



Constructing and Standardizing A Scale of Leadership Ability of Teachers of Physical Education in Secondary Schools

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Article information

Article history:

Submit Date: 31 March 2026

Revise Date: 5 May 2026

Accept Date: 15 May 2026

Keywords:

Leadership Ability Scale;
Physical Education Teachers;
Secondary Schools;
Educational Leadership;
Psychometric Properties.

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Abstract

The purpose of this study was to develop and standardize a leadership ability scale for physical education teachers in secondary schools in Nineveh Governorate as perceived by school administrators. The study deployed descriptive survey method and the sample was 160 school administrators, (principals and assistant principals) who were selected to represent the study population.

To collect data for the study, the researcher made a questionnaire after using several studies and theories of educational leadership.

The scale was reviewed by a panel of experts for content validity and amended accordingly. Following this, the appropriate statistics were employed to test the scale's psychometric properties, including its validity and reliability.

The scale in final version consisted of five things: objectivity, flexibility, understanding others, use of authority, and knowledge of communication principles. A total of 40 items were developed to represent the dimensions using the Likert-type scale .

According to the findings, the validity and reliability of the scale are acceptable, indicating it can be used to measure the leadership ability of physical education teachers. The study suggested the usage of the scale in subsequent research and the use of the study on different education levels including primary, intermediate, and secondary schools. In addition, the scale can be utilized in similar Arab educational contexts, especially in Iraqi governorates because it is adaptable and standardized.

1- INTRODUCTION

School leadership is a fundamental element in the educational process, as it plays a central role in enhancing the work environment and improving both administrative and educational performance of teachers. With the increasing challenges facing educational institutions, it has become essential for teachers to possess effective leadership skills that enable them to positively influence school staff in general, and physical education teachers in particular, who deal with various physical, psychological, and behavioral aspects of students.

Most organizations depend strongly on leadership to get things done and to help them realize their goals. In fact, leadership is very important to management. The demand for a successful leadership style is more prevalent in the education sector because of its impact on the society's socio-economic and political spheres. As a result, developing countries must ensure the success of educational leadership by preparing qualified administrative leaders who can adapt themselves to the modern trends. Educational institutions' success hinges on their leaders continuous development and readiness to respond to change [1].

According to Nelson (2007), leadership capability is the basis on which employees can trust their leader's professional competence, which in turn encourages the employees to support him, allowing him to affect their behaviour and motivate them to do things willingly. As such, successfully leading teachers to achieve institutional goals is a major factor of the effectiveness of school administration. The guidance, organization, and management of behaviour are important functions of the school principal. The principal also positively interacts with teachers, organises their efforts in accordance with available human and financial resources. He also meets challenges and realises the desired outcomes. Placing the right person in the right position, establishing strong social relationships and team spirit, and aligning individuals' action with the institution's goals also come inside this umbrella.

The physical education teachers' role as educational leaders is of great importance for efficiencies of educational work . They become role models and leaders to establish the modern ideal of leadership based on participation and motivation in the field of physical education [2] .

Although they play this crucial role, the variations of the leadership in the physical education teacher might have an adverse effect on their job performance and the educational process. Consequently, the research problem in this investigation is to find out the signature of leadership ability among teachers of physical education and its contribution to the success of the educational process in schools.[3]

Consequently, the aim of the study is to develop a leadership ability scale for physical education teachers in secondary schools of Nineveh Governorate which will in turn help in assessing and improving the leadership performance of an educational field.

2. Methodology

2.1.METHODOLOGY : The descriptive analytical approach was adopted because it was appropriate for the nature of the study.

2.2.1 Population

The study population consisted of 369 principals and assistant principals of secondary schools in Nineveh Governorate.

2.2.2 Sample

A sample of 160 principals and assistant principals was selected to participate in the procedures for developing and standardizing the scale.

2.3.TOOLS :

2.3.1.Developing scale of leadership ability

To prepare the dimensions of the scale, the researchers conducted a comprehensive review of the literature, analyzing theoretical frameworks and previous studies. Based on this review, a questionnaire was designed to define the main dimensions of the scale. Five basic dimensions were identified: objectivity, flexibility, understanding others, use of authority, and knowledge of communication principles. The initial version of the scale was then reviewed by a panel of experts in athletic management and organization (see Appendix 1), and several adjustments were made based on their feedback [4]

2.3.2. FORMING SCALE'S DOMAINS :

After setting scale's dimensions , researchers wrote items for each axis by reviewing resources and studies not to forget to mention opinions of experts . So final number of items was (40) primarily speaking [8]

First axis : objectivity (8) items

Second axis : flexibility (8) items

Third axis : understanding others (8) items

Fourth axis : using power (8) items

Fifth axis : know bases of communication (8) items

3.3.3.SET WEIGHT AND CORRESPONDENCE ALTERNATIVES

After setting scale's dimensions , researchers wrote items for each axis by reviewing resources and studies not to forget to mention opinions of experts . So final number of items was (40) primarily speaking

- First axis : objectivity (8) items

- Second axis : flexibility (8) items

- Third axis : understanding others (8) items

- Fourth axis : using power (8) items

- Fifth axis : know bases of communication items

2.3.3 Assigning Weights and Response Alternatives

To grade responses of subjects on scale items , five correspondence alternatives were set : (always , often , sometimes , seldom and never) graded based on agreement of experts of measurement and evaluation (see appendix 1) . Table (1) shows answering alternatives and their weight.

TABLE 1 ANSWERING ALTERNATIVES AND WEIGHT OF ITEMS

Answer alternatives	always	often	sometimes	Seldom	never
Wight of item	5	4	3	2	1

2.3.4. FACE VALIDITY :

Face validity was established by submitting the scale .items to a panel of experts to evaluate their suitability Such condition was met in this scale after passing a panel of experts (see their names in appendix 1) , took their opinions into consideration , reach 100% of agreement , to indicate reliability and suitability of scale

2.3.5.PILOT APPLICATION OF SCALE :

To assess the clarity of the items and instructions and to calculate response time, the researcher applied a pilot TABLE (2)

DISCRIMINATION FORCE OF ITEMS OF SCALE OF LEADERSHIP ABILITY TABLE (2)

No.	Higher group		Lower group		t-test	sig	No.	Higher group		Lower group		t-test	sig
	X-	S	X-	S				X-	S	X-	S		
1	4,90	0,29	3,53	0,79	10,589	0,00	21	5,00	0,000	3,69	0,722	11,054	0,00
2	4,69	0,46	3,58	0,66	9,040	0,00	22	5,00	0,000	3,604	0,760	12,034	0,00
3	5,00	0,00	3,60	0,76	12,034	0,00	23	4,79	0,411	3,720	0,629	9,325	0,00
4	4,76	0,42	3,58	0,73	9,181	0,00	24	4,58	0,499	3,325	0,788	8,906	0,00
5	5,00	0,00	3,55	0,70	13,499	0,00	25	4,76	0,477	3,581	0,731	9,181	0,00
6	5,00	0,00	3,69	0,86	9,929	0,00	26	4,93	0,257	3,488	0,767	11,677	0,00
7	4,67	0,47	3,55	0,76	8,130	0,00	27	4,86	0,350	3,651	0,612	11,233	0,00
8	4,81	0,39	3,32	0,60	13,500	0,00	28	4,67	0,474	3,581	0,731	8,233	0,00
9	4,83	0,37	3,55	0,62	11,468	0,00	29	5,00	0,000	3,581	0,731	12,719	0,00
10	4,72	0,45	3,41	0,82	9,084	0,00	30	4,69	0,464	3,325	0,892	8,943	0,00
11	4,90	0,29	3,51	0,76	11,133	0,00	31	4,95	0,213	3,534	0,766	11,688	0,00
12	4,83	0,37	3,55	0,76	9,848	0,00	32	4,97	0,152	3,627	0,655	13,142	0,00
13	4,51	0,50	3,30	0,80	8,357	0,00	33	4,95	0,213	3,418	0,905	10,816	0,00
14	4,69	0,46	3,46	0,82	8,523	0,00	34	4,88	0,324	3,488	0,702	11,821	0,00
15	4,60	0,49	3,39	0,82	8,276	0,00	35	4,95	0,213	3,651	0,719	11,375	0,00
16	4,44	0,50	3,09	0,81	9,270	0,00	36	4,93	0,257	3,627	0,690	11,581	0,00
17	4,76	0,42	3,51	0,66	10,383	0,00	37	5,00	0,000	3,581	0,698	13,326	0,00
18	4,86	0,35	3,48	0,79	10,323	0,00	38	4,72	0,453	3,325	0,892	9,140	0,00
19	5,00	0,00	3,74	0,92	8,872	0,00	39	4,53	0,504	2,511	0,735	14,868	0,00
20	5,00	0,00	3,79	0,86	9,213	0,00	40	4,88	0,32	3,441	0,733	11,787	0,00

Table (2) shows the arithmetic means, standard deviations, and calculated t-values for all items a

study on a sample of (10) schools from the original research population. The instructions were clear, and the items were understandable. The pilot study also determined the response time, which ranged between (8–12) minutes

2.3.6.CONSTRUCT VALIDITY :

2.3.6.1.FIND DISCRIMINATIVE VALUE OF ITEMS :

Ability of scale to differentiate between individuals with high or low level of certain . It also points to ability of scale to show variances between measured items for contrasted or different groups [5].

To calculate such validity , researchers compared extreme groups by dividing constructed sample into two groups based on decreasing order of obtained grades and each item at a time . Superior group representing (27%) with (43) forms for teachers scored high grades and inferior group also represented (27%) with (43) forms for teachers who gained low grades , from constructed sample to have extreme groups . Comparison was made between arithmetic means of both groups by using (t-test) for two irrelated equal groups as shown in table (2)

the 0.05 level of significance. The calculated t-values were statistically significant, indicating that all items had adequate discriminating power.

2.3.6.2. FIND FACTOR OF INTERNAL CONSISTENCY

factor of consistency of grades o each item and total degree of scale [7] . Researchers adopted factor of internal consistency to analyze scale’s items (i.e.

calculate content validity of scale) . Factor of internal consistency is used heavily when calculating internal consistency of many psychological and personal scales using internal criterion . Non-zero correlation will appear between grades of every item and total grade of scale [6] . Researchers relied on Pearson simple conjunction factor to find relation between grade of each item and total grade of scale as shown in table (3).

TABLE 3 FACTOR OF INTERNAL COSISTENCY OF SCALE’S ITEMS

No.	R.	sig	No.	R.	sig	No.	R.	sig	No.	R.	sig
1	0,817**	0,00	12	0,874**	0,00	23	0,834**	0,00	34	0,874**	0,00
2	0,801**	0,00	13	0,777**	0,00	24	0,804**	0,00	35	0,833**	0,00
3	0,740**	0,00	14	0,815**	0,00	25	0,875**	0,00	36	0,875**	0,00
4	0,844**	0,00	15	0,835**	0,00	26	0,835**	0,00	37	0,851**	0,00
5	0,746**	0,00	16	0,766**	0,00	27	0,863**	0,00	38	0,823**	0,00
6	0,754**	0,00	17	0,808**	0,00	28	0,899**	0,00	39	0,638**	0,00
7	0,805**	0,00	18	0,854**	0,00	29	0,848**	0,00	40	0,823**	0,00
8	0,788**	0,00	19	0,829**	0,00	30	0,814**	0,00			
9	0,812**	0,00	20	0,824**	0,00	31	0,962**	0,00			
10	0,871**	0,00	21	0,859**	0,00	32	0,867**	0,00			
11	0,837**	0,00	22	0,853**	0,00	33	0,852**	0,00			

Table (3) shows the internal consistency coefficients of the scale’s items. The calculated R-values were statistically significant at the 0.05 level (p < 0.05), indicating that all items were significantly correlated with the total score. This confirms that all items are consistent with the scale and measure the intended construct in a coherent manner.

2.3.7. STABILITY

2.3.7.1. Self validity : Self-validity is defined as the validity of the test scores after controlling for measurement errors. It reflects the relationship between validity and reliability, and it is based on the correlation between test scores when the instrument is re-applied to the same group. In this context, internal consistency is used as an indicator of stability [5] .

Internal validity was found via square root of stability factor as shown in table (6) as in the following equation internal consistency = value of stability factor [9]

3.3.7.2 Split-Half Method

Such method is based on calculating correlation factor between grades of persons on both sides of test . Value of calculated correlation factor is corrected via Spearman -Brown equation [6] . To ensure stability and consistency of grades of scale , researcher adopted half discrimination method as well as re-test by dividing items into (20) odd items and likewise even ones . So tested (40) items of forms of experimental experience as shown in table (4).

TABLE (4) FACTORS OF STABILITY OF TEST USED IN HALF DISCRIMINATION METHOD AS WELL AS CORRECTION AND COEFFICIENT OF AIENATION

Items	Odd group		Even group		Stability before correction	Stability after correction	Alienation factor	Internal consistency
	X-	S	X-	S				
	4,13	0,96	4,16	0,94	0,657	79,0	61,0	88,0

Table (4) shows arithmetic means and standard deviation of odd and even groups , value of correlation

factor by half discrimination method . correcting using Spearman-Brown equation , reliable value to estimated

stability of scale . Researchers used correlation factor no less than (0,71) and coefficient of alienation of no less than (0,70) where coefficient of alienation is also used as an indicator of correlation that indicates stability coefficient [6]

2.3.8. DESCRIBE FINAL IMAGE OF SCALE

Lastly but not least sum of items of scale of leadership ability was (40) items divided on (5) axes (objectivity with 8 items , flexibility 8 items , understanding others 8 items , using power 8 items and know communication principles 8 items) . Response alternatives were the following (always , often , sometimes , seldom , never) graded (1,2,3,4,5) respectively

Table (2): The Finalized Form of the Developed Scale

No.	Items	always	often	sometimes	seldom	Never
1	Teacher of physical education evaluates pupils performance objectively and unbiased					
2	Takes educational and physical decisions based on facts and information					
3	Avoids being biased when dealing with pupils					
4	Achieve goals of educational processes effectively through objective practices					
5	Takes decisions of choosing athletic teams based on actual performance and efforts					
6	Gives opportunity to participate and lead in athletic activities based on quality not personal relations					
7	Physical education teacher gives constructive criticism for pupils based on behaviour and not pupil himself					
8	Evaluate pupil's performance in athletic skills according to ready set and declared standards					
9	Teacher adapt with whatever changes in time table activities or weather					
10	Changes his plans and strategies to meet pupils needs and whatever equipment available at his disposal					
11	Deals with calm and flexibility with pupils' behavioural problems					
12	Creates dynamic effective flexible educational environment					
13	Accept pupils suggestions , their new ideas to develop training activities					
14	Modify rules to enable pupils with various physical abilities to participate					
15	Think of innovative untraditional solutions when faced by challenges in teaching and athletic training					
16	Adopts new technological styles in training or evaluation whenever needed					
17	Teacher of physical education understands the needs and feelings of pupils and colleagues					
18	Communicates with pupils , hears them gain their love and trust					
19	Encourages cooperation and team work among pupils					
20	Enhances discipline and positive relations inside class					
21	Consider individual differences and behaves well with behavioural challenges					
22	Shows empathy with pupils and gives appropriate support for each case					
23	Evaluate pupils efforts even if didn't win a local match					
24	Reads well body language of pupils to know their true feelings					

Final scale (appendix 2) was applied o sample of (160) after instructing them about the way to answer . Period of final application of scale began on (1/12/2025) ad ended on (15/1/2026) . Forms were collected and necessary statistical treatments were done : [10]

2.5. STATISTICAL MEANS

- *arithmetic means
- *standard deviation
- *percentage
- *Pearson conjunction factor
- *Pearson-Spearman correlation factor
- *SPSS package

3. Results

4.1 Presentation of Results

25	Teacher of physical education uses his authority with justice and responsibility
26	Knows when to discipline and when to be flexible
27	Guarantees pupils to feel respected and belonging when applying laws
28	His responsible use of power helps to develop pupils' self discipline
29	Know how to run physical activity in an organized way
30	Gives trusted pupils leading duties continuously to enhance their abilities
31	Participate in training and activities with pupils to be their role model
32	Uses his power to correct mistakes and direct instead of revenge
33	Teacher of physical education speaks his mind clearly in front of pupils and colleagues
34	Attentively hears others and understand their needs
35	Gives direction in a clear understood way
36	Have effective communication skills with pupils to enhance cooperation and class management
37	Accepts points of views of others and deals with them with respect and constructively
38	Uses positive body language to enhance interaction at lesson
39	Uses visual teaching aids like video clips and pictures to elaborate complex concepts
40	Changes his pitch and tone to keep pupils attentive while planning certain skill

The scale, in its final form, is well-designed and consists of 40 items clearly distributed across a range of dimensions of physical education teacher competence, including objectivity, flexibility, social intelligence, empathy, responsible use of authority, and effective communication.[11]

The scale employs a five-point scale: Always, Often, Sometimes, Seldom, and Never. This is suitable because it allows for the quantitative measurement of the frequency of behaviors exhibited by physical education teachers, enabling statistical analysis.

It can be said that the items comprehensively cover important aspects of physical education teacher performance. They do not only assess physical skills but also address fairness, decision-making, consideration of individual differences, classroom management, technology use, and the application of body language and teaching aids. This gives the scale a holistic educational and behavioral dimension.

Furthermore, some items reflect real-life situations within physical education classes, such as modifying rules to accommodate students with varying abilities, calmly addressing behavioral problems, or selecting sports teams based on actual performance rather than personal relationships. This reinforces the scale's content validity.

In general, the scale in its final form appears suitable for use in evaluating the performance of a physical education teacher, provided that it is presented to

experts to verify its validity, and then applied experimentally to determine its reliability and internal consistency before final adoption.[12]

4 .Conclusion

This research examines the effectiveness of the Leadership Ability Scale for physical education teachers in secondary schools in Nineveh Governorate, based on the final version consisting of (40) items. This is achieved by administering the scale to the research sample and analyzing the results using appropriate statistical methods, thus determining its suitability for measuring teachers' leadership abilities. The research recommends adopting the Leadership Ability Scale in its final form as a suitable tool for measuring the leadership abilities of physical education teachers, and utilizing it in developing professional development and training programs. It also emphasizes the importance of employing the scale's results in evaluating educational performance and expanding its use in similar studies with different samples and educational levels to verify its validity and potential for generalization, as well as working to develop it in line with modern educational advancements.

Researchers' Contributions

Researcher Sarah Esmat Noah contributed to developing the research concept, constructing the scale, collecting and statistically analyzing data, and writing the research draft. Researcher Waleed Khaled Hammam contributed to the study design, academic supervision, critical review, and approval of the final

version for publication. All researchers reviewed and approved the final version

Conflict of Interest

The researchers acknowledge that there is no conflict of interest related to the publication of this research

Funding

This research did not receive any financial support from public, private, or non-profit organizations

Data Availability

The data supporting the findings of this study is available to the researchers upon reasonable request

Ethical Considerations

The study was conducted in accordance with the ethical standards of scientific research. Participants participated voluntarily after the study objectives were clearly explained, and confidentiality and privacy were guaranteed.

Acknowledgement

The authors would like to express their sincere gratitude to the University of Al-Hamdaniyah and the University of Mosul for their academic support and for providing a conducive environment that facilitated the completion of this research.

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