the motivation of students with learning difficulties. The results of this study may also motivate researchers to design training and guidance programs in the future to help students with learning difficulties improve their self-regulation skills and internal motivation to learn. Self-regulation skills explained approximately 51% of the variance in motivating styles, according to the current findings. Students and their emotions, and the school environment, with its competition and social friction, allows the students to better understand the self, which leads to improved awareness of the individual's attitudes toward learning, which works to stimulate motivation by activating self-regulation skills. Thus, the results of the current study showed a significant correlation between self-regulation skills and motivational methods of learning for learners with learning disabilities.

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