

Effectiveness of a Blended Training Program in Developing the Most Important Supervisory Competencies of Physical Education Supervisors in Nineveh Governorate

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ABSTRACT

Prepare a blended training program based on modern scientific foundations to develop the most important supervisory competencies of educational supervisors specializing in physical education in Nineveh Governorate, build a scale for the most important supervisory competencies of educational supervisors specializing in physical education in Nineveh Governorate and identify the level of supervisory competencies among physical education supervisors before applying the blended training program.

There are statistically significant differences between the values of the pre-test and post-test results in developing the most important supervisory competencies of specialized educational supervisors, in favor of the post-test results.

The researcher used the experimental method as appropriate for the research problem and its application.

Population: Supervisors specialized in physical education belonging to the Educational Supervision Department – Nineveh Directorate of Education, with work experience ranging between 10–15 years during the academic year 2025–2026. The total number was 120 supervisors.

Sample: For building the scale and conducting the research tests: 120 supervisors (100% of the population).

for applying the experimental program: 60 supervisors specialized in physical education supervision in Nineveh Governorate (50% of the population).

•The researcher used SPSS v25 and several related statistical formulas to obtain the results of the current research.

Keywords: Blended Training, Supervisory Competencies, Educational supervision, Physical Education Supervisors, Professional Development, Nineveh Governorate.

Introduction

Educational supervision is one of its most important pillars to improve the quality of education and to develop the educational professional performance of teachers. Supervisors are responsible for planning, directing, assessing and assisting teachers to accomplish education objectives and enhance students' learning. Rapid changes in educational technology and present modern teaching methods have raised the demand for supervisors equipped with supervisory skills that will enable them to enhance their work operation.

Blended learning combines electronic learning with face-to-face jargon to make one of the greatest professional development avenues available. It has high applicability, promotes active

learning, and is related to the acquisition of professional competencies. Hence, the preparation of a blended training program based on scientific design for enhancing the supervisory skills of physical education supervisors might align with the present-day requirements of educational supervision.

Thus, this research seeks to develop the most significant supervisory competencies for PE supervisors in Nineveh Governorate through preparing a Supervisory Competency Scale, determining Supervisors levels of competencies before implementation of the programme and evaluating the impact of the trainings for the supervisor's professional performance.

1. Introduction and Importance of the Research

Globalization has led to rapid scientific and technological innovation forcing the modern educational system to develop from a traditional ownership model of educational supervision – where supervision was just an oversight model – to an educational leadership model with a more formal purpose of based on professional guidance, future capacity building, and the overall quality of education and teaching. In order to support teachers and improve students learning, educational supervisors have been expected to acquire a good competence in areas such as planning, communication, evaluation, decision-making, and working collaboratively (Glickman et al., 2018; Sergiovanni & Starratt, 2013).

Now it has become a need of educational growth to have technology involve in education and training. The interaction of traditional and electronic learning: Blended learning combines 2 environments in an interactive learning environment which makes the learner achieves knowledge and skills effectively and minimizes time and effort. As a result, this approach has been extensively utilized in educational and training programs (Salah & Al-Tarawneh, 2021, p.40, Deperlioglu, & Kose, 2013, p.328).

According to Kennedy (2021), blended learning improves learner achievement by providing opportunities for direct interaction, collaborative communication, flexibility of time and place, and reduced educational costs. This can further contribute to the professional development of teachers despite pressures of workload (Kennedy, 2021, p.12).

Likewise, educational supervision, it has also evolved into a process of development, which aims at ascertaining and enhancing the professional performance of teachers rather than solely appraising them. Competencies related to supervision (planning, communication, evaluation, educational leadership, and candid feedback) are those basic competencies that are essential for effective educational supervision (Ja'ar & Zamel, 2022, p.166).

The researcher considers educational supervision to be one of the foundations of the educational process since the transformation of educational objectives into practices in the field requires a supervisor. Modern supervisors need to create new approaches to supervision, theory in action, ongoing assessments of effective teaching, and ongoing mentoring for professional development.

However, recent technology advances have brought even more attention to the need for using modern educational technologies in supervision and in training. According to Al-Sheidani (2025, p.4) with easy access to virtual communication technologies the doors for distant supervision and professional development have opened up, some blending is effective for problems faced in education today.

Because of this, educational supervision is considered an integrated process that incorporates the preparation, leadership, supervision and still the development of the educational resources (Al-Taj'aan, 2016, p.8). Competences—human, administrative, and technical competencies—are also vital to supervisor and teacher collaboration that improves the quality of education (Wasous & Al-Jawarneh, 2014)

According to literature and researcher own experiences in training for educational supervision and in some previous studies related to this there is urgent need to focusing on enhancing the supervisory competence of physical education supervisors. This gap has adversely impacted performance in supervision and created demand for targeted PD programmes that are able to connect theoretical understanding of learning and teaching (LT) with practice in authentic contexts through evidence-based supervision training.

Materials and Method

The researcher used the **experimental method** as appropriate to the nature of the research and its problem.

Research Population and Sample

1 Research Population: The research population was deliberately defined as educational supervisors specializing in physical education supervision, affiliated with the Educational Supervision Department – Nineveh Directorate of Education, according to the research title. They have work experience ranging between 10–15 years during the academic year 2025–2026. Their total number is **120 supervisors**. The researcher obtained this information officially from the Educational Supervision and Specialization Department of Nineveh Directorate of Education, through formal correspondence (Appendix 1). Additionally, the researcher herself is an educational supervisor specializing in physical education in the same department.

Table (1): Details of the Research Population

Workplace	Number	Percentage
Mosul District Center	70	58%
Erbil Branch	30	25%
Duhok Branch	20	17%
Total	120	100%

2 Research Sample: The research sample included:

- **Scale-building and testing sample:** 120 supervisors (100% of the population).
- **Experimental application sample:** 60 supervisors specializing in physical education supervision in Nineveh Governorate (50% of the population).

Table (2) Details of the Research Sample

Research Sample Type	Nineveh Governorate	Erbil Branch	Duhok Branch	Total	Excluded	Percentage
Exploratory Experiments Sample	10	0	0	10	0	8.33%
Discriminant Validity Sample	70	30	20	120	0	100%
Reliability Sample	0	30	20	50	0	41.66%
Main Application Sample	60	--	--	60	10	50%
Total of Construction + Application Samples	120					100%

3 Devices and Tools

For the purpose of implementing the current research experiment, the following devices and tools were required:

- Laptop device (Azuz brand)
- Router connected to the internet
- Data show device (projector)
- Bag containing the program guide (both printed and electronic) along with other necessary materials
- Whiteboard with colored markers

4 Experimental Design

The researcher adopted the **one-group pre-test/post-test design**, as it is suitable for the nature of the current research problem, aligns with the research objectives, and fits the procedures of the experiment.

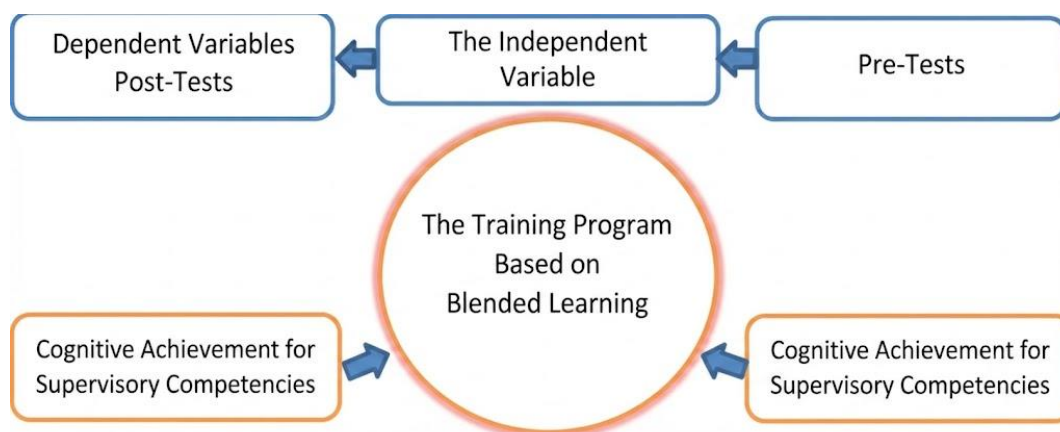


Figure (5) illustrates the experimental design of the research.

Experimental Design of the Research

5 Homogeneity of the Research Sample in the Variables of Age and Years of Service

To verify the homogeneity of the research sample in these two variables, the researcher applied the **Coefficient of Variation (CV)** formula to ensure the uniformity of the participants. *“This coefficient represents the dispersion of the group as a percentage stripped of units, making it unaffected by the measurement scale. This abstract property of the coefficient of variation is useful when comparing dispersion in traits, characteristics, or abilities within the same group”* (Allawi & Radwan, 2000, p.142).

Table (3): Arithmetic Means, Standard Deviations, and Coefficient of Variation Values for the Research Sample in the Variables of Age and Years of Service

Research Sample	Variables	Mean	Standard Deviation	CV Value
Specialized Supervisors	Age (years)	40.33	5.58	10.83
	Years of Service (years)	11.66	2.66	8.23

It is evident from Table (3) that the CV values for both age and years of service among supervisors are less than 30%. This indicates homogeneity of the research sample in these two variables. *“The closer the CV is to 1% and the farther it is from 30%, the higher the homogeneity”* (Al-Tikriti & Al-Obaidi, 1999, p.161). This procedure was conducted after distributing the personal and academic information forms to the specialized supervisors (Appendix 2), on Wednesday, September 10, 2025.

6 Design of the Training Program

After reviewing blended instructional design models such as Khan’s Model, Dick & Carey Model, Kemp Model, Al-Faqi Model, and the ADDIE Model, the researcher found that most

agree on the essential and subsidiary design steps. Therefore, the researcher adopted the **ADDIE Model** as the general instructional design framework for implementing the training program, as it is comprehensive and serves as the basis from which other models are derived.

-6-1 Analysis Phase

This phase included the following procedures:

6-1-1 Analysis of Target Group Characteristics: The researcher identified the characteristics of the target group (research sample) as follows:

- Members of the research sample had no prior participation in training programs or courses related to supervisory competencies (independent variable) during service. This was verified through communication with the Educational Supervision Department at the beginning of the program.
- All members of the research sample hold a **Bachelor's degree in Physical Education and Sports Sciences**, with actual supervisory service ranging between 10–15 years (conditions for granting specialization as an educational supervisor).
- All members of the research sample have experience and knowledge in using computers, the internet, and related applications. This was clarified during initial meetings with them regarding participation in the online classroom and submission of program lectures.
- Homogeneity was ensured among the research sample in the variables of age, years of service, and cognitive achievement of supervisory competencies.

6-1-2 Identification of Key Supervisory Competencies: Determining the needs of the research sample is the foundation of any training program, as training aims to meet specific needs and develop essential tasks related to the trainee's work. To identify the most important supervisory competencies, the researcher reviewed several sources and studies related to supervisory competencies, including: Al-Qasim & Al-Zubaidi (2009), Al-Muqbal (2019), Al-Khashab (2020), Rantisi (2022), Abu Areiban (2022), Flifel (2022), Al-Omari (2022), Al-Madawi & Al-Omari (2024), Khawaji & Al-Absi (2025), Al-Dawood (2026).

Based on this review, the researcher extracted a number of supervisory competencies, presented them in a questionnaire (Appendix 3), and consulted specialists in teaching methods of physical education and educational supervision (Appendix 4). Competencies with agreement rates above 75% were adopted. These included:

- Planning
- Guidance and Coordination
- Administrative Leadership
- Human Relations
- Professional Communication
- Evaluation of the Educational Process

6-1-3 Preparation of Training Program Content (Scientific Lectures): The researcher prepared the scientific material for the training program based on the intended objectives, after reviewing relevant literature and sources. The program sessions included: session title, general and specific objectives, educational environment requirements, presentation method, and training session flow.

The researcher ensured that:

- Content was linked to program objectives and the needs of the research sample.
- Lectures on supervisory competencies were integrated and sequential, completing one competency before moving to the next.
- Content was appropriate to the level of the research sample. The lectures were reviewed by experts and supervisors, who provided valuable feedback incorporated into the final version (Appendix 5).

6-1-3 Distribution of Program Lectures (Face-to-Face and Online): For implementation, the researcher reviewed prior studies and determined that the best distribution was a mix of face-to-face and online lectures. The program included **18 sessions**:

- 12 sessions delivered online
- 6 sessions delivered face-to-face

Schedule:

- **Saturday & Monday (9:00 PM):** Online sessions (60 minutes each)
- **Wednesday (9:30 AM):** Face-to-face session (90 minutes, including a 10-minute break) to discuss the content of the previous two online sessions.

Sessions were held at the Educational Supervision Department Hall. A questionnaire was distributed to verify the appropriateness of this distribution, and experts approved it (Appendix 6).

6-1-4 General Objectives of the Program: The general objective of the training program was defined as:

- Developing the most important supervisory competencies of physical education supervisors in Nineveh Governorate.

6-1-5-1 Cognitive Achievement Test for Supervisory Competencies: To achieve the research goal of developing cognitive achievement of supervisory competencies, the researcher found no existing test tailored to this specific sample. Therefore, a new test was constructed based on scientific principles of achievement test design.

Steps included:

- **Defining the purpose of the test:** To measure cognitive achievement of the key supervisory competencies identified earlier.
- **Determining the number and distribution of items:** The researcher reviewed prior studies and sources on measurement, evaluation, and test construction. Items were designed to comprehensively cover the training program content and supervisory competencies. A questionnaire was used to determine cognitive objectives and their distribution according to Bloom's taxonomy (knowledge, comprehension, application, analysis, synthesis, evaluation).

Experts were consulted to determine appropriate percentages for each level. The final agreed distribution was:

- Knowledge: 8%
- Comprehension: 12%
- Application: 25%
- Analysis: 10%
- Synthesis: 10%
- Evaluation: 35%

(Appendix 7 shows details of this process.)

Formulation of Test Items

- The items of the **cognitive achievement test** were formulated based on the cognitive objectives of the scientific material in the training program content, using the **objective test format (multiple choice)**. The items were aligned with the six cognitive levels of Bloom's taxonomy, according to the percentages determined by experts and specialists.

Determining the Relative Weight of Competencies

The researcher determined the relative weight of each scientific topic in the program (supervisory competencies) based on the proportion of pages devoted to each topic in the training program content (total = 70 pages).

Formula used:

Relative Weight = $\frac{\text{Number of pages for competency}}{\text{Total number of content pages}} \times 100$

Determining the Number of Items for Each Competency

To determine the number of items for each competency according to the cognitive objectives previously mentioned, the researcher used the following formula:

Number of items per competency = $\text{Total number of items} \times \text{Objective concentration ratio} \times \text{Objective percentage}$

The initial version of the test prepared by the researcher consisted of **60 items**, distributed according to the percentages specified for Bloom's cognitive levels.

6-2 Analysis of Training Tasks

To complete the procedures of the research experiment and achieve its objectives, the researcher analyzed the tasks and requirements for implementing the program, which included:

- Creating an electronic study group on **Telegram** named *Teaching Skills*, bringing together trainees and the research sample to explain training material and answer questions.
- Laptop connected to the internet for educational supervisors.
- Electronic files (PDF, PowerPoint) containing the scientific material of training sessions.
- Embedding a **Google Meet** link in the study group for live online sessions.
- Providing a classroom at the Educational Supervision Directorate for face-to-face sessions.
- Equipment and supplies for in-person sessions (whiteboard, colored markers, laptop, projector).
 - Trainer and participant training program guide (hard and soft copy)—session schedule, how the training will be conducted, and actual training activity content.

3-6-3 Design Phase

This phase included the following procedures:

6-3-2 Identification of Learning Elements and Resources:

- In-person education: Open discussion between the lecturer and participants, held in the Educational Supervision Directorate meeting hall, reviewing the content of the previous two online sessions, in addition to examples and applications. The content used in the experiment consisted of scientific material and videos that illustrate supervisory competencies in a practical way, displayed with a projector.
- E-learning tools: The scientific material was shown live through Google Meet with PDF, PowerPoint, and YouTube. To foster engagement and perform a diagnosis, advance through sessions and also at the end, we included interactive activities throughout the sessions.

Program Content:

- Online sessions: center on knowledge and information pertinent to supervisor skills, activities are interactive in the middle of the session and final projects submitted electronically.
- In-person sessions: take place at the Educational Supervision Directorate which discusses the online assignments, evaluates the supervisory competencies, displays sample physical education lessons, and assigns trainees to implement competencies in schools.
- Assignments and tasks: Theoretical activities you (a) worked on after each online session (b) sent over electronically and (c) talked about in person during the next session.
- Examples of Lessons: plans and video excerpts of physical education lessons delivered through projector in face-to-face meetings.

- **Practical training:** After each session, participants were guided to practice supervisory skills in schools, which served as formative evaluation.

6-3 Development Phase

- This stage included reading elements initially for a Mixed learning Program consisting of
- **In-Person Tools:** An opportunity for open discussion, Printed material relevant to the training
- **E-learning:** online sessions, interactive synchronous activities, asynchronous materials (PDF, PowerPoint, recorded sessions, YouTube videos)

Preparations included:

- Availability and Preparation of Devices and Materials.
- Sending the participants the program guide (both printed and electronic).
- Implementing the enhanced blended learning approach, which focuses on online learning while incorporating in-person sessions.
- Taking lectures from scientific, expert-reviewed sources,

6-4 Implementation Phase

Steps included:

- **Pre-test application**– After preparing research Tools and making a statistical condition check.
- o October 15, 2025: Cognitive or Pre-test for managerial skills
- **Implementation of program:** Enrolled in the main research sample from 15 noviembre 2025 to 31 diciembre 2025.
- o Online session duration: 60 minutes.
- o Face-to-face session duration: 90 minutes (including 10-minute break).
- o Total program time: 1,050 minutes.
- **Post-test application:** Conducted after program completion.
- o January 7, 2026: Post-test of supervisory competencies and psychological resilience scale.

6-5 Evaluation Phase

This phase aimed to verify program effectiveness in achieving its objectives by applying tools to the research sample (supervisory competencies test and psychological resilience scale). Evaluation was conducted in three stages:

- **Pre-training evaluation:** Applying the supervisory competencies test before program implementation to establish baseline and homogeneity.
- **During-training evaluation:** Through activities within and at the end of each session, as well as assignments and tasks.
- **Post-training evaluation:** Reapplying the cognitive achievement test after program completion and analyzing differences between pre- and post-test results.

7 Information Collection Methods and Research Tools

-7-1 Information Collection Methods:

- Scientific sources
- University theses and dissertations
- Scientific journals
- Internet resources
- Personal interviews
- Personal information forms for participants
- Questionnaires

7-2 Research Tools:

7-2-1 Scientific Validity of the Cognitive Achievement Test for Supervisory Competencies

7-2-1-1 Content Validity of Test Items: Content validity is considered the most appropriate type of validity for use. *“If a test achieves a high level of content validity, this indicates that it represents the total content around which the evaluation revolves”* (Melhem, 2000, p.274).

Content validity is achieved through two methods:

1. **Review and analysis of previous studies.**
2. **Logical reasoning**, which relies on:
 - Consulting experts (judges).
 - Personal expertise (Allawi & Radwan, 2000, pp.260–261).

The researcher ensured content validity of the test items by applying both methods: reviewing scientific sources and logical reasoning through expert consultation and personal expertise. The test adopted **objective multiple-choice items with four alternatives**, containing one correct answer, ensuring objectivity in evaluation.

The initial version of the cognitive achievement test consisted of **60 items**.

Table (4) Percentages of Experts' Agreement on the Items of the Cognitive Achievement Test for Supervisory Competencies

Item No.	Agreement %	Item No.	Agreement %	Item No.	Agreement %	Item No.	Agreement %
1	92.30%	24	84.61%	47	100%		
2	84.61%	25	84.61%	48	100%		
3	100%	26	92.30%	49	92.30%		
4	92.30%	27	84.61%	50	69.23%		
5	92.30%	28	61.53%	51	100%		
6	69.23%	29	84.61%	52	92.30%		

7	76.92%	30	84.61%	53	92.30%		
8	76.92%	31	92.30%	54	100%		
9	100%	32	84.61%	55	84.61%		
10	53.84%	33	100%	56	84.61%		
11	84.61%	34	84.61%	57	76.92%		
12	84.61%	35	92.30%	58	84.61%		
13	100%	36	100%	59	76.92%		
14	92.30%	37	92.30%	60	84.61%		
15	92.30%	38	92.30%				
16	92.30%	39	76.92%				
17	92.30%	40	76.92%				
18	76.92%	41	84.61%				
19	92.30%	42	53.84%				
20	84.61%	43	84.61%				
21	76.92%	44	92.30%				
22	92.30%	45	92.30%				
23	76.92%	46	100%				

It is evident from Table (4) that the percentages of experts' agreement on the test items varied. The researcher adopted items with agreement rates of **75% or higher**, following the acceptance criteria (Al-Husseini, 2010, p.26). Accordingly, **5 items were excluded** for not meeting the minimum acceptance threshold, resulting in the acceptance of **55 items out of 60**.

1. Exploratory Experiment of the Supervisory Competencies Test

To verify the clarity of test items and determine the appropriate response time, the researcher applied the test to a sample of **10 physical education supervisors**. The results showed:

- The test was valid for application to the current study sample, as participants responded actively and willingly.
- The average time required to answer the test was **35 minutes**, which was deemed sufficient.

This exploratory experiment was conducted on **Wednesday, September 17, 2025**, in the Educational Supervision Department Hall, Nineveh Directorate of Education.

2. Discriminant Validity of Test Items

a. Item Difficulty and Ease Index: To identify items with appropriate difficulty and ease, the test was applied to the full construction sample of **120 supervisors**:

- Erbil and Duhok branches: September 21–22, 2025
- Nineveh supervisors: September 24, 2025

Correct answers were scored as (1), incorrect answers as (0).

Formula:

Difficulty Index = $\frac{\text{Number of correct answers}}{\text{Total number of responses}} \times 100$

Ease Index = $1 - \text{Difficulty Index}$

(Radwan, 2006, p.219)

Table (5): Difficulty and Ease Indices of Test Items (*Values presented as in original Arabic table, showing item numbers and difficulty indices.*)

The researcher adopted difficulty indices between **20–79**, as Radwan (2006, p.320) notes that items within this range are acceptable and discriminative. Items below or above this range were excluded. As a result, **3 items were excluded**, leaving **52 items accepted out of 55**.

b. Item Discrimination Index: Defined as “*the ability of a test to show differences in the trait it measures between contrasting groups*” (Kawafha, 2005, p.116).

To calculate discrimination, the researcher ranked item data descending and divided the sample into:

- **Upper group:** 23 supervisors (27%)
- **Lower group:** 23 supervisors (27%)

Formula:

Discrimination Index = $\frac{\text{Correct answers in upper group} - \text{Correct answers in lower group}}{\text{Number of individuals in one group}}$

(Radwan, 2006, p.328)

Table (6): Item Discrimination Indices (*Values presented as in original Arabic table, showing item numbers and discrimination indices.*)

Items with discrimination indices of **30 or higher** were accepted (Radwan, 2006, p.330). Two items were excluded for low discrimination, resulting in **50 items accepted out of 52**.

c. Overall Test Discrimination Index: To assess the overall discriminative power of the test, the researcher applied the **contrasting groups method** to the entire test.

Table (7) presents the overall discrimination index values.

Table (7) Shows the discrimination of the cognitive achievement test items for supervisory competencies as a whole

Group	Mean	Standard Deviation	Calculated (t) Value	Significance Level
Upper Group	36.00	4.44	18.77	0.000
Lower Group	13.16	2.61		

It is clear from Table (7) that the calculated (t) value between the two groups for the whole test is significant, as the significance level is smaller than the error rate adopted in the study, which is (0.05).

d- Internal Consistency Coefficient: *"The discrimination coefficient between the upper and lower groups measures the strength of discrimination of each item, but does not determine the homogeneity of the items in measuring the behavioral phenomenon. Therefore, the internal consistency coefficient is used to provide evidence of item homogeneity"* (Mansour, 2001, p.59).

The internal consistency coefficient *"is the correlation coefficient between the score of each item and the total score of the scale"* (Kazem, 1994, p.113). The researcher relied on the internal consistency coefficient in analyzing the test items after applying Pearson's simple correlation coefficient, and items that were not discriminative were deleted.

Table (8)

Shows the internal consistency coefficient of the cognitive achievement test items for supervisory competencies

Item	r	Sig.	Item	r	Sig.	Item	r	Sig.	Item	r	Sig.
	Value			Value			Value			Value	
1	0.31	0.00*	14	0.47	0.00*	27	0.40	0.00*	40	0.41	0.00*
2	0.29	0.00*	15	0.25	0.00*	28	0.37	0.00*	41	0.43	0.00*
3	0.17	0.03*	16	0.46	0.00*	29	0.39	0.00*	42	0.17	0.02*
4	0.53	0.00*	17	0.40	0.00*	30	0.30	0.00*	43	0.21	0.01*
5	0.39	0.00*	18	0.19	0.02*	31	0.30	0.00*	44	0.18	0.02*
6	0.42	0.00*	19	0.45	0.00*	32	0.27	0.00*	45	0.33	0.00*
7	0.25	0.00*	20	0.25	0.00*	33	0.19	0.01*	46	0.27	0.00*
8	0.46	0.00*	21	0.23	0.00*	34	0.22	0.00*	47	0.29	0.00*
9	0.29	0.00*	22	0.27	0.00*	35	0.17	0.03*	48	0.29	0.00*
10	0.30	0.00*	23	0.25	0.00*	36	0.37	0.00*	49	0.29	0.00*
11	0.17	0.02*	24	0.31	0.00*	37	0.29	0.00*	50	0.24	0.00*
12	0.40	0.00*	25	0.47	0.00*	38	0.31	0.00*			
13	0.30	0.00*	26	0.39	0.00*	39	0.27	0.01*			

- Significant at level (sig) ≤ 0.05

It is clear from Table (8) that the internal consistency coefficient for all test items of supervisory competencies is significant, which means that all correlation coefficients are statistically significant, and each item is highly correlated with the total test score. This indicates that all items are valid in measuring what they were designed for and consistent with each other.

7-2-1-2 Test Reliability by Split-Half Method

The split-half method is based on calculating the correlation coefficient between individuals' scores on two halves of the test, corrected using the **Spearman–Brown formula** (Radwan, 2006, p.112).

To ensure reliability and consistency of test scores, the researcher divided the test into 25 odd-numbered and 25 even-numbered items for 50 reliability forms. The correlation coefficient (r) between the two halves was **0.85**, corrected to **0.91** using Spearman–Brown.

This procedure was conducted on **October 12–13, 2025**, with the reliability sample.

7-2-1-3 Final Version of the Test

The final version of the cognitive achievement test for supervisory competencies consisted of **50 items**, each worth one point, for a total score of **50**. Appendix (8) shows the final items and answer key.

Table (9): Final Specifications of Cognitive Achievement Test Items According to Bloom's Cognitive Levels

Competency	Pages	Concentration %	Knowledge (8%)	Comprehension (13%)	Application (21%)	Analysis (10%)	Synthesis (13%)	Evaluation (35%)	Total Items
Educational Planning	10	14.29%	1	1	2	1	1	1	7
Coordination & Guidance	16	22.86%	1	1	3	1	1	4	11
Administrative Leadership	12	17.14%	1	1	2	1	1	3	9
Human Relations	7	10.00%	0	1	1	1	0	2	5
Communication	9	12.86%	0	1	2	0	1	2	6

Education al Evaluation	16	22.86%	1	1	3	1	1	5	12
Total	70	100%	4	6	13	5	5	17	50

3-7-2-1-4 Initial Application of the Test

After completing the construction of the test, it was applied to the research sample on **October 15, 2025**, in the Educational Supervision Hall. The time allotted was **35 minutes**. This procedure served as the **pre-test**.

Table (10): Statistical Parameters of the Pre-Test for Supervisory Competencies

Sample	Mean	Standard Deviation
Physical Education Supervisors	29.78	7.23

4-1 Presentation and Discussion of the First Hypothesis

4-1-1 Hypothesis 1: There are statistically significant differences between pre-test and Existence of statistically significant differences between the values of the pre-test and post-test results in developing the most important supervisory competencies of specialized educational supervisors, in favor of the post-test results. To verify this hypothesis, a paired *t*-test was applied, and Table (13) shows this:

Table (13) Shows the mean, standard deviation, and *t* value between the pre-test and post-test in developing the most important supervisory competencies of specialized supervisors

Program	Variables	Test	Mean	Std. Dev.	Calculated <i>t</i>	Sig. Value	Significance
Blended Training Program	Supervisory Competencies	Pre	29.78	7.23	6.78	0.001	Significant
		Post	40.28	5.36			

Significant at error margin $\leq (0.05)$

It is clear from Table (13) that there are statistically significant differences between the pre-test and post-test results in developing the most important supervisory competencies, with significance level smaller than the error rate of (0.05), in favor of the post-test, as indicated by the higher mean.

The researcher attributes this to several scientific reasons:

- **Effectiveness of the blended training program in improving supervisory knowledge:** The blended program provided multiple opportunities to acquire theoretical knowledge related to

educational supervision through combining e-learning and face-to-face training, which helped in deeper understanding compared to traditional methods. The variety of learning sources and the ability to revisit training content reinforced knowledge and expanded professional awareness. *“Studies have confirmed that blended training provides greater educational richness and flexibility in learning and helps trainees link theory and practice more effectively”* (Wu et al., 2020: 248).

- **Variety of educational experiences leading to competency development:** The blended training environment allowed supervisors to learn through multiple methods (lectures, discussions, online activities, case studies, practical assignments), engaging them actively in the learning process. *“Studies indicated that blended programs provide multiple learning styles that allow trainees to interact with content, trainers, and peers more deeply, positively reflecting on professional performance”* (Dyrstad et al., 2024: 7).
- **Continuous feedback improving supervisory performance:** The blended program provided immediate and sustained feedback during both face-to-face and online activities, helping supervisors identify strengths and weaknesses and gradually improve. “
- **Educational literature has taught us that feedback is among the most powerful means of increasing professionalism, as feedback addresses incorrect and maladaptive behavior by correcting errors and reinforcing desired behavior** (Wu, 2021: 21).
- **BY THIS REASON**, blended learning created the opportunities to supervisors learn at their own pace, review the materials, and deal with different learning styles. Al-Arifi notes that *“literature on blended supervision competencies confirms that using digital technologies in professional development leads to better acquisition of intellectual and technical competencies needed for supervisory positions”* (176, 2025)
- **Enhanced practice — professional team leader interaction:** The program facilitated the sharing of experiences — the participants shared supervisory experience and discussed specific supervisory issues, developing collective knowledge and practice. *“Research indicates that trainee interactions are one of the most significant factors in improving professional practice and enhancing educational practice”* (Owston et al., 2008: 206).
- **Programing fit-for-purpose:** The human side, as previously indicated, pulled from the real needs of the supervisors, making its content highly relevant to their work and professional realities. Contemporary Arab studies proved that professional development and e-supervision programs are effective in developing performance and electronic competencies of supervisors when based on their actual professional needs (Al-Shahri, 2022: 134).
- **Example Quotes from the Evaluation Report**· Building their confidence and skills relating to work: The blended program improved supervisors’ self-efficacy: The respondents expressed through training completion and conducting the activities, increased competency to do their supervisory roles. The study *“confirmed that trainees with blended programs had higher self-efficacy and professional confidence from their performance”* Kim et al. 2025: 204).
- **Practical applications:** The program created opportunities where participants could apply communication skills as well as team management, the use of digital technologies in supervision, and evaluation of performance on an ongoing basis. *“This serves as a testament*



to how blended programs successfully offer, the practical application of supervisory skills” (Al-Abisi, 2025 : 157)..

- **Program content linked to real supervisory practice:** The training content was connected to real problems and situations faced by supervisors, making learning meaningful and directly transferable to practice. *“Studies confirmed that using case studies and situational learning in blended training improves decision-making and problem-solving skills”* (Dyrstad et al., 2024: 9).
- **Flexibility and self-learning opportunities:** Supervisors were able to learn at their own pace and review materials anytime, which respected individual differences and improved benefit from the program. *“Studies showed that the flexibility of blended training helps trainees take responsibility for their learning, increases motivation and independence, and positively impacts achievement and professional competence”* (Wu et al., 2020: 252).

Conclusions

1. The blended training program was effective in developing the supervisory competencies of physical education supervisors in Nineveh Governorate.
2. The integration of face-to-face and online training created a flexible learning environment that enhanced supervisors’ competencies in planning, organization, evaluation, communication, and educational guidance.
3. Continuous blended training contributes to improving supervisors’ professional performance and keeping pace with modern educational developments.

Recommendations

1. Adopt the blended training program in preparing and qualifying physical education supervisors.
2. Expand the implementation of blended training in professional development programs and provide the necessary administrative and technical support.
3. Urge supervisors to take an active role in ongoing professional development activities.
4. Do more Empirical research for blended instruction from different educational organization and evaluate their effect on other variables of professional competence, job satisfaction climate, and phase quality of supervisory OP.

Suggestions

- Organize periodic training courses targeting the development of modern supervisory competencies among educational supervisors.
- Conduct similar studies on supervisors of other educational specializations to verify the effectiveness of blended training programs in different contexts.

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