The Extent to Which Special Education Students Have the Skills of Scientific Research

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Abstract--- The present study aimed at revealing the range of knowledge female students of the special education department, faculty of Education of Princess Nourah University have on the skills of scientific research. The study adopted the quantitative approach in collecting and analyzing data. Two measures were developed by the researchers (a questionnaire and an achievement test). The tools of the study were applied to a sample of (344) students of the special education department at different levels and specializations (learning disabilities and autism). The data were analyzed using the statistical package (SPSS). The results showed that the knowledge of scientific research skills female students have, was good. The results also indicated that the level of students' achievement in the achievement test of scientific research skills was weak. The results showed that the perceptions of female students about their knowledge of scientific research skills do not comply with the actual achievement on the achievement test. Several recommendations were presented by the study, including increasing the interest in teaching scientific research courses with non-traditional strategies, and increasing scientific research courses in undergraduate study plans.

Keywords--- Scientific Research Skills, Special Education, Female Special Education Students.

I. INTRODUCTION

Scientific research is one of the basics with which progress of countries start. Hence, both developed and developing countries have been interested in scientific research because of its major role in modernizing societies, producing and developing knowledge. Therefore, one of the most important aspects of the qualitative development of nations in modern times is its interest to scientific research including financial and moral support given to it because scientific research is one of the main reasons for the advancement and progress in technological, medical, educational, economic, social, cultural and psychological fields of life. Universities are usually considered the ideal place for scientific research on whose objectives advancement of scientific research community service and issues of environment depend. The National Development Plans of the Kingdom pay special interest to scientific research. The Eighth Development Plan included strategies to reinforce and develop research in the Kingdom's universities and can develop scientific personality of the student. The importance of scientific research lies in helping the student to seek for facts to discover new horizons of knowledge and to present his views frankly and freely. Scientific research is an opportunity to develop student's critical reading skills, problem solving in an innovative way, critical thinking and acquisition of communication skills and finally self-confidence, in addition to scientific writing. The scientific research skills are also an opportunity for the student to practice sober scientific writing in compliance with the dominating rules (Al-Shalash, 2015).

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Scientific research is based on solving problems efficiently and objectively. Modern scientific revolution would not have been achieved without the proper scientific approach in achieving human knowledge. Therefore, educational institutions at all levels of schools and universities include subjects and courses in educational curricula (Al-Rafiee 2016).

Thus, mastering the skills of scientific research has become a necessity for countries, especially developing ones. Every nation or society aspires to achieve advancement, global competitiveness and leadership, or even to overcome its problems. Therefore, the importance of scientific research must be recognized (Al-Khatib and Al-Khatib, 2008).

The student represents one of the axes of the educational process in higher education in which scientific research represents an opportunity to develop the student's personality through practice. Accepting this challenge will let him discover the abilities and possibilities that he possesses, if hedoes not feel it. Scientific research is an opportunity for the student to develop critical reading skills, critical thinking, problem solving and creative decision-making in addition to other skills such as self-confidence, communication skills and scientific writing (Al-Qarni, 2016).

The problem of weakness in possessing the skills of scientific research among university students in general represents a major obstacle for the university to achieve its goals in raising graduates who have an important means of progress in possessing the talent of scientific research. Laure(2003) pointed out that there are obvious errors in the design of educational research. He attributed this to the lack of seriousness of some studies and research through errors committed in the procedures of implementation, and undervaluing the importance of data needed for comparisons, where most researchers lack the required information.

The importance of possessing scientific research skills by which scientific errors are avoided while conducting it is indicated by (Baumberger and Bangert's, 2004) study which stated that 80% of the (174) educational researches published in the journal of Learning Disabilities from 1989 to 2004 were inappropriate procedure wise, 55% of the statistical methods employed were preliminary, 32% of those methods were normal, and 14% were statistically advanced.

The importance of scientific research lies in that it is the main gateway to get knowledge which is the ultimate outcome of scientific research. Therefore, development processes in developed countries revolve around the concept of establishing what is known as society knowledge. So, knowledge has become the main source of any aspired development (Alshaye, 2015).

In the light of the belief in the importance of scientific research in the advancement of nations, the Arab Gulf States, especially Saudi Arabia, have long time ago stressed the role that this research can play in achieving their progress. Although scientific research is practiced in many institutions, universities are the most important institutions to practice this activity due to the huge number of researchers working in such institutions in all specializations with quantity and quality that may not be repeated anywhere. Recently, the role of universities is no more solely limited to education. It went beyond that as the university is now based on three main axes identical equilateral triangle with education or teaching as the first side, while the second side is scientific research, and the third side represents community service (Al-Arishi, 2008).

1.1 Problem of the Study

Scientific research in humanities, especially in the field of special education, is of a particular importance because this specialization is modern compared to specializations in humanities and education. There are still many theories and methods of dealing with students with disabilities under experimentation which depend on constant renewed field practices. Therefore, it was necessary for female special education students to possess the cornerstone of scientific research in methods, approaches and procedures accredited by human and educational research. Due to the aforementioned, researchers were prompted to investigate the extent of which the female students of special education have regarding scientific research. Such students will be the basic building block for future researchers, irrespective of the nature of their work whether it was teaching or working with societies that deal with people with disabilities, or being graduates. All such works need development and improvement. Having research skills will enable them to do so; otherwise they won't be able to make any development and improvement based mainly on the different methods and skills of scientific research. Therefore, the current study attempts to identify the extent of scientific research skills female students of special education have.

1.2 Objectives of the study

The aim of the study is to monitor the extent to which special education students possess of scientific research skills. In addition to this general goal, the researchers seek to achieve a number of objectives among which are the following:

1. Identify scientific research skills available for special education students, department of special education, college of education at Princess Nora Bint Abdul Rahman University.

2. Identify the actual level of achievement of students at the special education department of scientific research skills and their awareness about their skills.

3. Present several recommendations for the development of scientific research relevant to its results.

1.3 Study terminology

The Skill: It is performing an act with a certain degree of speed and performance, with an economy in the effort exerted. This develops as a result of the learning process. The skill in this study measures the grades the students obtained on the scale of scientific research prepared for this study.

Scientific Research

The concept of research can be defined as an organized intellectual process which investigates facts about a particular issue or problem called subject of the research, using an organized scientific method known as research method, in an attempt to come up with appropriate solutions for the problem, or results valid for generalization at similar problems called research results.

The skills of scientific research in this study are measured by the grades of the students according to the tools prepared for this study.

Students of Special Education Department

They are the female students enrolled at the department of special education, College of education, Princess Nourah University for the academic year (2018-2019) specializing in: learning difficulties and autism.

1.4 Questions of the Study

The current study seeks to answer the following questions focusing on the range of knowledge students of special education have about scientific research skills. The questions are as follows:

1. What is the extent students of the special education department at Princess Nourah University have regarding scientific research from their own perspective?

2. What is the actual achievement level do students of special education have regarding scientific research skills?

3. What is the actual achievement level do students of special education have with regard to scientific research skills, and how do they perceive that?

1.5 Significance of the Study

The study stems its significance from the following:

- Identifying the extent of scientific research the extent to which do students of special education have.
- Focusing on, special education, which is considered an advanced field distinguished from other fields of education in being an active search movement. In addition, the sample of the study includes undergraduate students of freshman level, thus can make up for any cognitive deficiency related to scientific research.

1.6 Limitations of the study

The study limits are as follows:

1. Human limitation: female students of the department of special education, college of education, Princess Nourah Bint Abdul Rahman University, for the academic year 2018-2019.

2. Space limitation: female students of the department of special education, at Princess Nourah Bint Abdul Rahman University.

3 Time limitation: academic year 2018-2019.

II. REVIEW OF LITERATURE

In reviewing the theoretical literature of a certain group of studies which examined scientific research, the two researchers were able to view a group of theses relevant to the subject and sample of the current research. These studies are:

Al-Zoghoul and Al-Handal (2016) conducted a study aimed at revealing the level of scientific research competencies among graduate students at the Arab Gulf University and revealing the differences in these competencies according to gender variables, type of program and degree. The sample of the study included (60) students and the tool was applied to the respondents of the study which consisted of (49) items related to the

competencies and skills of scientific research. The results showed that the level of scientific research competencies was higher than the virtual mean of most of the tool items.

Al-Rafi'I's study (2016) aimed to reveal the extent to which graduate students at King Khalid University possessed the skills of scientific research, its problems and ways to overcome them from their point of view. The study used the mixed (quantitative - qualitative) method. The study sample consisted of (465) graduate students, (60) master's theses and doctoral dissertations. The study found that graduate students possess advanced skills in scientific research, but they have problems with application. It was found that there were differences with statistical significance according to the specialization, the stage of study, type of study and gender. It was also found that the most important solutions to these problems, from their point of view, focused on the practical aspect.

Abu Awad and Al-Qahwaji (2016) both conducted a study aimed at developing the skills of scientific research test among colleges of education students in Arab universities and investigated its psychometric characteristics according to classical and modern measurement theory. In order to achieve the goal of the study, a multiple-choice test in scientific research skills was built. The final form of the test was made of (88) items. The results showed that the test reflected good psychometric characteristics according to the classical theory.

Al-Qarni's (2016) study aimed at identifying the weakness in the scientific research skills of middle and high school students in Al-Namas governorate. The study used the descriptive survey method. The sample was chosen from middle and high school students from all classes of (300) students. The researcher designed a questionnaire to identify the reasons for the weakness in scientific research skills formed of three areas, namely: reasons related to the student, reasons related to school environment and reasons related to the family. The results indicated that the reasons for the weakness of students in the scientific research skills related to the student ranged from (1.19 - 1.95). The results, also, indicated that the reasons for the family ranged from (1.17- 1.95), while the mean values of the reasons for the school environment ranged between (1.76 -2.24). Based on the results, the study recommended disseminating the culture of scientific research practice at the general education stage.

Al-Asiri (2008) conducted a study aimed at determining the basic competencies in the educational statistics of graduate students of the college of education at Umm Al-Qura University in the light of some variables (gender, stage, specialization).An achievement test in the basic competencies of educational statistics was applied to (271) male and female students of the master and doctoral levels. The results showed a decrease in the basic competencies in the educational statistics of graduate students of higher studies in the college of education in the total or sub-results of the test. There were also no differences with statistical significance in competencies in the basic educational statistics in general which might be attributed to the difference in the study level or to gender, but there were differences with statistical significance in the basic skills attributed to difference in specialization.

Al-Ra'jouni's (2007) study aimed to identify the research skills (Using the library, preparing and writing the research, writing reports) and the importance of presentation skill in teaching social materials. The research also aimed to describe its actual application in teaching. The survey method was used in the study whose sample consisted of (130) male and (150) female teachers of social subject sat the intermediate and secondary stages in Buraidah. The researcher used the questionnaire as a research tool. Through the analysis of the data, the study

showed that both male and female teachers were convinced that the skills of using library, preparing and writing the research were important as they rated high, while the presentation skill was of medium importance from the viewpoint of the study sample.

Comments on the Previous Studies

By reviewing the previous studies, it might be said that the researchers were able to identify the theoretical framework of those studies to identify it in the current study in terms of: its objectives, significance, sample selection, study methodology, preparation of the study tools in terms of fields and expressions it contains, identifying the statistical methods and presenting and interpreting the results. It was obvious that there was a consensus on the importance of scientific research. The current study agreed with some previous ones on the population and sample of the study like that of Abu Awad and Al-Qahwaji (2016).It also agreed with that of Al-Ra'jouni (2007) in terms of methodology of using descriptive method, but disagreed with other studies. The present study was singled out for combining the tools: the questionnaire and the achievement test, in addition to its questions.

III. METHODS AND PROCEDURES

3.1 Study Methodology

In this study, the researchers used the quantitative approach typified in the descriptive, casual comparative and analytical method.

3.2 Study Population

The study population comprised female students from the department of special education (majoring in learning difficulties and autism) college of education, Princess Nourah Bint Abdul Rahman University, from sixth to eighth level, enrolled at the department in the academic year 2018 – 2019.

3.3 Study Sample

The study population consisted of the available sample of students of special education specializing in learning difficulties and autism, and enrolled in the department in the academic year 2018-2019. The study tools (the achievement test and the questionnaire) were distributed electronically. The sample consisted of (344) students from the special education department: (100) students studying learning difficulties, (111) autism, and(133) third and fourth level students prior to specialization at all levels of study.

3.4 The Psychometric Characteristics of the First Tool (the Questionnaire)

3.4.1Validity of the first tool (the Questionnaire)

The researchers developed the study tool which aims to answer the study questions, after studying the most important research skills that university students should possess by reviewing the university's study plans and reviewing the most important scientific references approved for teaching the scientific research course at the university. The aim was to build the first tool, the questionnaire, in order to measure the degree of scientific research skills female students of special education at the University of Princess Nourah have.

The method of pre-and post application was used to evaluate the validity coefficient of the tool. The validity sample included 50 randomly selected students from the college of education, special education department. The questionnaire was reapplied to the same students after a four-week interval. The correlation coefficient of total students' answers of the two applications was calculated. It was found that the coefficient between them was(0.82) as an estimate of the coefficient of validity which is acceptable for the purpose of conducting this study.

3.4.2 Reliability of the First Tool (the Questionnaire)

3.4.3 Reliability of Internal Uniformity

Reliability of internal uniformity was verified by calculating the Pearson correlation coefficient between the total number of all items of the questionnaire and the total number of each paragraph. The results showed that the correlation coefficient revealed a strong direct proportion with a statistical significance($\alpha \geq 0.01$) for all items of the questionnaire, except for items 7 in which the correlation coefficient was (0.321). This ratio expresses a strong direct proportion but in statistical significance of($\alpha \geq 0.05$)which indicates that all items of the questionnaire are appropriate in terms of internal reliability.

3.4.4 Correction of the First Measurement (the Questionnaire)

The students' responses were distributed on the questionnaire items in accordance with Likert scale (always, often, sometimes, rarely, never), with grades (1, 2, 3, 4, 5) for all items, respectively. Accordingly, the total score of the scale ranged between (38 -190). Since the response to the items of the scale is limited to (1-5) degrees, then the extent of possessing the scientific research skills in this study has been divided into three categories: excellent, average, and weak. Thus, the top score of item (5) was divided into (3) levels, and the result was (1.33). The researchers adopted this number, to be the length of student's category. Levels of students were as follows:

Excellent level: (3.68 - 5)

Average level: from (2.34 -3.67)

Weak level: (1 - 2.33)

3.4.5 Validity of the second tool (the Achievement Test)

After applying the test on the exploratory sample of (49) students, and providing data to the statistical analysis program SPSS, the researchers came up with the following results:

First, the Kronbach alpha coefficient was used for the items of the test which were 0.92, i.e, validity coefficient - internal uniformity of test items - was 92%. This percentage is considered acceptable and good for scientific research purposes.

3.4.6 Second: items discrimination index

The discrimination coefficients of the test items were calculated. The researchers concluded that the discrimination coefficients for the items ranged between (0.04) and (0.80) and that was considered acceptable in terms of the coefficient of discrimination as that index exceeded (0.20) except for the first and tenth items which were considered weak because their discrimination index was less than 20%. The difficulty coefficients of the test

items were calculated. The results showed that the difficulty coefficients ranged between (0.39) and (0.94) Since the acceptable tolerance coefficient is between 20% and 80%, the accepted items in terms of difficulty coefficient are items (2, 3, 5, 6, 9, 10, 11, 12, 13, 14). The remaining items are considered weak in terms of coefficient difficulty because they exceeded 80% which means that they are very easy items answered by most students.

3.4.7 Validity of the second tool (the Achievement Test)

The internal validity of the tool was achieved. The Pearson correlation coefficient was calculated between the overall number of test items and the total for each item. The researchers found that the Pearson correlation coefficient between the total number of test items and the sum of each item expresses a strong positive relationship with statistical significance ($\alpha \leq 0.01$) for all test items except for item 24, with a correlation coefficient of (0.168). Although it indicates a positive relationship, it is a weak and statistically insignificant relationship, indicating that all test items are appropriate in terms of internal validity except for item 24.

3.4.8 Correcting the second tool (the Achievement Test)

The test was automatically corrected. It was designed objectively (multiple choice) and the score was calculated and corrected automatically for each student.

IV. RESULTS AND DISCUSSION

4.1 Results of the study and discussion

In order to answer the first question: regarding the level of students' achievement of scientific research skills from their point of view, the researchers exported the responses of the students to the questionnaire prepared for this purpose on the **SPSS**. The researchers analyzed the responses of the students using the descriptive statistics by finding the totals, the means and the standard deviations for each item of the questionnaire. Statistical analysis was also used in one sample (T) Test. The following table (1) shows the total for each item of the questionnaire in addition to the mean, the standard deviation and the order of the item compared with the rest of the items.

Table (1) shows the total outcome for each item of the questionnaire in addition to the arithmetic mean, the standard deviation and the order of the items to compare with the rest of the items.

Serial No.	Item Context	No.	Total	Arith. Mean	Standard Deviation	Item Order
1	The concept of scientific research is clear to me.	344	1356	3.94	1.70	9
2	I am well aware of the characteristics of scientific research.	344	1252	43.6	.850	14
3	I seriously understand the objectives and function of scientific research.	344	1318	33.8	6.70	10
4	I fully understand the importance of scientific research.	344	1417	24.1	9.60	4
5	I know what is meant by ethics of scientific research.	344	1413	14.1	3.80	5
6	I can distinguish between scientific research methods (historical approach, descriptive approach, experimental approach.	344	1309	13.8	.950	11
7	I can distinguish between variables of study (dependent and independent).	344	1232	3.58	.910	15

8	I know very well what is meant by the theoretical framework and previous studies.	344	1290	3.75	.870	12.5
9	I know what study population means.	344	1485	24.3	8.60	2
10	I know what study sample means.	344	1480	4.30	3.70	3
11	I have sufficient knowledge of research tools in human sciences (questionnaire, interview, observation).	344	1510	94.3	5.70	1
12	I understand the meaning of psychological characteristics (Psychometric) validity and reliability.	344	1388	4.03	6.90	6
13	I understand the meaning of study questions and hypotheses.	344	1366	3.97	.930	8
14	I can search for various researches and different studies through traditional and digital databases.	344	1202	3.49	21.0	17
15	I understand what the documentation techniques are: research body, and its end.	344	1289	53.7	90.0	12.5
16	I am well aware of the basic principles of ethics of scientific research.	344	1369	83.9	.990	7
17	I have knowledge of the most important publishing methods (scientific journals) concerned with my specialization.	344	1208	3.51	1.06	16
18	I have knowledge of data analysis and statistical processing.	344	1079	43.1	1.12	18

Table (1) shows that the number of students who responded to the questionnaire was (344). The arithmetic mean of their answers was (69.66) out of(90) and the standard deviation is (9.30). The table also shows that the item that scored highest was no. 11 which rated (4.39) out of 5, followed by item 9, with an average of (4.32), followed by item 10, with an average of(4.30), while item 18 scored the lowest (3.14) out of 5.

To determine the significant difference between the average of the students' answers to questionnaire items and the mean of the questionnaire itself, the researchers used the one sample (T) test. The results were as follows in the following table:

Table (2) shows the results of the one sample (T) test.

Group	No. Respondents	Arith. mean	Standard Deviation	Degrees of Freedom	(T) Calculated Value	Statistical Significance
	344	69.66	9.30	343	31.243	0.000

Mean of questionnaire = 54 which is the average rating value of questionnaire (3) multiplied by the number of items.

The above table shows that the number of students was (344) and the arithmetic mean of their answers to questionnaire items was (69.66)out of 90, the degrees of freedom were (343) and the calculated values of (T) was (67.155). Since the statistical significance was (0.000) or less than (0.05).This means that there were differences with statistical significance of ($\alpha \leq 0.5$) between the average responses of the students to the questionnaire and the mean of the questionnaire in favor of students' responses.

It is clear from what preceded that the students of the department of special education possess the skills of scientific research at a good level, and that they are well-acquainted with the skills of scientific research and related terms and vocabulary. The researchers attribute this to the fact that faculty members focus on teaching scientific research courses which provide students with the basic skills of these courses. The results also indicate that students

are weak in terms of information related to data analysis and statistical treatment. The researchers attribute this weakness to this vocabulary (data analysis and treatment) which students of higher studies specifically face. This represents the practical side of research. Students of the graduate level are not usually exposed to such things. This proves the validity of students' response to items of the research tool, the questionnaire. The results of this question comply with the study of Al-Rafi'i (2016), Al-Zoghoul and Handal (2016) and Al-Asiri (2008).

4.2 Answering the second question related to the actual level of students' achievement in scientific research skills

In answering the two questions of the study, the researchers examined students' answers to the test set for this purpose on the statistical analysis program **SPSS**. Then the researchers determined the total number of answers for each item of the test then analyzed that using descriptive statistics by finding the total, the arithmetic mean and standard deviation. The statistical analysis was also used for (T) test for a single sample. The results were as follows:

Table (3) shows the arithmetic mean, total standard deviation for the answer of each student to test items.

No. of Respondents	Total	Arithmetic mean	Standard Deviation
344	3046	14.43	5.128

In order to identify the difference with significance between the average of students' answers to the test items and the degree that is considered "good", the researchers used the one-sample (T) test. The results were as follows in the following table:

Table (4) shows the results of the one-sample (T) test.

Group	Calculated (T) Value	Degrees of Freedom	Standard Deviation	Arith. mean	No. of Respondents	Statistical Significance
	-10.096	210	35.1	414.4	344	0.000

The good score = 18 out of 24: 75%

The above-mentioned table shows that the number of female students who responded to the test was (344), the arithmetic mean was (14.44) out of (24), and the standard deviation was (5.13). The degrees of freedom were (210) and the calculated value of (T) was (-10.096). Since the statistical significance is (0.000), less than (0.05), this means that there are differences with statistical significance of($\alpha \leq 0.5$) between the average of the students' answers to the questionnaire and the good grade in favor of the good grade. This indicates that the level of achievement of the students of scientific research skills is weak.

Results of this question regarding the practical side of the students' possession about information related to the scientific research skills, apparently reveal that the level of female students is weak, in the sense that the students' response to the questionnaire indicated that they had good information about the skills of scientific research, while their results of the test were not good. The researchers attribute this difference to several reasons, one of which is that sometimes faculty member lack command of these skills. This weakness may be due to the method of teaching based on memorization and spoon-feeding but not to correlating the skill to the practical side. This led to the difference found between the results of the students regarding the questionnaire and their performance in the achievement test. Students usually think they have mastered research skills. However, the real test of these skills

indicates the opposite, that is, the students do not really comprehend or understand such skills perfectly. In other words, the scientific research skills of the students as revealed through the test were not good.

4.3 Answering the third question: related to the actual level of students' achievement of scientific research skills and their perceptions about their level.

To answer the study question, the researchers calculated Pearson's correlation coefficient between the total number of students of the test and the total number of the questionnaire. The number of female students who answered the test and the questionnaire was (344) students. The results were as follows:

Table (5) shows the number of students, their mean and their standard deviation in the test and questionnaire.

The Tool	Number	Mean	Standard Deviation
The Test	344	414.4	35.1
The Questionnaire	344	869.5	69.3

Table (5) shows that the number of students who responded to the test and the questionnaire together was (344). The mean of the students in the test was (14.44) out of (24), standard deviation was (5.13), while their mean in the questionnaire was (69.58) out of 90 and the standard deviation was (9.36).

Table (6) shows the results of Pearson correlation coefficient between the total number of the test and the questionnaire for each student.

	The Test	The Questionnaire
The Test Coefficient Correlation Pearson Statistical Significance Number	1 344	0.063 0.361 344
The Test Coefficient Correlation Pearson Statistical Significance Number	0.063 0.361 344	1 344

The above table shows that the number of students who responded to the test and the questionnaire together was (344), and Pearson correlation coefficient between the test results and the questionnaire was (0.063). This means that there is no relationship between the results of the students on the test and the questionnaire because the correlation coefficient value is close to zero. This confirms the value of the statistical significance of (0.361), which is much higher than (0.05). The above-mentioned facts show that the perceptions of the students about their knowledge of scientific research skills do not correspond to their actual achievement.

The results of this question agree with the previous question (question 2),that students' belief that their scientific research skills not match with their results of the achievement test. The researchers attribute this weakness to the method of teaching scientific research course based on memorization, spoon-feeding and lack of interest in the practical side, in addition to weak cognitive and practical formation of these skill swhich should be accompanied by

practical side of the theoretical information that matches with practice. The researchers believe that the above-mentioned led to a discrepancy between the students' perception of their knowledge about scientific research and reality of the achievement test, which covered most basic information in the field of scientific research skills. It is worth mentioning that this question and the previous one were not discussed by previous studies, to the knowledge of the researchers. Researchers believe that one tool (questionnaire) should not be sufficient to identify the skills of scientific research as this tool alone may have inaccurate results. This is what the results of this study came up to.

V. RECOMMENDATIONS

In the light of the findings of the study, the researchers recommend the following:

1. To teach scientific research courses for students using non-traditional methods and strategies.

2. To pay more attention to the practical aspect of the application during the presentation of vocabulary of the course.

3. To increase courses of scientific research skills in undergraduate study plans.

4. To encourage students to prepare and write scientific research, and publish the distinguished ones.

5. To conduct further studies on other larger samples of female students and different disciplines.

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