

Verifying the Effect of an Educational Program on Developing Social Intelligence among Preparatory-Stage Female Students

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Abstract

The present study aimed to verify the effect of an educational program on developing social intelligence among preparatory-stage female students, and to reveal the differences between the experimental and control groups in the pre- and post-administrations. The study adopted the experimental method with an equivalent-groups design. The research sample consisted of (60) female students of the fourth preparatory grade in the center of Nineveh Governorate for the academic year (2025–2026), distributed into four groups—two experimental and two control—after establishing equivalence among them in the variables of the pretest, chronological age, and the father's and mother's educational attainment.

The two research instruments were the educational program, consisting of (20) lessons in addition to an introductory lesson, delivered at a rate of four sessions per week, each lasting (40) minutes, and the Social Intelligence Test (Idham, 2009). The psychometric properties of both instruments were verified: the experts' agreement rate on the test items reached (98%), and the test-retest reliability coefficient was (0.72).

The results showed that preparatory-stage female students possess a high level of social intelligence compared with the hypothetical mean of the scale, and that the educational program had a statistically significant effect at the (0.05) level on developing social intelligence in favor of the post-administration, in addition to statistically significant differences between the experimental and control groups in the post-administration in favor of the experimental group. In light of the results, the study recommended integrating social intelligence skills into school curricula and activities, and training teachers and educational counselors to employ educational and counseling programs in developing it.

Keywords: Educational Program; Social Intelligence; Preparatory-Stage Female Students.

1. Introduction

The contemporary world is witnessing rapid transformations across various social and technological domains, which have led to clear changes in the nature of human relationships and patterns of interaction among individuals. This has created an urgent need to develop mental and social capacities that enable the individual to adapt to these changes, and social intelligence stands at the forefront of these capacities as a fundamental factor in the individual's success in social interaction (Amin, 2022, p. 112). Social intelligence is considered one of the core concepts in educational psychology, as it refers to the individual's ability to understand others, perceive their feelings, and interact with them effectively in various social situations, thereby contributing to the achievement of psychological and social adjustment (Al-Shujairi & Rashid, 2021, p. 85).

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Educational and psychological studies have confirmed that social intelligence is closely associated with a number of behavioral variables; it contributes to reducing aggressive behavior and increasing cooperative behavior, and it strengthens effective communication skills, which makes it an important indicator of students' psychological and social health (Al-Zoubi, 2011, p. 233). Its importance is particularly evident during adolescence, which is considered one of the most sensitive stages in an individual's life due to the rapid psychological, emotional, and social changes it involves—changes that require possessing sound social interaction skills—and the preparatory stage constitutes an appropriate context for studying these variables (Widaa, 2023, p. 141).

In the local context, recent field studies conducted at the University of Mosul have documented the spread of negative thinking patterns among students. AL-Ogaidi and Al-Dulami (2025) found that second-year students in the colleges of the University of Mosul possess twisted and radical thinking, with a strong direct relationship between the two patterns, which may cause a decline in their academic and social abilities in the future; their study emphasized the impact of these negative thinking patterns on students' academic and social life and the need to develop positive thinking skills to confront them (AL-Ogaidi & Al-Dulami, 2025). Such findings underscore the importance of structured educational programs that develop learners' social and cognitive capacities—foremost among them social intelligence—as a protective and developmental factor within the school environment.

Despite the importance of social intelligence, the educational literature indicates variation in its level among students as a result of differences in the social environment, child-rearing styles, educational conditions, and individual differences (Al-Shujairi & Rashid, 2021, p. 91). Certain manifestations of weakness in social interaction skills can also be observed among preparatory-stage female students, such as difficulty in effective communication, weak ability to form positive social relationships, and the emergence of some patterns of maladjusted behavior (Widaa, 2023, p. 145). Accordingly, the research problem can be summarized in answering the following two questions:

- What is the level of social intelligence among preparatory-stage female students?
- Is there a statistically significant effect of the educational program on developing social intelligence among preparatory-stage female students?

1.1. Significance of the Research

In recent years, educational systems have undergone a qualitative shift toward adopting approaches that focus on the holistic development of the human being, such that the role of the school is no longer confined to transmitting knowledge but extends to developing the social and emotional aspects that help the learner interact effectively within society (UNESCO, 2023, p. 18). Recent literature indicates that an individual's success in professional life is linked to the ability to manage social relationships effectively (Trilling & Fadel, 2009, p. 56). Modern trends in educational psychology emphasize the importance of programs built on developing social skills, given their evident effect in reducing behavioral problems within schools and increasing students' self-discipline (Taylor et al., 2017, p. 1158). Moreover, social skills acquired in the school environment are among the important predictive factors of future academic and professional success (National Research Council, 2012, p. 23).

The preparatory stage is one of the stages that requires targeted educational interventions, given the changes it entails in the student's social structure, as the student begins to rely more heavily on peers in shaping behaviors and attitudes (Eccles & Roeser, 2011, p. 229), in addition to the distinctive nature of this stage for female students in forming social relationships and constructing personal identity (WHO, 2022, p. 34). Furthermore, adopting structured training methods within the school environment helps bring about measurable changes in students' behavior (Zins et al., 2004, p. 10).

Accordingly, the theoretical significance of the research lies in enriching the educational and psychological literature with a modern knowledge framework on social intelligence among preparatory-stage female students, while its practical significance lies in providing an educational program applicable within schools that contributes to developing social intelligence skills, assists teachers and educational counselors in improving the quality of interaction within the learning environment, and provides field data that supports educational decision-makers in developing instructional programs.

Research Objectives

The present research aims to identify:

- The level of social intelligence among preparatory-stage female students.

- The effect of the educational program on developing social intelligence among preparatory-stage female students.
- The differences in the level of social intelligence between the pre- and post-administrations among the experimental group students.
- The differences in the level of social intelligence between the experimental group students and the control group students in the post-administration.

1.2. Research Hypotheses

To achieve the research objectives, the following null hypotheses were formulated:

- There are no statistically significant differences at the (0.05) significance level between the mean of the students' scores in social intelligence and the hypothetical mean of the scale.
- There is no statistically significant effect at the (0.05) significance level of the educational program on developing social intelligence among the research students between the pre- and post-administrations.
- There are no statistically significant differences at the (0.05) significance level in the level of social intelligence between the experimental group students and the control group students in the post-administration.

Limits of the Research

The present research is limited to female students of the fourth grade of the preparatory stage in the center of Nineveh Governorate, for the academic year (2025–2026).

Definition of Terms

- The Educational Program: Ornstein and Hunkins (2018) defined it as: “an integrated system of educational procedures and activities built on scientific foundations and implemented within a specified time frame, with the aim of developing cognitive, skill-based, or affective aspects in a targeted group of learners” (Ornstein & Hunkins, 2018, p. 212). Al-Laqrani and Al-Jamal (2017) defined it as: “a set of planned and organized learning activities and experiences delivered according to specific objectives, seeking to bring about desirable changes in learners' behavior, knowledge, and attitudes through well-considered teaching methods” (Al-Laqrani & Al-Jamal, 2017, p. 45).
- Operational Definition of the Educational Program: The set of structured lessons prepared according to scientific foundations, amounting to (20) lessons in addition to an introductory lesson, applied to the students of the two experimental groups with the aim of developing their social intelligence.
- Social Intelligence: Idham (2009) defined it as: “the ability to interact with others; it constitutes a balanced blend of sensing others' needs and their explicit and implicit interests, and of acquiring a set of skills that enable the individual to succeed in interacting with them at any time and in any place” (Idham, 2009, p. 14). Beauchamp and Anderson (2017) defined it as: “the ability to process social information, understand others' intentions, and employ this understanding to guide social behavior appropriately” (Beauchamp & Anderson, 2017, p. 296).

Theoretical Definition: The researchers adopted the definition of Idham (2009), as they relied on her scale.

Operational Definition: The total score obtained by the student according to her responses to the items of the Social Intelligence Test adopted in this research and in accordance with the applicable scoring criteria.

2. Theoretical Framework and Previous Studies

2.1. Theoretical Framework

Social intelligence is one of the pivotal concepts in contemporary psychology, representing a dimension of intelligence that goes beyond traditional cognitive abilities to encompass the individual's capacity to interact with others and understand the dynamics of social relationships (Marlowe, 2018, p. 12). It falls within the framework of multiple intelligences, which affirms the plurality of human abilities; success is not confined to intellectual intelligence but depends to a large extent on the individual's skills in dealing with and understanding others (Gardner, 2016, p. 43). It is also interpreted in light of social cognitive theory, which views human behavior as the product of an interaction between cognitive processes and environmental and social factors (Bandura, 2018, p. 102).

Social intelligence is linked to the individual's ability to process social information, including perceiving nonverbal cues, understanding others' intentions, and interpreting social situations (Crick & Dodge, 2016, p. 78). Empathy is one of its essential components, as it enables the individual to understand others' feelings and respond to them appropriately (Decety & Cowell, 2017, p. 5), in addition to effective communication skills (Riggio, 2019, p. 210). The literature indicates that it consists of several dimensions, most notably: social awareness, social skills, and relationship management (Goleman, 2017, p. 84); that it develops across the lifespan and is reinforced during adolescence as a result of increased peer interaction (Wentzel, 2017, p. 315); and that it is influenced by family upbringing styles, the school environment, and societal culture (Bornstein, 2019, p. 156). Recent studies confirm that it can be developed through structured training and educational programs focusing on communication, empathy, and social problem-solving skills (Jones & Kahn, 2017, p. 14).

Theories Explaining Social Intelligence: Gardner's theory of multiple intelligences is among the most prominent theories explaining it, as it holds that intelligence is not limited to general mental ability but consists of several relatively independent types, among them social intelligence, represented in the individual's ability to understand others and interact with them effectively; it is not fixed but can be developed through experience and training (Al-Zaghoul, 2021, pp. 215–217). Bandura's social learning theory also explains it through its emphasis on the role of the environment and social interaction in acquiring behavior via observation and imitation of the models surrounding the individual, and the role of reinforcement in consolidating desirable social behaviors, which indicates the possibility of developing social intelligence through educational programs based on modeling and training (Al-Atoum, 2018, pp. 178–181). The present educational program was built upon the premises of these two theories.

2.2. Previous Studies

Idham's Study (2009): It aimed to construct an educational program for developing social intelligence among fourth-grade (scientific and literary) female students and to prepare a test to measure it. It adopted the experimental method with a sample of (64) female students distributed into two experimental and two control groups, and a program of (20) lessons was applied over three months. The results showed a statistically significant effect of the program in favor of the post-administration, with no differences attributable to the track variable (Idham, 2009).

Ahmed's Study (2021): It aimed to identify the level of social intelligence and its relationship to certain demographic variables among university students, adopting the descriptive method. The results showed that students possess a moderate to high level of social intelligence, with significant differences according to some variables (Ahmed, 2021).

Denham et al.'s Study (2016): It aimed to examine the role of social intelligence and social skills in school adjustment among primary-stage children, adopting the experimental method. The results showed that developing social skills contributes directly to improving social interaction and adjustment within the school environment (Denham et al., 2016).

Taylor et al.'s Study (2017): It aimed to analyze the effect of school-based programs grounded in social-emotional learning (SEL) on developing social skills through a meta-analysis of a large number of studies. It showed that these programs lead to a clear improvement in social behavior and interactive skills, supporting the developability of social intelligence (Taylor et al., 2017).

Shalabi et al.'s Study (2025): It aimed to test the effectiveness of a counseling program based on developing social skills and emotional intelligence in reducing bullying behavior, with a sample of (283) participants. The results demonstrated the effectiveness of the program in enhancing social skills (Shalabi et al., 2025).

Comparison of the Present Research with Previous Studies: The previous studies agreed that social intelligence is developable and positively associated with a number of variables. The experimental studies (Idham, 2009; Denham et al., 2016; Shalabi et al., 2025) demonstrated the effectiveness of educational and counseling programs in developing it, and the study of (Taylor et al., 2017) confirmed this through meta-analysis. The present research agrees with Idham's study (2009) in method, target population, and instrument, and differs from it in the research population and its time frame. The researchers benefited from the previous studies in formulating the objectives, selecting the sample and statistical methods, and interpreting the results.

3. Research Methodology and Procedures

3.1. Research Method

The research adopted the experimental method with an equivalent-groups, pretest-posttest design, given its suitability to the nature and objectives of the research.

3.2. Research Population

The research population consisted of female students of the fourth grade of the preparatory stage in the center of Nineveh Governorate for the academic year (2025–2026), numbering (132,261) students according to the statistics of the General Directorate of Education in Nineveh.

3.3. Research Sample

A purposive sample of (80) fourth-grade (literary and scientific) female students was selected from Al-Houd Secondary School for Girls and Fatima Al-Zahraa Secondary School for Girls, with (40) students from each school. After excluding students who had repeated a grade and selecting students of corresponding ages born in (2009–2010), the total number of sample members became (60) students, distributed into four groups: two experimental groups (32 students) and two control groups (28 students). The reliability sample of (40) students was also selected from the same two schools, from outside the main sample.

Table 1 Distribution of the experimental and control research groups

Group	Literary-Track Students	Scientific-Track Students	Total
Experimental	11	21	32
Control	13	15	28
Total	24	36	60

3.4. Equivalence of the Research Groups

Establishing equivalence among the research groups is a fundamental methodological requirement in experimental studies, in order to strengthen internal validity and ensure that differences in the dependent variable are attributable to the independent variable rather than to extraneous factors (Creswell & Creswell, 2021, p. 178; Shadish et al., 2022, p. 55). The four groups were equated on the following variables using one-way analysis of variance (One-Way ANOVA):

- The pretest: the calculated F-value was (0.69), which is smaller than the tabulated value (2.76) at the (0.05) significance level with degrees of freedom (3, 56), indicating the equivalence of the groups on the pretest.
- Chronological age (calculated in days up to 1/10/2025): the calculated F-value was (0.591), which is smaller than the tabulated value (2.77), indicating the equivalence of the groups in chronological age.
- The father's educational attainment: the calculated F-value was (1.018), which is smaller than the tabulated value (2.77), indicating equivalence in this variable.
- The mother's educational attainment: the calculated F-value was (1.806), which is smaller than the tabulated value (2.77), indicating equivalence in this variable.

Table 2 Results of the one-way ANOVA for the equivalence of the four groups on the research variables

Variable	Calculated F-Value	Tabulated F-Value	Significance Level	Significance
Pretest	0.69	2.76	0.05	Not significant
Chronological age	0.591	2.77	0.05	Not significant
Father's educational attainment	1.018	2.77	0.05	Not significant
Mother's educational attainment	1.806	2.77	0.05	Not significant

Based on the foregoing, it can be concluded that the research groups possess a high degree of equivalence on the studied variables, which strengthens the internal validity of the study and increases the strength of the causal interpretation of the results (Shadish et al., 2022, p. 62).

3.5. The Experimental Design

The equivalent-groups, pretest-posttest design was adopted, as shown in Table (3).

Table 3 The experimental design of the research groups

Group	Pretest	Independent Variable	Posttest
G1: Experimental – Fourth Literary	✓	Educational Program	✓
G2: Experimental – Fourth Scientific	✓	Educational Program	✓
G3: Control – Fourth Literary	✓	—	✓
G4: Control – Fourth Scientific	✓	—	✓

Extraneous variables were controlled through the researchers teaching the program themselves; the control group being located in a different school to prevent contamination of the experiment; maintaining complete confidentiality regarding the research objectives; adopting an indirect approach with the students; and standardizing the duration of the experiment. No cases of dropout or discontinuation were recorded during the application.

3.6. The Two Research Instruments

A. The Educational Program: The program was prepared based on the program of (Idham, 2009) and consisted of (20) lessons in addition to an introductory lesson for acquaintance and for specifying the aim of the program and its components, bringing the total number of lessons to (21). Each lesson includes: an introduction (5 minutes); a presentation of the topic with illustrative examples (13 minutes); enrichment (3 minutes); group discussion (12 minutes); deriving and recording general principles (7 minutes); and a homework assignment discussed in the following lesson. The lesson topics included: social skills, evaluation, conviction, how to express one's presence, purpose, authenticity and trustworthiness, satisfaction, confronting problems, eye contact, friends, handling mistakes, and other topics related to social intelligence skills.

Validity of the Program: Face validity was employed by presenting the program to a group of experts and specialists in the field of education and psychology to judge the suitability and importance of its lessons. The program obtained an agreement rate of (100%), and none of the lessons was removed.

B. The Social Intelligence Test: The researchers adopted the Social Intelligence Test prepared by (Idham, 2009). The maximum score of the scale is (250) and the minimum score is (49), with a hypothetical mean of (150).

Validity of the Test: Test validity refers to the test's ability to measure what it was designed to measure (Stanley & Hopkins, 1972, p. 101), and the best way to ascertain it is to present its items to a group of experts to judge their suitability for measuring the attribute for which they were designed (Allen & Yen, 1979, p. 69). The face validity of the test was established by presenting its items to a group of experts specialized in psychology and in measurement and evaluation, and the items obtained an agreement rate of (98%).

Reliability of the Test: Reliability was computed using the test-retest method by administering the test to the reliability sample of (40) students on (20/11/2025) and re-administering it on (10/12/2025), i.e., after two weeks—an appropriate interval, as Adams indicates that the time interval for re-testing should not exceed two to three weeks (Adams, 1964, p. 20). The correlation coefficient between the scores of the two administrations was (0.72), which is statistically significant, indicating that the test possesses acceptable reliability.

Application of the Educational Program: The pretest was administered on (26/2/2026), and the application of the program began on (1/3/2026) at a rate of four lessons per week, each lasting (40) minutes, and ended on (7/4/2026); the posttest was then administered on (9/4/2026). The students of each experimental group were divided into small groups of (4) students each, headed by one of them who acted as its spokesperson.

Statistical Methods: The research data were processed statistically using the Statistical Package for the Social Sciences (SPSS). The methods included: one-way analysis of variance (One-Way ANOVA), the one-sample t-test, the paired-samples t-test, the independent-samples t-test, and the Pearson correlation coefficient.

4. Presentation and Discussion of the Results

4.1. Results Related to the First Hypothesis

To verify the first hypothesis, which states that: “There are no statistically significant differences at the (0.05) significance level between the mean of the students' scores in social intelligence and the hypothetical mean of the scale,” the one-sample t-test was used to compare the arithmetic mean of the sample's scores with the hypothetical mean of (150), as shown in Table (4).

Table 4 Results of the one-sample t-test comparing the mean social intelligence score with the hypothetical mean

Variable	N	Mean	Standard Deviation	Hypothetical Mean	Calculated t-Value	Tabulated t-Value	Significance
Social intelligence	60	166.2	5.80	150	21.6	2.04	Significant

It is evident from Table (4) that the calculated t-value (21.6) is greater than the tabulated value (2.04) at the (0.05) significance level, indicating a statistically significant difference between the arithmetic mean of the students' scores (166.2) and the hypothetical mean of the scale (150) in favor of the arithmetic mean. The null hypothesis is therefore rejected, and it is concluded that preparatory-stage female students possess a high level of social intelligence. This finding is consistent with the results of (Ahmed, 2021), which showed that students possess a moderate to high level of social intelligence, and it can be interpreted in light of the nature of the social and school environment, which provides multiple opportunities for social interaction among the students.

This result is also consistent with what AL-Ogaidi (2026) found regarding students of the Faculties of Education for Humanities and Pure Sciences at the University of Mosul, who were shown to possess healthy thinking characterized by a positive outlook, intellectual flexibility, and self-awareness in managing the crises they face. AL-Ogaidi attributed this to the city's historical cultural diversity, which fostered students' intellectual flexibility and prompted them to adapt to this diversity, in addition to community initiatives that turned challenges into opportunities for constructive dialogue, concluding that healthy thinking is not merely an individual skill but the product of an interaction between the self and the complex environment (AL-Ogaidi, 2026, p. 2037). The high level of social intelligence observed among the present research sample may accordingly be viewed as another manifestation of these adaptive social and cognitive capacities within the same local environment.

4.2. Results Related to the Second Hypothesis

To verify the second hypothesis, which states that: “There is no statistically significant effect at the (0.05) significance level of the educational program on developing social intelligence among the research students,” the paired-samples t-test was used to compare the mean scores of the experimental group students in the pre- and post-administrations, as shown in Table (5).

Table 5 Results of the paired-samples t-test measuring the effect of the educational program

Group	N	Mean	Standard Deviation	Calculated t-Value	Tabulated t-Value	Significance
Pretest (Experimental)	32	165.7	3.80	14.5	2.04	Significant
Posttest (Experimental)	32	176.5	4.50			

It is evident from Table (5) that the calculated t-value (14.5) is greater than the tabulated value (2.04) at the (0.05) significance level, indicating statistically significant differences between the two mean scores of the experimental group students in the pre- and post-administrations in favor of the post-administration; the null hypothesis is therefore rejected. This result demonstrates the positive effect of the educational program on developing social intelligence and is consistent with the findings of (Idham, 2009) and (Denham et al., 2016), both of which confirmed the effectiveness of educational programs in developing social skills. It can be interpreted in light of the topics, activities, and group discussions included in the program, which allowed the students to practice social interaction skills and apply them in a variety of real-life situations—an outcome consistent with the premises of social learning theory concerning the acquisition of behavior through modeling and reinforcement.

4.3. Results Related to the Third Hypothesis

To verify the third hypothesis, which states that: “There are no statistically significant differences at the (0.05) significance level in the level of social intelligence between the experimental group students and the control group students in the post-administration,” the independent-samples t-test was used, as shown in Table (6).

Table 6 Results of the independent-samples t-test in the post-administration

Group	N	Mean	Standard Deviation	Calculated Value t-	Tabulated Value t-	Significance
Experimental (Posttest)	32	176.5	4.50	11.8	2.04	Significant
Control (Posttest)	28	164.5	3.90			

It is evident from Table (6) that the calculated t-value (11.8) is greater than the tabulated value (2.04) at the (0.05) significance level, indicating statistically significant differences between the two mean scores of the experimental and control groups in the post-administration in favor of the experimental group; the null hypothesis is therefore rejected. This result confirms the effectiveness of the educational program in developing social intelligence among the research students, as the difference between the two groups is attributable to the effect of the independent variable (the educational program) after controlling extraneous variables and establishing equivalence among the groups. This finding is in line with the conclusion of the meta-analysis in (Taylor et al., 2017) that structured school-based programs produce a clear improvement in social behavior and interactive skills, and with the results of (Shalabi et al., 2025) regarding the effectiveness of programs based on developing social skills.

5. Conclusions

In light of the results reached by the research, the following can be concluded:

- Social intelligence can be developed among preparatory-stage female students using the educational program, as the differences between the two mean scores of the experimental and control groups were statistically significant in favor of the experimental group; that is, the program made the experimental sample students more capable of generating ideas and comprehending social situations.
- The educational program has a clear effect in increasing the social intelligence scores of the experimental group, as the difference between the means of the pre- and post-tests was statistically significant in favor of the posttest.
- The track variable (scientific/literary) played no role in the variation of the effect produced by the program, indicating that the program affected the sample members equally after controlling the other variables.

Recommendations

In light of the research results, the researchers recommend the following:

- Making the present educational program available to educators and counselors in preparatory schools for use in counseling sessions.
- Incorporating into school curricula and activities topics concerned with developing social intelligence skills, so as to equip students with the ability to deal with the problems and various situations of daily life.

- Administering social intelligence tests to students at different educational stages for diagnostic purposes and for identifying social skills, thereby facilitating the counseling units' guidance and care of students.
- Organizing in-service training courses for preparatory-stage teachers that emphasize methods of developing students' social intelligence skills.
- Employing visual and print media in raising awareness of the importance of social intelligence in building students' personalities.

Suggestions

As a complement to the present research, the researchers suggest the following:

- Conducting a similar study on a sample of male students and comparing its results with those of the present research.
- Conducting a similar study on other samples in the various governorates of Iraq.
- Conducting similar studies on different educational stages, from kindergarten through university.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that they have no conflict of interest.

Statement of ethical approval

All procedures performed in this study involving human participants were conducted in accordance with the ethical standards of the relevant educational authorities. Permission to conduct the study was obtained from the Directorate General of Education in Nineveh and the administrations of the participating schools.

Statement of informed consent

Informed consent was obtained from all participating students, their teachers, and the school principals prior to their participation in the study.

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