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Self-Regulated Learning Strategies and Their Relationship to Self-Efficacy Among the Students of Psychology Department at Bordj Bou Arreridj University

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Abstract: The study aimed to identify the relationship between self-regulated learning strategies and self-efficacy among psychology students at the University of Bordj Bou Arreridj and whether there are differences between them in terms of self-regulated learning strategies and self-efficacy according to the university level variable. The study was conducted on a random sample of (126) male and female students where the researcher applied the descriptive approach and the scale of "Pintrich and Others (1991)" of the self-regulated learning strategies and the scale of "Kim & Park (2000)" of self-efficacy.

The results of the study showed that there is a correlation between the scores of self-regulated learning strategies and the degrees of self-efficacy among psychology students at the University of Bordj Bou Arreridj. The study also revealed that there were no differences in self-regulated learning strategies and self-efficacy among psychology students at the University of Bordj Bou Arreridj according to the university' level variable.

Keywords: Self-regulated learning strategies, self-efficacy, psychology student.

1. Introduction

Today, we live in the era of the explosion of knowledge and information, thanks to the development of science and technology in various fields which imposes great and diverse challenges in the field of education, as most countries have abandoned the approach of indoctrination and memorization, where the teacher is the main axis in the educational process, because this method does not keep pace with the current era. Therefore, modern approaches have made the student the focus of the teaching/learning process, as it gave him/her the largest role, in pursuit of major strategic goals, including preparing the individual to deal and interact with this changing world, by providing them with thinking and visualization methods, and enhancing their self-learning to ensure its continuation in the absence of the teacher (Ben Shaalal, 2017, p. 94).

Self-regulated learning is one of the most prominent topics addressed by theorists, scientists and specialists in educational psychology at the present time, and the importance of self-regulated learning lies in the type of student who seeks to form it, as the self-regulated learner has the ability to monitor his performance, identify and apply appropriate strategies and be driven towards learning for learning (Al-Hilat Qassim and Others, 2015, p. 360).

Many theories and models have contributed to the emergence of the concept of self-regulated learning, such as procedural learning theory, Vygotsky's views, cognitive learning models, social learning theory, and constructivist theories, but the credit for emphasizing the concept of self-regulated learning goes back to the work of Bandura through his theory of

social learning, which resulted in many assumptions and models that explain how learning occurs (Ben Madhi, and Assiri, 2022, p. 227).

Researchers such as Boekaerts, Pintrich, Zeidner (2000), Zimmerman (2002), and Schunk (2005) have shown a lot of interest in the concept of self-regulated learning, as it is due to the process of self-direction through which learners convert their mental abilities into tasks related to academic skills. Students are self-regulated to the point where they become participants, highly motivated, behaviorally active in their learning, and generally active and efficient in managing their teaching/learning process (Hani Salem, 2013, p. 97).

Among the most important models explaining the occurrence of the learning process are firstly, the Zimmerman model, which assumed that there are three elements that affect self-regulated learning, namely (the individual, the environment, and behavior). Secondly, the Winne model (1995), which focused on the interactive role between cognitive processes and metacognitive and motivation, and focuses in particular way on the role of monitoring and feedback. Thirdly, the Boekaerts model, which believes that self-regulated learning, has three competencies which work in three areas, namely: The organization area of the information processing and processing system, the area of organizing learning processes, which represent the cognitive aspect and the self-organization area, which represents the motivational aspect. Fourthly, the Pintrich model, in which self-regulated learning processes are organized in four stages including: planning, self-monitoring, control and evaluation. Fifthly, the self-regulation activities are centered on four aspects: knowledge, motivation, behavior, and context. And lastly, the Purdie model, which presented four strategies, namely: Goal setting and planning, record keeping and monitoring, listening and archiving and asking for social assistance (Ben Madhi and Asiri, 2022, pp. 227-228).

In this study, the researcher relied on the Paul R. Pintrich and Others model (1991), which presented three strategies: cognitive strategies, metacognitive self-organization strategies, and resource management strategies for their clarity and suitability to the study sample.

Theoretical research on traditional classroom preparation indicates that setting learning goals, monitoring the progress made by the individual towards achieving those goals and managing various learning resources are important aspects of self-organized learning theory, so self-regulation has a positive impact on academic success. One of the main reasons why self-regulated learning is considered highly important is the strong relationship between sociocognitive learning processes, which states that learner behaviors and motivations affect the achievement of Learner (Hani Salem, 2013, p.97).

As a result, the interest of many researchers to study the strategies by which students learn, especially at the university level, has increased for several reasons. The most important of these causes are first, the university student bears self-responsibility for his learning. Second, the nature of university learning imposes multiple burdens on the student. Third, the low scores of students in tests may not be due to the weakness of their abilities or to the shortcomings in aspects of their personalities, but may be due to their lack of learning strategies and recall skills (Djouhari, 2018, p.67).

Therefore, it can be noted that the focus in this study will be on self-regulated learning strategies and self-efficacy, because students' high self-efficacy helps them employ various learning strategies and creative ways of thinking. According to the researcher in this study, the research problem is to identify the type and the nature of the relationship between self-regulated learning strategies and self-efficacy among students of the Department of Psychology at the University of Bordj Bou Arreridj.

1.1.Study Questions:

- Is there a statistically significant correlation between the scores of self-regulated learning strategies and the scores of self-efficacy among students of the Department of Psychology at the University of Bordj Bou Arreridj?

- Is it possible to predict self-efficacy among students of the Department of Psychology at the University of Bordj Bou Arreridj through self-regulated learning strategies (cognitive strategies, metacognitive, resource management)?
- Are there statistically significant differences in self-regulated learning strategies among students of the Department of Psychology at the University of Bordj Bou Arreridj according to the university level variable (second year, third, Master 1, Master 2)?
- Are there statistically significant differences in self-efficacy among students of the Department of Psychology at the University of Bordj Bou Arreridj according to the university level variable (second year, third, master 1, master 2)?

1.2.Hypotheses of the study:

-There is no statistically significant correlation between the scores of self-regulated learning strategies and the scores of self-efficacy among students of the Department of Psychology at the University of Bordj Bou Arreridj.
-It is not possible to predict self-efficacy among students of the Department of Psychology at the University of Bordj Bou Arreridj through self-regulated learning strategies (cognitive, metacognitive, resource management).
-There were no statistically significant differences in self-regulated learning strategies among students of the Department of Psychology at the University of Bordj Bou Arreridj according to the university level variable (second year, third, Master 1, Master 2).
-There were no statistically significant differences in self-efficacy among students of the Department of Psychology at the University of Bordj Bou Arreridj according to the university level variable (second year, third, Master 1, Master 2).

1.3.Objectives of the study:

Through this study, we seek to identify the type and the nature of the correlation between self-regulated learning strategies and self-efficacy among students of the Department of Psychology at the University of Bordj Bou Arreridj. As well as, it is aimed to know the degree of self-efficacy prediction among students through self-regulated learning strategies (cognitive strategies, metacognitive, resource management), and to verify the significance of statistical differences in self-regulated learning strategies and self-efficacy among students of the Department of Psychology at the University of Bordj Bou Arreridj according to the university level variable.

1.4.Importance of the study:

This study may help Algerian university professors to use more effective learning strategies to raise the level of students' academic achievement and increase their motivation and self-efficacy in learning. In addition, it can enrich the university library and add scientific material for researchers and those interested in this field, and it can open the way for research in other variables.

1.5.Study concepts:

Self-regulated learning strategies: Pintrich (1999) defines them as: "The strategies that students use to organize their knowledge, such as the use of different cognitive and metacognitive strategies and the strategies of managing educational resources that students use to control their learning."(Taibba, and Belaid, 2020, p. 886)
Kitsants et al, 2000 define them as: "Specific strategies used to achieve academic goals based on self-efficacy perception and include three important elements: cognitive strategies, metacognitive strategies and motivational strategies."(Abedi, and Zabdi, 2018, p.1015)
The researcher defines it procedurally as: the final score obtained by the student in the Department of Psychology (University of Bordj Bou Arreridj) through his answer to the scale of self-regulated learning strategies of Pintrich and colleagues (1991) which is adopted in this study.
Self-efficacy: Bandura (1977) defines it as: "the ability of an individual to perform behavior that achieves desired results in a given situation, to control events that affect his life, to issue subjective expectations about how he performs tasks and the activities he performs, and to

predict the extent of effort, and perseverance required to achieve that activity or work."(Abu Hadra, and Khamis, 2022, p.52).

Lazhar (2022) states that self-efficacy is an important determinant of human behavior that works to build the self and depends primarily on what the individual believes about his effectiveness and his expectations about his behavioral skills required for efficient and effective interaction in the face of the events he faces in the busyness of life.

Bandura (1994), quoting Hornich (2008), defines it as: "Individuals' beliefs about their potential to produce certain levels of performance that exert an impact on their lives."(Doudou, 2017, p.20).

The researcher defines it procedurally by the final grade obtained by the student in the Department of Psychology (University of Bordj Bou Arreridj) through his answer to the self-efficacy scale of Kim & Park (2000) which is adopted in this study.

Psychology students procedurally are defined as the students who have a baccalaureate degree and are enrolled in the Department of Psychology, Faculty of Social Sciences and Humanities, University of Bordj Bou Arreridj for the academic year 2022/2023. They were directed to the Department of Psychology in its various disciplines after receiving one-year training in the Common Trunk of Social Sciences.

1.6.Previous studies:

- The study of Nadir Rachid Saleh Anaqra (2022) aimed to identify self-regulated learning strategies for a sample of students of the Faculty of Social Sciences at Abd El Hamid Ben Badis University in Algeria, and to achieve this, the Purdie scale was applied to a sample of (149) male and female students, and the descriptive approach was used in its study, and one of its results was that their common learning strategy is: recitation and memorization. Also, it was found that there was no significant effect of the gender variable and the school year on self-regulated learning strategies among the research sample.

- The study of Monira ben Madhi and Mohamed Ali Assiri (2022) aimed to identify the relationship between self-regulated learning strategies and self-efficacy among joint first-year students at King Saud University, and to predict self-efficacy through self-regulated learning strategies. The study sample consisted of (342) female students, who were selected by random stratified method, and the descriptive approach was used. The researchers also used two scales to collect data after confirming their psychometric properties: the self-regulated learning scale by Purdie and the self-efficacy scale by Kim & Park (2000). The results found a statistically significant positive relationship between self-regulated learning strategies and the dimensions of self-efficacy. Additionally, the results of multiple regression analysis showed that self-efficacy can be predicted through self-regulated learning strategies, no differences in self-regulated learning strategies according to the variable of academic specialization among common first-year students, and there are statistically significant differences in self-efficacy according to the variable of academic specialization.

- Study of Abd Essalam Taibba and Ahmed Belaid (2020) aimed to find out the relationship between self-regulation strategies for learning and academic achievement and the possibility of predicting academic achievement through the application of these strategies. It was applied to a sample of (244) students at Al-Sadiq Talbi High School in the state of Laghouat, and the researchers also used the descriptive approach, and after processing the results statistically. The results resulted in a positive correlation between self-regulation strategies and academic achievement, and there are gender differences in self-regulation strategies for learning in favor of females, and it was possible to predict academic achievement through some strategies (planning and setting a goal, listening and remembering, helping others, and cognitive maps).

- The study of Al-Osaimi ben Talal Awatif (2019) aimed to identify the quality of university life and its relationship to academic self-efficacy among um Al-Qura University students, in light of the variables of specialization and academic level. The researcher used the descriptive correlational approach and the study sample consisted of (300) students. Also, the researcher used the university quality of life scale prepared by Mansi and Kazem (2010) and the academic

self-effectiveness scale prepared by Mukhaimer (2014). Among the findings: the level of academic self-efficacy among um Al-Qura University students was high, and there were no statistically significant differences in academic self-efficacy among um Al-Qura University students attributed to academic specialization or academic level. (Abu Hadra, and Khamis, 2022, p. 55).

- **Al-Shammari's study (2017)** aimed to identify the components of self-regulated learning used by students of Samarra University, the level of academic competence, and the level of university students' possession of wisdom and knowledge and the changes that occur during the years of study. The research sample reached (80) male and female students. The study tools were: the self-regulated learning scale prepared by Purdie, the efficiency questionnaire was prepared by the researcher, and the scale of wisdom and knowledge developed by Seligman and Patterson (Seligiman & Peterson, 2002). The research found that the sample of the study has a good level with regard to all the studied variables, with statistically significant differences in them at the level of significance (0.01) and in favor of the fourth year in self-regulated learning and in wisdom and knowledge, while the difference was in favor of the third year is in academic efficiency. Also, the research found that there is no correlation between the research variables for the four years (Maddid Farhan, 2020, p. 57).
- **The study of Seydi Ahmet Satici and Gurhan Can (2016):** in this study whether academic self-efficacy of university students differ in terms of various socio-demographic features has been investigated. The study was conducted on (1679) students who were attending Anadolu University. In this study, the academic self-efficacy scale and personal information from were used as data collection tools. The findings suggested that there are significant differences between academic self-efficacy, gender, grade level, and perceived academic achievement. It was also suggested by the findings of the study that there are no significant differences between academic self-efficacy of university students and field of study, education level of the parents, and amount of family.
- **The study of Barry J. Zimmerman and Manuel Martinez-Pons (1990)** aimed to identify the differences of students in self-regulated learning relating to grade, sex, and giftedness to self-efficacy and strategy use for (45) boys and (45) girls of the 5th, 8th, and 11th grades from a school for the academically gifted. An identical number from regular schools were asked to describe their use of 14 self-regulated learning strategies and to estimate their verbal and mathematical efficacy. The groups of students from both schools included whites, blacks, Hispanics, and Asians. The students came from middle-class homes. Gifted students displayed significantly higher verbal efficacy, mathematical efficacy, and strategy use than regular students. In general, 11th grade students surpassed 8th graders, who in turn surpassed 5th graders on the three measures of self-regulated learning. Students' perceptions of both verbal and mathematical efficacy were related to their use of self-regulated strategies. Evidence of relations between students' strategic efforts to learn and perceptions of academic self-efficacy is concordant with a triadic view of self-regulated learning.
- **The study of Paul R. Pintrich and Elisabeth V. De Groot (1990)** examined relationships between motivational orientation, self- regulated learning, and classroom academic performance for (173) seventh graders from eight science and seven English classes. A self-report measure of student self-efficacy, intrinsic value, test anxiety, self-regulation, and use of learning strategies was administered. The performance data were obtained from work on classroom assignments. Self-efficacy and intrinsic value were positively related to cognitive engagement and performance. Regression analyses revealed that, depending on the outcome measure, self-regulation, self-efficacy, and test anxiety emerged as the best predictors of performance. Intrinsic value did not have a direct influence on performance but was strongly related to self-regulation and cognitive strategy use, regardless of prior achievement level. The implication of individual differences in motivational orientation for cognitive engagement and self-regulation in the classroom are discussed.

1.6.1. Commenting on previous studies:

Through our review of some previous studies, it was found that most of them dealt with either one variable or linking the self-organized learning variable to other variables, except for the study of Ben Madhi and Assiri (2022), which was similar to our study "studying the relationship between self-regulated learning strategies and self-efficacy". The approach used in all previous studies was the descriptive approach that will be relied upon in our study. As for the study sample, most of the previous studies were applied to university students or students of other educational stages. As for data collection tools, most of the studies relied on ready-made measures according to the objective of each study, except for the study of Zimmerman and Martinez-pons (1990) and the study of Pintrich and De Groot (1990). In this study, we relied on the Kim and Park Scale (2000) in measuring self-efficacy applied by Monira ben Madhi and Mohamed Assiri (2022) in their study and the Pintrich et al. Scale (1991). It also benefited from previous studies in building the problem, controlling its questions, defining the concepts of the study and interpreting the results reached.

2. Method and Tools:

2.1.Study Methodology:

The appropriate approach to know the type and nature of the correlation between self-regulated learning strategies and self-efficacy among students of the Department of Psychology at the University of Bordj Bou Arreridj is the descriptive approach that studies the current conditions of phenomena, and it often includes predictions of the future of the phenomena and the events it studies.

2.2.Study population:

The study population consists of students of the Department of Psychology at the University of Bordj Bou Arreridj for the academic year 2022/2023, which numbered (632) male and female students.

2.3.Study sample:

As for the research sample, it was selected by stratified random method by symmetrical distribution, and the sample size was (126) male and female students by (20%) of the original community, and the following table shows the characteristics of the study sample and its distribution according to the university level variable.

Table (1) : Sample characteristics and distribution

variable		Sample size	Percentage
University level	Second year	58	46.03%
	Third year	38	30.16%
	Master 1	20	15.87%
	Master 2	10	7.94%
Total		126	100%

Source: Prepared by the researcher

2.4.Study Tools:

The data collection process in this study was carried out by relying on two tools:

2.4.1. Motivated Strategies for Learning Questionnaire (MSLQ) (1991):

The researcher relied in this study on the scale of self-regulated learning strategies prepared by Pintrich & others (1991). The scale consists of two main sections: motivation and learning strategies took only the second section, i.e. the scale of self-regulated learning strategies consists of (50) items, of which (19) items measure cognitive strategies, (12) items measure metacognitive self-organization strategies, and (19) items measure resource management strategies. The scale in its foreign form is a tool for self-reporting, from a social cognitive perspective, its vocabulary is answered on a graded scale consisting of (7) alternatives. The scale also contains (8) negative vocabulary corrected in a reverse way, which carries the following numbers: 2, 6, 9, 21, 26, 29, 46, 49. The vocabulary of this scale is distributed on three axes: cognitive strategies represented by the following sub-strategies: the repetition strategy represented by the vocabulary (8, 15, 28, 41), the mastery strategy represented by the

vocabulary (22, 31, 33, 36, 38, 50), the organization strategy represented by the vocabulary (1, 11, 18, 32), the critical thinking strategy represented by the vocabulary (7, 16, 20, 35, 40). Metacognitive self-regulation strategies: represented by vocabulary (2, 5, 10, 13, 23, 24, 25, 26, 30, 45, 47, 48). Resource management strategies represented by the following sub-strategies: strategies for managing the environment and time of study which is represented by vocabulary (4, 12, 21, 34, 39, 42, 46, 49), strategies for organizing effort represented by vocabulary (6, 17, 29, 43), comrades learning strategy represented by vocabulary (3, 14, 19), strategy for seeking help and represented by vocabulary (9, 27, 37, 44). The scale in its foreign form enjoys high stability and validity (pp 1- 79).

2.4.1.1.Correction of the scale:

It was based on the opinions of experts and arbitrators. The "Likert" scale was adopted to score the scale, so that the student chooses an alternative from the three alternatives instead of the seven-point choice used by the preparers of the scale, which is in order: applicable, hesitant, never apply to me, so that the correction is opposite to the descending grades (3, 2, 1) in the case of positive vocabulary, but in the case of negative vocabulary, the correction takes the ascending numbers (1, 2, 3).

2.4.1.2.Psychometric properties of the scale:

- Validity: The validity of the scale was tested in this study using three types of validity:

a. Virtual validity: To ensure the apparent validity (validity of arbitrators) the scale was presented to (09) arbitrators from specialists in psychology and educational sciences. They were asked to provide their opinions and observations on the clarity of the phrases and their suitability to achieve the objectives of the study, the scientific and linguistic accuracy of the formulation of the items and the extent to which they relate to the axes of the study. After calculating the apparent honesty between the arbitrators by applying the Cooper equation, a criterion (70%) was determined as a test to judge the appropriateness of the items for what was prepared to measure, taking into account the amendments and observations made by the arbitrators, and the percentage of agreement between the arbitrators ranges between (70% and 100%).

b. Validity of internal consistency: The scale of self-regulated learning strategies has been applied to (30) male and female students from the Department of Psychology and from outside the basic study sample in order to calculate the validity of internal consistency. The criterion adopted for statistical significance is the Ebel criterion, as an item that receives a correlation of (0.19) or more is considered as a distinctive item (Ebel Robert, 1972, p555). Therefore, the researcher used the Pearson correlation coefficient to extract the correlation between the degree of each item and the total degree of the axis to which it belongs. The values of the correlations ranged between (0.24) and (0.77), and all of which are statistically significant at α (0.01) and (0.05). The correlation coefficient between the axis score and the total score of the scale was also calculated, and the results are as shown in the following table:

Table (2): The correlation coefficients between the axis score and the total score of the scale.

Strategies	Total scale
Cognitive strategies	0.794**
Metacognitive self-organization strategies	0.779**
Resource management strategies	0.726**

Source: Based on the outputs of the SPSS 26 program.

It is clear from the previous table that all the axes' correlation coefficients with the total score of the scale are statistically significant at α (0.01).

c. Validity of peripheral comparison (differential validity): To calculate this type of validity, the "T" test was applied to two independent samples to find out the significance of the differences between the means of the two groups. The results are as shown in Table (03).

Table (3): Discriminatory validity using the "T" test of the self-regulated learning strategies scale

Groups	Sample size	$\bar{x}$	S	T	DF	P	Decision
Minimum group	8	99	7.09	- 9.01	14	0.000	Difference is significant
Senior group	8	123.06	3.06				

Source: Based on the outputs of the spss 26 program.

From Table (03), it is clear that the value of "T" for two independent samples was estimated at (-9.01), which is a function at α (0.05). This shows that the scale has the ability to distinguish between the two groups and is an indicator of validity.

Reliability: The researcher relied on measuring the reliability of the self-regulated learning strategies scale on two methods:

a. Coefficient of internal consistency of items Alpha Cronbach:

The results were as shown in Table (4).

Table (4): Reliability coefficients of the self-regulated learning strategies scale

Strategies	Value of Reliability coefficient
Cognitive strategies	0.597
Self-regulated strategies Meta cognitive	0.586
Resource management strategies	0.550
Total Reliability of the scale	0.749

Source: Based on the outputs of the SPSS 26 program.

It is clear from Table (04) that the reliability coefficients of the self-regulated learning strategies scale indicate a high degree of internal consistency of the scale, and therefore the scale has a high reliability coefficient.

b. Half-segmentation method using the Spearman-Brown equation:

By calculating the correlation coefficient between the odd and even items of the scale, the results were as shown in Table (5).

Table (5): Reliability Value Using Spearman-Brown Equation

Number of items	Correlation coefficient	Spearman-Brown coefficient
50	0.61	0.76

Source: Based on the outputs of the SPSS 26 program.

It is clear from Table (5) that the value of the reliability coefficient reached (0.76), a value that indicates a high and strong degree of reliability of this scale. From the above, we conclude that the self-regulated learning strategies scale is characterized by high validity and reliability, and therefore is suitable for use in data collection.

2.4.2. Self-efficacy scale:

The researcher relied in this study on the self-efficacy scale prepared by Kim & Park (2000) to measure general self-efficacy (GSE) in the light of Pandura's self-efficacy theory. It consists of (24) items distributed on three factors: (12) items to measure the effectiveness of self-regulatory efficacy, (7) items to measure self-confidence, and (5) items to measure the preference for difficult tasks “Task difficulty preference”. It is of the self-report type where its items are responded to in the light of a hexagonal scale (completely agree, agree, somewhat agree, disagree to some extent, disagree, and completely disagree). All items are corrected in the positive direction (6, 5, 4, 3, 2, 1), except for items numbers (2, 4, 6, 8, 10, 12, 14, 20, 24) which were corrected in the opposite direction (1, 2, 3, 4, 5, 6). The items of this scale are distributed on the axes, as follows: the effectiveness of self-organization and represented by items (1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23), Self-confidence represented by items (2, 4, 6, 8, 10, 12, 14), and preference for difficult tasks which are represented by items (16, 18, 20, 22, 24). The preparers of the scale, indicate that it enjoys a high degree of validity and reliability (pp 2- 35).

2.4.2.1.Correction of the scale:

Was based on the opinions of experts and arbitrators. The scale is corrected according to the "Likert" scale so that the student chooses an alternative from the three alternatives instead of the six-point choice used by the researcher preparing the scale, namely: OK, neutral, and disagree, where the grades (3, 2, 1) in the case of positive vocabulary, but in the case of negative vocabulary, the correction takes the numbers (1, 2, 3).

2.4.2.2.Psychometric properties of the scale:

Validity: In this study, the researcher used two methods to ensure the validity of the scale, shown as follows:

a. Virtual validity (validity of arbitrators):

To verify the apparent truthfulness of the scale, it was presented to (09) arbitrators in order to provide their opinions and observations on the clarity of the items of the scale and their suitability to achieve the objectives of the study. After calculating the apparent validity among the arbitrators by applying the Cooper equation, a criterion (70%) was determined as a criterion to judge the appropriateness of the items for what was prepared to measure, taking into account the amendments, observations and additions made by the arbitrators, and the percentage of agreement between the arbitrators were ranged between (70% and 100%).

b. Validity of internal consistency:

The Pearson correlation coefficient was calculated between the degree of each axis and the total score of the scale. The results of the correlation matrix were as shown in the following table:

Table (6): Correlation coefficients between the degree of the axis and the total score of the scale.

Axes	Scale as a whole
Self-regulation effectiveness	0.795**
Self-confidence	0.663**
Preference for difficult tasks	0.702**

It is clear from the previous table that all the axes' correlation coefficients with the total score of the scale are statistically significant at α (0.01).

-Reliability: To calculate the stability coefficient, the scale was applied to a random sample of students of the Department of Psychology at the University of Bordj Bou Arreridj, estimated at (30) male and female students. The stability of the scale was calculated in two methods:

a. Alpha Cronbach coefficient method: The results were as shown in Table (7).

Table (7): Coefficient of reliability of the measure of self-efficacy.

Sample	Number of items	Cronbach alpha coefficient
30	24	0.788

Source: Based on the outputs SPSS 26 program.

It is clear from Table (7) that the value of the Cronbach alpha reliability coefficient reached (0.788), which indicates a high degree of internal consistency of the scale, and therefore the scale has a high reliability coefficient.

b. Half segmentation method using the Spearman-Brown equation: The results are as shown in Table (8).

Table (8): Reliability value using Spearman-Brown equation

Number of items	Correlation coefficient	Correlation coefficient of Spearman-Brown
24	0.60	0.75

Source: Based on the outputs of the SPSS 26 program.

It is clear from Table (8) that the value of the reliability coefficient reached (0.75), a value that indicates a high and strong degree of reliability of this scale. From the above, we conclude that the measure of self-efficacy is characterized by high validity and reliability, and therefore is suitable for use in data collection.

2.5.Statistical treatment used in the study:

The study data were processed by the statistical package program for the social sciences known as (SPSS) version 26, using the following statistical treatments: percentage calculation, arithmetic mean, standard deviation, (t. test), unidirectional analysis of variance (ANOVA), Pearson correlation coefficient, and simple linear regression.

3. Results and Discussion

3.1.Presentation and discussion of the results of the first hypothesis:

To address this hypothesis, the simple Pearson correlation coefficient (r) was calculated between the scores of self-regulated learning strategies and the degrees of self-efficacy. The Table (9) illustrates this.

Table (9): Descriptive statistics results and "r" value between self-regulated learning strategy scores and self-efficacy scores among sample members.

Statistical processing Variables	$\bar{x}$	s	r	Probability value(p)	Decision
Learning strategies	116.277	11.292			Correlation is significant
Self-efficacy	55.158	7.405	0.235**	0.008	

** Correlation is significant at the 0.01 level (2-tailed)

It is clear from Table (9) that the arithmetic mean of self-regulated learning strategies was estimated at (116.277) with a standard deviation of (11.292), while the arithmetic mean of self-efficacy was estimated at (55.158) with a standard deviation (7.405). The value of the Pearson correlation coefficient between the scores of self-regulated learning strategies and self-efficacy scores was (0.235), which is a statistically significant value given the probability value (P)(0.008), which did not exceed the confidence level α(0.01), and which indicates that there is a positive correlation and statistically significant between the grades of self-regulated learning strategies and the degrees of self-efficacy among students of the Department of Psychology at the University of Bordj Bou Arreridj. That is, the higher the self-regulated learning strategies of psychology students, the more indicative it is of increased self-efficacy. This result can be explained by the fact that the university student relies a lot on him/herself in the learning process and uses various learning strategies that help him/her plan and set the goals he/she seeks to achieve and thus will increase his/her sense of self-confidence. This finding is consistent with Bandura's social learning theory (2002) that the learner can adjust his behavior through his/her perception and belief of the consequences of his/her behavior, and that individuals have great control over their actions and the learning environment by taking active and effective actions to build and modify the surrounding environment or change their way of learning (Ben Madhi, and Assiri, 2022, p. 236). This finding is also consistent with the results of the study of Ben Madhi and Assiri (2022), whose results indicated a positive relationship between self-organized learning strategies and the dimensions of self-efficacy among first-year students. A study (Pintrich& De Groot, 1990) found a statistically significant relationship between self-efficacy and the use of cognitive strategies.

3.2.Presentation and discussion of the results of the second hypothesis:

To address this hypothesis, the statistical method of analysis of variance for simple linear regression was used. Table (10) and (11) illustrate this:

Table (10): Results analysis of variance for simple linear regression to confirm model validity.

Dependent Variable	Source	Value (R2)	Sum of Squares	DF	Mean of Squares	Value (F)	Value (P)	Decision
Self-Efficacy	Regression	0.055	377.645	1	377.645	7.230	0.008	Statistically significant
	Remaining		6477.180	124	52.235			
	Total		6854.825	125	/			

Table (11): Results of simple linear regression analysis to predict self-efficacy through self-regulated learning strategies.

Independent variable	B	Standard error	Beta	Value (T)	Value (P)	discussion
Constant	37.261	6.688	/	5.572	0.000	Statistically significant
Self-regulated learning strategies	0.154	0.057	0.235	2.689	0.008	Statistically significant

Through the data of table (10) obtained from the spss program and using the statistical method of analysis of variance for simple linear regression, where the table summarizes the results of simple linear regression analysis. It shows the validity of the model to predict self-effectiveness through self-regulated learning strategies, where the calculated value of (F) was found (7.230), which is a statistically significant value given the probability value (P) (0.008) that did not exceed the confidence level α (0.05) at degrees of freedom (1, 124, 125). As shown in the table (10) Self-regulated learning strategies explain (5.5%) of the total variance of the value of self-efficacy change, through the square of the correlation coefficient or the coefficient of determination, which amounted to (0.055). Based on this, we can build a linear equation to predict the value of the self-efficacy variable through self-regulated learning strategies among students of the Department of Psychology, as shown in Table (11).

It is clear from Table (11) that the values of (T) were all statistically significant given the probability value (P) (0.000) and (0.008) that did not exceed the confidence level α (0.05), and therefore the impact of self-regulated learning strategies among students of the Department of Psychology on self-efficacy is statistically significant. Also, it is clear through the value of the slope of the linear equation (B), which was positive, that the higher the level of self-regulated learning strategies among students of the Department of Psychology, the greater the level of self-efficacy they have.

Based on this, the linear regression equation can be formulated as follows: Self-efficacy = 37.261 + 0.154*self-regulated learning strategies. It is clear from this result that self-regulated learning strategies predict self-efficacy, and that psychology students who use self-regulated learning strategies will reflect positively on their self-efficacy. This result can be explained by the fact that the self-regulated learning strategies used by students of the Department of Psychology in the university environment and that increase their self-efficacy are cognitive strategies through (repetition, mastery, organization, and critical thinking), strategies of self-regulated beyond knowledge, and strategies for managing resources through (managing the environment and time of study, organizing effort, learning comrades, asking for help from others).This is what was stated in Bandura (1997) that one of the most important sources of self-efficacy is verbal persuasion, and this persuasion can be through the request for social assistance, which is one of the strategies of self-regulated learning, as stated by Bandura (2006) that the process of self-regulated learning includes three processes, namely: (self-observation, self-judgment, and self-reaction), and these processes interact with each other, which means the impact of self-regulated learning strategies on self-efficacy(Ben Madhi, and Assiri, 2022, p. 238).This result is consistent with the study of Ben Madhi and Assiri (2022), which found that self-efficacy can be predicted through self-regulated learning strategies, and the study of Abd Essalam Taiba and Ahmed Belaid (2020), which found that academic achievement can be predicted through some strategies (planning and setting a goal, listening and remembering, helping others, cognitive maps). Additionally, Pintrich & De Groot (1990) found the effect of cognitive strategies on self-efficacy. This result differs from the results of Al-Shammari (2017), which found that there is no impact of the components of self-organized learning on the level of academic competence and the level of university students' possession of wisdom and knowledge.

3.3.Presentation and discussion of the results of the third hypothesis:

To address this hypothesis, the statistical method of unidirectional variance analysis (ANOVA) was used, and Table (12) illustrates this.

Table (12): Results of unidirectional variance analysis (Anova) to test the significance of the difference between students of the Department of Psychology in self-regulated learning strategies according to the variable of university level.

Source of variance	Sum of squares	DF	Mean of squares	Value (F)	Value (P)	Decision
Between groups	196.888	3	65.629	0.509	0.677	Non-statistical significance
Within groups	15742.390	122	129.036			
Total	15939.278	125	/			

Through the data of Table (12) obtained using the SPSS program and the statistical method of analysis of unidirectional variance (ANOVA), where the table summarizes the results of the analysis of variance represented in the three sources of variance, namely the variance between groups (196.888), which is due to the independent variable at the university level (second, third, Master 1, Master 2). Then, the variance within the groups (15742.390), which is the variance that reflects random errors, and the sum of variances (15939.278), as well as determining the degrees of freedom and the average squares for each source of variance. It is also clear from Table (12) the value of the missed percentage (0.509) that was calculated by dividing the average squares between the groups by the average squares within the groups in order to estimate the differences in self-regulated learning strategies among students of the Department of Psychology according to the university level variable (second, third, Master 1, Master 2), which is a statistically insignificant value given the probability value (P) (0.677) that exceeded the confidence level α (0.05), the later indicates that there are no statistically significant differences between Students of the Department of Psychology at the University of Bordj Bou Arreridj in self-regulated learning strategies according to the university level variable (second, third, master 1, master 2). The fact that students of different university levels have the desire to demand and master the learning material, determine its objectives and choose an effective strategy in the learning process. This is confirmed by the social cognitive school which indicates that learning is an effective process in which the learner builds information and skill, which contributes to improving the level of production he has, and here the teacher's role is to provide assistance to the student when he/she needs, and stop doing so when his/her own abilities grow (Anaqra Rachid, 2022, p. 106).

This result is consistent with the study of Nadir Rachid Saleh Anaqra (2022), which concluded that there is no significant effect of the school year on self-regulated learning strategies among the research sample. And the study of Ben Madhi and Assiri (2022), whose results showed that there were no statistically significant differences in self-regulated learning strategies according to the variable of academic specialization. This result differs from the study of Al-Shammari (2017), which found that there are statistically significant differences in self-regulated learning according to the variable of school years in favor of the fourth year, and the study of Zimmerman and Martinez (1990), whose results were higher than students of the eighth and eleventh stages of the fifth stage in self-learning.

3.4.Presentation and discussion of the results of the fourth hypothesis:

To address this hypothesis, the statistical method of unidirectional variance analysis (Anova) was used, and Table (13) illustrates this.

Table (13): Results of one-way variance analysis (Anova) to test the significance of the difference between students of the Department of Psychology at the University of Bordj Bou Arreridj in self-efficacy according to the variable of university level.

Source of variance	Sum of squares	DF	Mean of squares	Value(F)	Value(P)	Dicusion
Between groups	153.193	3	51.064	0.930	0.429	Non-statistical significance
Within groups	6701.632	122	54.931			
total	6854.825	125	/			

Through the data of Table (13) obtained using the SPSS program and the statistical method of analysis of unidirectional variance ANOVA, where the table summarizes the results of the analysis of variance represented in the three sources of variance, namely the variance between groups (153.193), which is due to the independent variable at the university level (second year, third, Master 1, Master 2), then the variance within the groups (6701.632), which is the variance that reflects random errors, and the sum of variances (6854.825), as well as determining the degrees of freedom and the average squares for each source of Contrast. It is also clear from Table (13) that the value of the missed percentage (0.930) was calculated by dividing the average squares between the groups by the average squares within the groups in order to estimate the differences in self-efficacy among the sample members according to the university level variable (second year, third, Master 1, Master 2), which is a statistically insignificant value given the probability value (P) (0.429) that exceeded the confidence level α (0.05), the later indicates that there are no statistically significant differences among students of the Department of Science Self at the University of Bordj Bou Arreridj in self-efficacy according to the variable of university level (second year, third, Master 1, Master 2) because students enjoy high self-efficacy at all university levels to accomplish learning activities and continue to strive and persevere to achieve the goals of the learning process and success in study, and the study conducted by Karima and Lazhar (2024) confirms that the highly competent student has high confidence in himself and his abilities, which generates in him a strong desire to achieve goals and ambitions, and this is reflected in academic performance and achievement. This result is consistent with the study of Al-Osaimi ben Talal Awatif (2019), which included no statistically significant differences in academic self-efficacy among um Al-Qura University students attributed to academic level, and Satici and Gurhan (2016), who found that there were no differences between the average scores of the academic self-efficacy scale due to the grade variable. This result differs from the study of Ben Madhi and Assiri (2022), which showed that there are statistically significant differences in self-efficacy according to the variable of academic specialization.

4. Conclusion

Through what was found in this study of the existence of a correlation between self-regulated learning strategies and self-efficacy among students of the Department of Psychology, and there are no differences between students in research variables according to their university level; we can predict the self-efficacy of students of the Department of Psychology through self-regulated learning strategies according to the model of Pintrich & Al (1991), which was relied upon in this study. As it is considered as one of the best models explaining the process of self-regulated learning, and one of the appropriate methods to achieve the quality of education, especially at the undergraduate level, where the student relies a lot on him/herself in the learning process and uses various learning strategies that help him/her in planning, setting goals, accomplishing learning activities and continuing to exert and persevere, to achieve learning goals, increase academic achievement and success in study. This model includes three major strategies (cognitive, metacognitive, and resource management strategies), and under each strategy there are sub-strategies that are measurable through self-assessment. A self-organized student has a high self-efficacy that helps him/her to plan and organize well, enhance their self-confidence and improve academic performance. In light of the findings, the researcher recommends the following:

- Encouraging the employment of self-regulated learning strategies by students, as it helps to improve academic performance and raise their self-efficacy.
- Conducting training courses for students aimed at using and developing self-regulated learning strategies, in addition to recognizing, enhancing and developing the student's self-efficacy.
- Creating the appropriate university environment for the student that helps him/her to plan and organize well, helps in cooperative work, and enhances their self-confidence.

- Activating self-regulated learning strategies by university professors and helping students set their goals and enhance their self-confidence.
- Employing self-regulated learning strategies in pedagogical work in universities for its contribution to enhancing self-efficacy and improving academic performance.

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