

# Construction Psychological and Educational Test for Selecting Teachers - Educational Resilience as a Model

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## Abstract

In order to meet the aspirations and expectations of those involved in the education process in Algeria, and to improve the teaching profession and the quality of teachers to keep pace with rapid progress, this project aims to provide a psychological-educational measurement tool that measures or achieves the minimum standards that should be available in applicants for the teaching profession, or what is known as the (Teacher Selection License). The test construction process was carried out in accordance with international standards for building psychological tests, and this in light of the educational regression theory educational Resilience. The descriptive approach was also relied upon, as the study sample consisted of (2051) respondents from different states of the country, and we verified the psychometric properties to ensure the validity of the test.

**Keywords:** *Construction, the Test, Psychological, Educational, Selecting, Teacher, Theory Educational Resilience.*

## INTRODUCTION

Algeria's education sector boasts significant employment figures, with over 500,000 educators catering to the needs of over 11 million students across various educational levels (primary, middle, and secondary). This sector prioritizes keeping pedagogical approaches aligned with technological advancements. Consequently, the selection of qualified instructors for educational institutions has become pivotal in shaping a competent and skilled workforce. To elevate the caliber of educators, the supervisory ministry has implemented stringent requirements, encompassing academic and scientific qualifications coupled with specialized university training geared towards fostering essential qualities such as academic prowess, scientific literacy, and effective pedagogy. Nevertheless, discrepancies in the perceived importance of these qualities among stakeholders lead to inconsistencies in selection criteria.

Given the substantial demand for instructors across diverse disciplines, the supervisory ministry employs certificate- or exam-based recruitment competitions to select university graduates. This approach stems from the inability of current graduate programs and national schools to meet the burgeoning demand. Notably, similar selection processes are observed in various countries, some of which solely emphasize factors like academic transcripts and cognitive ability scores. However, evidence suggests that these processes fall short in identifying candidates with the most suitable dispositions for the teaching profession.

To ensure high-quality instruction, a holistic approach necessitates balancing a teacher's physical, psychological, emotional, social, and cognitive attributes. This balanced approach aligns with the overarching goals of educational policies across numerous countries, emphasizing the pivotal role of educators in fostering vibrant school environments. Indeed,

research consistently underscores the profound impact of educators on the overall quality and efficacy of educational systems.

### **1. Criteria for Selecting Teachers in Algeria**

The selection process of professors in Algeria is based on Algerian legislation. Employment in public institutions has a set of legal requirements that must be fulfilled by the applicant for a given position, in accordance with Article 75 of Decree No. 3-6 of July 15, 2006, which contains the basic law on public service. The main requirement for recruitment is that the applicant meets the conditions of age, physical and mental fitness, as well as the qualifications required to fill the position.

Under the supervision of the Ministry of National Education, education directorates select teachers to fulfill assigned tasks, adhering to school legislation. Ministerial Order 831 of November 13, 1999, outlines these tasks. Teacher recruitment follows Article 80 of Order 6-3, governing public service access through:

- Examination-based competitions;
- Diploma-based competitions for specific employee categories;
- Professional examinations;
- Direct recruitment for candidates with specialized training from qualified institutions, as stipulated in basic laws.

Article 79 of Order 03-06 emphasizes that recruitment requires proof of qualifications through certificates, achievements, or qualification levels. Specific basic laws for each position define the required certificates, achievements, or training levels based on responsibilities and skills. Candidates prove their qualifications by submitting certificates or licenses. Please refer to Instruction No. 13 issued by the General Directorate of Public Service on September 3, 2008, for the list of certificates and qualifications required for public service, and Presidential Decree No. 304-07 of September 29, 2007, with its amendments and supplements.

Teacher selection involves direct recruitment competitions per Article 80 of Order 06-03, allowing for recruitment from candidates with specialized teacher training from qualified institutions.

This applies to graduates of higher institutes specializing in teacher training. After completing three years for primary school teachers, four years for middle school teachers, and five years for high school teachers, and passing the baccalaureate with a weighted average, they must meet specific conditions and criteria for joining higher teacher schools, including a specific baccalaureate average and passing an oral interview with a specialized committee University graduate.

### **2. The Concept of Educational Resilience**

Cyrułnik, a pioneer who contributed to the spread and development of the concept of resilience in psychology, defined it as the individual's ability to grow well and continue moving towards the future despite disruptive events, difficult life circumstances and harsh shocks. This makes us understand his conception of resilience as a process of rebuilding in light of a relational social interaction that allows for a new vision of life, despite the effects caused by shocks. (Cyrułnik & David , 2009, p. 7)

Resilience is an aspect of personality, characteristics and distinctive traits that allow the individual to settle and manage the difficult circumstances that hinder adaptation. It is a dynamic process that requires positive adaptation within a difficult environment. In this context, Moss and Schaefer (1993) believe that resilience enables the individual to achieve high levels of excellence, best through effective coping strategies that allow cognitive differentiation and building personal confidence and adopting a more mature approach to life (Corinne & Luc , 2011, p. 200).

Black (1996) presents the concept of psychological resilience as a personal trait formed by lived experiences that improve the individual's ability to model a reality characterized by constant change. Facing difficulties is an inevitable necessity for developing coping skills. However, Roberts (2004) considers resilience more as a capacity that develops in a more dynamic way than personality, reflecting situational and environmental factors. Some assess it as a state of recovery, speed and depth in returning to normal after facing difficult situations, while others consider it as resisting difficulties, overcoming them and succeeding despite obstacles, as Pelchat (2002) sees it as a criterion for the ability to make positive change through adaptation mechanisms, which includes maturity, mental health, comfort, and external adaptation that works on good behavior processes within school, work and positive contribution through performance skills. Differences in resilience are based on special concepts regarding mental comfort in education. The difference in the level of motivation and self-esteem levels leads to an attempt to understand the resilient teacher in the meaning related to the degrees of accepting change and moving towards achieving set goals. (Corinne & Luc , 2011, p. 202) Among the personal traits associated with resilience, Wolin and Wolin (1993) talk about seven important characteristics that appear to varying degrees in resilient employment: autonomy, insight and ingenuity, ability to establish relationships, initiative, creativity, sense of humor, and morality. These traits appear in adults after growing during childhood and adolescence (Marie, 2013, p. 58).

Knowing these aspects and strengthening them, working on investing them, whether internal subjective ones, or objective and social, is what helps the teacher overcome the social, economic and educational difficulties and problems he has experienced, such as professional exhaustion for example, due to its negative results, which in turn limit pedagogical performance and thus undermine ensuring the quality of education, and moving towards a new horizon that allows the emergence of positive abilities that did not exist before and are more effective.

### 3. Problem Statement

From our review of the teacher selection process in Algeria, we conclude that teachers are graduates of universities and national institutes holding bachelor's, postgraduate and master's degrees. We find (38) majors accepted for candidacy as a primary school teacher, (40) majors accepted for candidacy as a middle school teacher, and (70) majors accepted for candidacy as a high school teacher, despite their different educational backgrounds. Since the public service is a process with a system based on legal foundations and mandatory principles, every candidate must comply with it and submit to the general basic law on public service, especially the principle of competence. Selecting the competent and most capable of carrying out the tasks assigned to him is required, as well as the obligation to raise the level and select objective scientific criteria, with the need to apply projective psychological tests and others that objectively measure aptitudes, skills, abilities and mental health in order to select the best human resources capable of bearing responsibilities. Therefore, a system must be established to ensure this selection and support it. Therefore, in creating the Educational Psychology Scale

for Teacher Selection, we used educational resilience theory derived from positive psychology, which focuses on improving one's psychological and functional performance while also studying the determinants of human well-being, with a focus on Factors that lead to human happiness. Empowerment we help people live satisfying and fulfilling lives, realize their ambitions, fulfill their abilities and feel good about themselves, others and the world.

It also works to develop the individual in all aspects, especially mental health, which has surfaced among concepts. The 2013 World Health Organization report indicated that mental health is a state of complete mental, social and psychological well-being; it is not just the absence of illness or any form of suffering (Théorêt, 2014, p. 705). When applying this definition to educational settings, we find them mired in the negative effects resulting from working conditions and understanding the reality that controls the course of pressures, and thus those pressures become a generator of psychological and physical illnesses. Here, the pressure and its effects are redirected towards mental health through applications of positive psychology, specifically educational resilience.

#### **4. The Importance of Constructing the Scale**

- Striving to identify the most prominent standards and modern trends in teacher selection;
- This research addresses the (psychological and educational) criteria in order to advance the teaching profession and improve the quality of teachers to keep pace with rapid progress;
- Meeting the ambitions and aspirations of those in charge of the educational process, experts and educators.

#### **5. The Goal of Constructing the Scale**

Providing a psychological-educational measurement tool that measures or achieves the minimum standards that should be present in applicants for the teaching profession or what is called the (teacher licensing).

#### **6. Stages of Scale Construction**

##### **6.1 Defining the Subject of Measurement**

We defined the concept of educational resilience through two main sources:

- The first source: We derived the basic concepts through theoretical texts related to the concept of resilience;
- The second source: Reviewing scales of educational resilience, and benefiting from different concepts and perceptions of educational resilience and its dimensions.

##### **6.2 Identifying the Dimensions of the Scale**

The concept of educational resilience was divided into eight dimensions:

- Educational resilience: It is an individual's trait that allows managing difficult circumstances that hinder internal adaptation, which includes maturity, mental health and comfort, motivation and self-esteem levels, and external adaptation that works on good behavior processes and commitment at work and positive contribution through performance skills through the following dimensions: The ability to adapt, self-esteem, emotions, self-efficacy, motivation, positive thinking, problem-solving ability, commitment.

## 7. The Initial Form of the Scale

After identifying the dimensions of the test, we took the following steps to build the test in its initial form:

### 7.1 Formulating the Paragraphs of the Scale

A number of paragraphs were formulated covering each component of the main dimensions of the test, which were collected through several previously mentioned tests and scales. A total of (79) paragraphs were formulated, with (10) paragraphs covering the dimension of the ability to adapt, (10) paragraphs covering the self-esteem dimension, (10) paragraphs covering the emotions dimension, (10) paragraphs covering the self-efficacy dimension, (10) paragraphs covering the motivation dimension, (10) paragraphs covering the positive thinking dimension, (10) paragraphs covering the problem-solving ability dimension, and (9) paragraphs covering the commitment dimension.

### 7.2 Method of Scale Construction

The researchers adopted the Likert method in building the measurement tool as it is characterized by easy construction and correction, and it forms test scores with high reliability. Therefore, the paragraphs were formulated with five alternative answers (never, rarely, sometimes, often, always). The scores of the alternatives on the positive paragraphs are (1,2,3,4,5) respectively, and the scores of the alternatives on the negative paragraphs are (5,4,3,2,1) respectively. Table No. (02) Shows the numbers of positive and negative paragraphs:

**Table 01: Positive and Negative Paragraphs**

Number	Type of paragraphs	Paragraph numbers
1	Positive	(01), (02), (03), (04), (05), (07), (10), (11), (12), (16), (18), (19), (21), (22), (23), (24), (25), (29), (31), (32), (34), (35), (36), (37), (38), (40), (41), (42), (43), (44), (45), (46), (47), (48), (49), (50), (51), (52), (53), (56), (60), (62), (63), (65), (68), (68), (69), (70), (71), (72), (73), (74), (75), (76), (77), (78), (79).
2	Négative	(06), (08), (09), (13), (14), (15), (17), (20), (21), (26), (27), (28), (30), (33), (39), (54), (55), (57), (58), (59), (61), (66), (67).

Source: Prepared by researchers.

### 7.3 Preparing the Scale Instructions

The instructions for answering the paragraphs were prepared, taking into account their suitability for the category of respondents. It included how to answer the paragraphs by placing a (+) sign in the box that applies to it. We also clarified the purpose of the test and conducting scientific research and filling out some information that may serve the research.

## 8. Verifying the Psychometric Characteristics

### 8.1 The Study Sample

The study population refers to the set of elements or individuals of interest in a particular study. According to the subject of the study, the study population includes third-year university students, second-year master's students from majors accepted for participation in the teacher recruitment process, as well as graduate school students, and teachers for all three levels, from various states of the country. The research sample consisted of (2051) distributed in the table as follows:

**Table 02: Distribution of Study Personnel**

Total	University student	Student teacher	Teachers of the three levels	
2051	756	391	904	<b>Frequency</b>
%100	%36.90	%19	%44.10	<b>Percentage</b>

Source: Prepared by researchers based on Spss program results.

We note through the table above that the total sample was estimated at (2051) individuals according to profession, where the first sample of university students was estimated at (756) students, the second sample of graduate school students (student teachers) at (391) students, and the last sample of teachers of the three levels at (905) teachers.

## 8.2 Scale Validity

It means that the scale is able to measure what it was designed for. To determine that, the following steps must be followed:

### - Content Validity

The test was presented to a group of specialized professors to give their opinions on the tool in terms of its paragraphs, the extent to which they belong to the dimensions included under them, and to ensure their linguistic integrity, the degree of their formulation and the extent of their suitability for measuring what they were designed for. Accordingly, some paragraphs of the test were modified and deleted.

### - Internal Consistency Validity

It measures the extent of correlation and consistency of each dimension with the total score of the test. It refers to the extent to which each dimension of the test is consistent with the test as a whole, by calculating the correlation coefficients "Pearson" between each dimension and the total score of the test.

**Table 03: Correlation Coefficients of Scale Dimensions with Total Score**

Sig. level	Correlation coefficient	Dimensions	Symbol
0	0.649**	Adaptability	<b>X1</b>
0	0.647**	Self-esteem	<b>X2</b>
0	0.901**	Emotions	<b>X3</b>
0	0.901**	Self-efficacy	<b>X4</b>
0	0.835**	Motivation	<b>X5</b>
0	0.645**	Positive thinking	<b>X6</b>
0	0.735**	Problem-solving ability	<b>X7</b>
0	0.776**	Commitment	<b>X8</b>

Source: Prepared by researchers based on Spss program results.

We note through the table above that the correlation coefficient values between the scale dimensions and the total score were high values ranging between (0.90) and (0.64) which is a positive value and statistically significant at the significance level (0.01), indicating that all dimensions of the scale enjoyed a high degree of validity. Accordingly, it was evident that the validity and consistency of the paragraphs and dimensions of the scale, as well as its validity, and therefore relying on them to obtain the desired results according to the scientific context for which it was prepared.

### 8.3 Scale Reliability

Scale reliability means that the scale gives the same result if applied more than once under the same conditions, which also means stability in results. The reliability of the test was verified using the Cronbach's alpha coefficient. Cronbach's alpha coefficient will be used to measure test reliability:

**Table 04: Correlation Coefficients of Test Dimensions with Total Score**

Validity	Cronbach's Alpha Coefficient	Dimensions	Symbol
0.719	0.517	Adaptability	<b>X1</b>
0.781	0.61	Self-esteem	<b>X2</b>
0.709	0.503	Emotions	<b>X3</b>
0.84	0.706	Self-efficacy	<b>X4</b>
0.934	0.873	Motivation	<b>X5</b>
0.753	0.568	Positive thinking	<b>X6</b>
0.763	0.583	Problem-solving ability	<b>X7</b>
0.961	0.924	Commitment	<b>X8</b>
0.962	0.927	<b>Total test score</b>	

Source: Prepared by researchers based on Spss program results.

From the table above we note that the value of Cronbach's alpha reliability coefficient is high, estimated at (0.92), which indicates a strong internal consistency between the dimensions consisting of (71) items. For the first dimension (adaptability) consisting of (10) items, its value was (0.51), while for the second dimension (self-esteem) consisting of (07) items it was (0.61). As for the third dimension (emotions) consisting of (06) items, it was (0.50), and for the fourth dimension (self-efficacy) consisting of (10) items, its value was (0.70). The fifth dimension (motivation) with (10) items was (0.87), the sixth dimension (positive thinking) consisting of (0.56), the seventh dimension (problem solving ability) consisting of (09) items was (0.58), and the eighth and final dimension (commitment) consisting of (09) items had a reliability value of (0.92).

The results in the table above show that the validity value for all test items is high, which means that the test is stable and confirms complete confidence in the validity and suitability of the test.

## 9. Validity of exploratory factor analysis of the educational regression scale

We estimated the validity of the educational regression test using exploratory factor analysis, with the aim of verifying the factors involved in the test after its design. This was done using the principal components method and determining the number of factors as follows:

### 9.1 Verifying the suitability of the data and sample size for conducting exploratory factor analysis

To conduct exploratory factor analysis, we must first verify the suitability of the data derived from applying the designed test and the sample size for analysis. This was done through two important tests: the Kaiser-Meyer-Olkin (KMO) test to detect the extent to which the data is suitable for factor analysis, and the Bartlett test to detect the appropriateness of the sample size for analysis, as shown in the following table:

**Table 05: The suitability of the data and sample size for conducting exploratory factor analysis**

0.892		<b>The value of the Kaiser-Meier-Ocline test</b>
28	Degree of freedom	<b>Bartlett's test</b>
0	Significance level	

Source: Prepared by the researchers based on the results of the Spss program.

From the table above, looking at the value of the KMO test, which reached (0.89), we can say that the data extracted from applying the educational regression test is highly suitable for conducting exploratory factor analysis. As for the Bartlett test, its value reached (6670.47) in terms of the K2 test, which is statistically significant at the alpha significance level (0.01). Therefore, the certainty rate that the sample size is suitable for conducting factor analysis reached 99% with a 1% margin of error.

**Table 06: Bifurcations of the dimensions of the test on the worker after the rotation process**

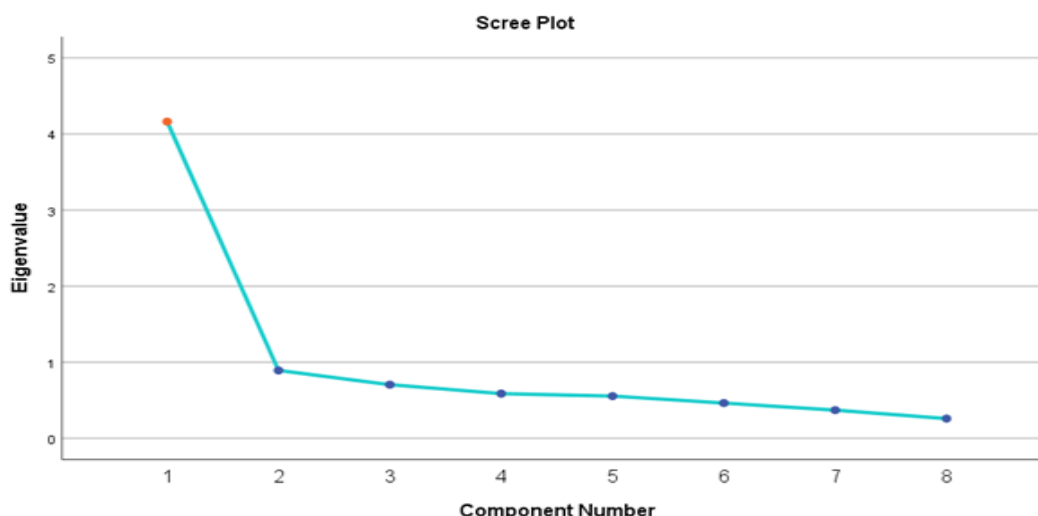
<b>factors</b>	<b>items</b>
1	
0.829	<b>The fifth dimension (motivation)</b>
0.825	<b>The fourth dimension (self-efficacy)</b>
0.775	<b>The eighth dimension (commitment)</b>
0.758	<b>The seventh dimension (the ability to solve problems)</b>
0.692	<b>The first dimension (adaptability)</b>
0.678	<b>Sixth dimension (positive thinking)</b>
0.669	<b>The second dimension ( self-esteem )</b>
0.483	<b>The third dimension (emotions)</b>
162 . 4	<b>underlying root</b>
02 . 52	<b>Contrast ratio</b>
02 . 52	<b>Aggregate ratio of variance</b>

Source: Prepared by researchers based on Spss program results.

From the table above, it is clear to us that the bifurcations of the dimensions of the ERT designed after Varimax rotation resulted in the presence of one factor that saturated all dimensions of the test, where the saturation values ranged between (0.82) as the highest value of saturation for the fifth dimension (motivation) and (0.48) as the lowest value of saturation for the third dimension, we also note that the latent root of this factor was 4.16 with an explained variance of 52.02% for the test as a whole.

From this, it can be said that the results of the exploratory factor analysis of the dimensions of the designed educational backwardness test resulted in the presence of one factor on which all dimensions were saturated with a cumulative variance of 52.02%, in other words, this test can be categorized as a unidimensional test, and it should be noted that all bifurcations were positive and the following figure shows the saturation of the dimensions on the factor as follows:





**Figure 01: Dimensional Saturation of the Educational Relevance Test Designed on the Main Factor**

Source: Prepared by researchers based on Spss program results.

**9.2 Extracting the Criteria of the Educational Referencing Test:**

The researchers extracted the percentile criteria for the test as a whole to determine how to interpret the results obtained according to the pentagonalization method, which is determined by the percentiles (10, 25, 50, 75, 100) as follows:

**Table 07: Distribution of the Study Sample in the overall test based on the extracted criterion**

Percentile degree field	Levels	Grades	Number of individuals
From the 75th percentile or more	5	From 315 and above	523
From 50 to 75	4	From 297 to 315	521
From 25 to 50	3	From 280 to 297	497
From 10 to 25	2	From 263 to 280	318
Less than the 10th percentile	1	Less than 263	192
<b>Total</b>			2051

Source: Prepared by researchers based on Spss program results.

From the above table, we notice that the members of the study sample were distributed according to the range of the extracted percentile scores, as we notice in the table where we find that there are (192) individuals whose raw scores were less than 263 degrees and fell in the range of less than the 10th percentile, while the number of individuals whose raw scores were between 263 and 280 degrees amounted to (318) individuals and they are in the range of the percentile 10 to 25, while we note that (497) individuals whose scores were between 280 and 297 degrees and in the 25th to 50th percentile range, while the number of individuals whose scores were between 297 to 315 and in the 50th to 75th percentile range amounted to (521) individuals, and in the 75th percentile range and above, we find that there are (523) individuals whose raw scores were from 315 degrees and above, and the following figure shows this:



**Figure 02: The Distribution of the Study Sample based on the Standard Adopted for the Test**

Source: Prepared by researchers based on Spss program results.

## CONCLUSION

The process of psychological and educational measurement helps in understanding, guiding and diagnosing phenomena and issues that impede individual compatibility through the use of tests and scales specific to each field. We built the test to test the teachers' license, and here it must be emphasized that the process of building the test includes everything related to the psychological health of the teacher, specifically educational backwardness, which is based on concepts related to the psychological comfort of teaching, as the difference in the level of motivation and levels of self-esteem leads to an attempt to understand the reactionary teacher in the connotation related to the degrees of acceptance of change and orientation towards achieving the set goals.

This study came to clarify the most important scientific stages agreed upon in the construction of psychological tests, using the theory of educational retrogression as a model:

The study also found that the results of the arbitration process to which the test was subjected in its initial form, a large number of paragraphs were deleted.

In another context, the statistical results revealed that the test has an acceptable degree of reliability and stability, which can confirm the hypothesis of the validity of this test on the environment in which it was codified.

On the other hand, the statistical results revealed that (8) paragraphs were deleted out of (79) paragraphs that made up the test in its initial form that were not statistically significant, and the test became in its final form with (71) paragraphs, which confirms the importance of these paragraphs in the dimensions and in the test as a whole.

The factor structure of the test came through the results of the exploratory factor analysis of the dimensions of the designed educational backwardness test, which resulted in the presence of one factor on which all dimensions were saturated, in other words, this test was categorized within the category of unidimensional tests.

We also extracted the percentile criteria according to the pentagonalization method and then the distribution of raw scores based on them, in order to know how to interpret the results obtained during the application of the test. The results of the study conclude that a psycho-educational test has been provided for the selection of teachers in Algeria.

## RECOMMENDATIONS

- Utilizing the psycho-educational test in determining the profile of the teacher in the three educational stages;
- Utilizing the outputs of the test in the preparation of teaching contents for the training of pre-service teachers, especially the psychological contents;
- Applying the test on the widest scale to determine the degree of the teacher's pedagogical relevance in the educational system;
- Expanding the application of the test to educational actors.

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