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The Level of Trust in Science Teachers Among Students of the Scientific Stream At Secondary Education and its Relationship to Some Variables

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Abstract

The study aimed to investigate the level of trust in science teachers among students of the scientific stream at secondary education and its relationship to gender, future orientation, school type, and teachers' specialization variables. The descriptive correlational approach was used in addition to a questionnaire applied to (1030) male and female students from the scientific stream in public and private schools in Irbid Kasbah Directorate of Education. The results indicated that the level of students' trust in science teachers was medium. There were statistically significant differences in the level of students' trust in science teachers attributed to gender and teachers' specialization in favor of males and life science teachers respectively. While there were no statistically significant differences attributed to the variables of students' future orientation and school type. In light of the results, the study recommended educating teachers about the importance of having a strong bond of trust with their students, holding training courses that foster teachers' communication skills and giving students appropriate guidance and support according to their needs. The study further recommended conducting more research on the concept of trust, taking into account other variables such as stress, tension, and academic achievement.

Keywords: Trust in teacher; scientific stream; Science teachers; Secondary education.

Introduction

Most of the developmentally important and precious years of students' life are spent at school; passing the general secondary examination is the most important as it sets the stage for the rest of their academic years and future career. Time spent in secondary school can be viewed as the last period of preparation for students to learn and prepare for university education, careers, and future life. Only after secondary education, students will be exposed to the actual world, learn about their strengths, interests and goals that are governed by certain cultural contexts and socio-economic considerations.

Between the demands of school and the pressures of society, secondary education students are under a tremendous amount of stress. More work and thoughts of life after graduation are the drumbeat of secondary education these days. Furthermore, a lot of pressure is put on college selection and admittance, which is a major life choice. The denial or not having the desired specialization in light of the result of the general secondary exam can feel like a personal failure in front of their families and society.

in the field of education have recognized the importance of the teacher at this pivotal stage. Secondary education teachers play an essential role in preparing students for college or life following graduation, and considered a key influence in their behavior, thought and abilities.

According to Hegazy (1986), a positive relationship with students is close and supportive. Teacher-student relationship as a human relationship is based on affection, compassion and mutual respect, so that the teacher creates an atmosphere of intimacy, sets high expectations, communicates with students constantly and strives to keep the relationship conflict-free.

Additionally, there is an educational relationship between the student and the teacher. The student looks at the teacher as a source of knowledge and a basic reference when facing a challenging topic. The teacher's competence in teaching became an important aspect to develop students' trust towards them. If students trust their teachers, they will be more able to focus on the task at hand and to learn more effectively. This calls for teachers to be knowledgeable and assist students in learning new information and skills while addressing their weaknesses (Al-Nsour, 2004).

Education is a bi-polar process, at the one end is the teacher and at the other end is the student. This relation requires interaction and trust between the two

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poles, the teacher trusts the abilities of his students and the students trust the ability of their teacher as a person who is able to overcome obstacles and let them feel confident through exploration and taking risks in their academic tasks. (Al-Nsour, 2004).

The phenomenon of trust has been extensively explored by a variety of disciplines across the social sciences, including economics, social psychology, and political science. Deutsch (1973) defined trust in his study, which was one of the first empirical studies concerned with this concept in the twentieth century, as a person's expectation of an event that will produce positive results if his expectations are met. It is also defined as the individual's thinking that he will mostly find what he hopes for.

Kurnianingsih et al. (2012) defined trust as the individual's desire to automatically communicate with a specific person, and launched the so-called trust-building term on a model consisting of three elements: 1) The ability to trust others based on their previous experiences. This means that individual must be knowledgeable or skillful in the area that is important to the trustor 2) the ability to recognize the outstanding performance of others due to their competence in performing in certain situations 3) the ability to anticipate how to work together.

Desouki (1998) considers that the concept of trust is the individual's willingness to engage in a relationship with the other party based on his own previous experience. The need for trust arises from the interdependence between two parties; people often depend on others to help them obtain the outcomes they value which led to granting trust between the interacting parties.

According to the American Psychological Association (APA Dictionary of Psychology) trust is relying on the dependability of someone or something. It refers to the confidence that a person or group of people has in the reliability of another person or group; the degree to which each party feels that they can depend on the other party to do what they say (VandenBos, G.R., & American Psychological Association Staff, 2015).

Falcon and Castelfranchi (2002) believe that trust is a multi-dimensional and related to oneself and the other at the same time. Anyone could trust himself, trust in groups, and trust in others because of their internal self-characteristics or because of external factors. They dealt with trust from a social cognitive approach and reported that the word 'trust' may be used for indicating three levels : the individual's evaluation of the trustee before relying on him, taking the decision of relying on the trustee and the action of trusting which the actual depending upon the trustee.

The concept of trust is one of the widely spread educational and psychological concepts that is based on philosophical and theoretical grounds. Rotter (1980) dealt with this concept in the so-called social learning theory, presenting the concept of trust in a social context, whereby any specific behavior in certain situations depends on what the individual expects of support and evaluation from others based on a written discourse or a verbal promise they have already made.

Rempel et al., (1985) identified three components of trust: predictability, dependability, and faith. The predictability of an individual's behavior is influenced by a host of factors such as the consistency of recurrent behavior, the stability of the social environment and the functional reinforcements and restraints on behavior. In the dependability domain, as relationships progress there is an unavoidable shift in focus away from assessments involving specific behaviors, to an evaluation of the qualities and characteristics attributed to the individual. Thus, trust is placed in a person, not their specific actions. Faith domain reflects an emotional security on the part of individuals, which enables them to go beyond the available evidence and feel, with assurance, that the trustee will be responsive and caring despite the changing of an uncertain future.

While Rotenberg et al., (2005) model focused on two dimensions of trust: cognitive-emotional dimension of trust, which comprises individual's beliefs and feelings of the other person in terms of giving him trust or not. Behavioral dimension of trust, which comprises concrete forms of behavior and actual risk taking in order to deal with complex, uncertain and difficult events. It reflects the tendencies of individuals toward the trustee and that he is worthy of being trusted.

Banat (2016) referred to three stages of trust namely the perceived trust: which includes the individual's trust in the other party because of the presence of rationale reasons that push him to do so. Emotional trust, in which the perceived trust turns into emotional as a result of the trustee's success in this experience, the readiness stage: which is deepening the relationship with the trustee and being ready to cooperate with him in many situations.

It is worth noting that the levels of trust determine the quality and pattern of relationships among individuals. Mar'i (2011) explored another three levels of trust: The individual level, when the individual deals with others based on his accumulated experiences with them. The personal level, when a person trusts another person around him based on a social bond that brings both of them together. The level of social relationship, where trust exists as a result of mutual relations, it is a directed behavior from one individual to another and mutual trust between the two parties.

On the contrary, Larue (1995) has indicated that the lack of trust in certain situations may lead to refraining from interacting with the other literally or figuratively, due to letting him down in certain situations; or staying in an interactive relationship with him, but with extreme caution and careful monitoring of his behavior.

In the field of education, trust is a key component of a good teacher–student relationship and a good learning environment. Trusting in teachers is the cornerstone of effective communication, and results in credibility, reliability and affection that in turn leads to dedication and success. The more they trust each other, the stronger the mutual bonds between them; and the lower the trust between them, the greater the student's loss of reassurance and enthusiasm. The absence of trust means the absence of students' moral resource and basic support (Kurnianingsih et al., 2012).

A plethora of research has investigated the level of teacher-students trust in certain aspects and yielded effective results

Moore (2022) examined the relationship between students' expectation of success and their trust in teachers who implemented social and emotional learning programs. A comprehensive survey was conducted on students in Oklahoma (n = 1164). The results showed that there were no statistically significant differences in students' expectations for success attributed to students' demographic variables, and there were no statistically significant differences in trust in teachers who implemented the social and emotional learning programs attributed to gender variable. On the contrary, the results revealed significant differences in the average mean of trust in teachers among black students attributed to race variable (Asian, Hispanic, Native American, and White).

Mustafa (2020) investigated the differences in the degree of students' trust in teachers according to education type, developmental stage, academic specialization, and gender. The study sample consisted of (889) male and female students divided into three categories: preparatory school students (183), university students (510) and post graduate students (196). A measure of student trust in teachers was used to collect data. The findings showed that there were statistical significant differences between the types of education (public, private, and international) in (reliability, sympathy, competence, and the total degree of trust). The differences were statistically significant between international education and both private and public education in favor of the international education, while there were statistically significant differences between public and private education in favor of public education. The rest of the differences in the sub-dimensions and the total degree of trust were not statistically significant except for the competency dimension, the differences were statistically significant for the scientific specialization. The results also revealed statistically significant differences attributed to gender variable in the preparatory stage in (competence, sympathy, reliability, the total degree) in favor of females, and the differences were statistically significant in the competence dimension for females. The results also indicated that there are statistically significant differences between genders at the postgraduate level in (competence, sympathy, reliability, and the total degree of trust) for females, and there are statistically significant differences between ages in (competence, sympathy, reliability, the total degree of trust) in favor of secondary education students.

Qadri (2017) identified the reality of private lessons between students' demands and teachers' responsibility in Algeria, which indicates the degree of students' trust in teachers. The comparative analytical approach was adopted in addition to a questionnaire applied to a sample of (95) male and (203) female students in the secondary education. The results showed that the level of students' interest in private lessons ranged between high and medium, which means that the students' level of trust in teachers was low to medium, thus, they resorted to private lessons. The results also showed that there were no differences in the study sample responses attributed to students' gender and academic specialization (scientific, literary, economics).

Jasmi (2014) conducted a qualitative study to investigate the link between student-teacher relationship and student's academic motivation. Two 16-year old male students from a public boarding school in Malaysia were selected as participants. Data were gathered from two unstructured interviews. Five themes within the student-teacher relationship were identified throughout the interviews: care, support, trust, approachability and expectation. The findings indicated that academic motivation is enhanced when teachers show real care towards the students, provide continuous support, construct trust in the relationship and have a reasonably high expectation towards their achievement.

Hood (2013) examined mathematics teacher trust in students and its relationship to their achievement. The study sample consisted of a large number of students. The results showed that teachers' trust in students has a positive relationship with their achievement, and that it is possible to increase students' achievement in mathematics by increasing the teacher's trust in them.

Mohamadin and Seddik (2012) conducted a study on organizational trust and its relationship to school and teacher effectiveness in Egypt, using a measure of trust consisting of three dimensions: trust in the principal, teachers, and students, the Ohio measure of teacher's sense of self-efficacy and the measure of school effectiveness. The study sample consisted of (995) teachers. The results showed that there is a positive and strong relationship between organizational trust, school and teachers' effectiveness and their impact on students.

Kurnianingsih et al. (2012) conducted a study aimed at revealing the factors affecting students' trust in teachers, using the descriptive approach. A total number of 291 senior secondary education students in Indonesia (males=147, females=144) completed an open-ended questionnaire developed for the purpose of this study that asks how much they trust their teachers and the reason why they trust them. The findings revealed that 63% of participants stated that they trusted their teachers. The main reason for trusting them

were as follows: they are perceived as being able to transfer knowledge, the relationship with teacher, and their abilities of guiding students.

Hall (2002) carried out a study to investigate the impact of building social relationships between teachers and their students on social behavior and trust. A questionnaire was applied to a sample of (162) male and female students in some university colleges in Florida. The results showed that building positive social relationships leads to building cooperative relationships and trusting oneself and others. Building these social relationships has been associated with the variables of age, achievement, place of residence, specialization, and the work of parents.

Baek & Choi (2002) investigated the impact of students' relationship with English language teachers and their perceptions of classroom environment on their academic achievement in light of gender variable in Korea. The data was collected from a sample of 1012 students in 10th and 11th grades at the same school district. The results revealed that classroom environment was a good predictor of students' academic achievement. Moreover, good relations between teachers and students help to increase their academic achievement. On the contrary, there were no statistically significant differences attributed to gender variable.

Schwarzer and Buchwald (2000) conducted a longitudinal study to reveal the mutual trust between the teachers of practical education programs and their students on the one hand and the level of students' effectiveness in performing teaching tasks on the other hand. Students (N=67) from the department of education at a German university completed the survey. The results showed that there was a positive significant relationship between the level of mutual trust between teachers and their students, in addition to a positive effect of this relationship on students' effectiveness in performing teaching tasks. The findings further revealed that there were no gender differences in the level of mutual trust and practicing teaching skills.

A good body of research, which varied in scope and objectives, was reviewed for the purpose of the study. Some studies examined the nature of the relationship between the student and the teacher (Schwarzer & Buchwald, 2000; Qadri, 2017; Jasmi, 2014). Other studies investigated the relationship of trust with some variables: such as the expectation of success (Moore, 2022), education type, developmental stage, academic specialization and gender (Mustafa, 2020), the academic achievement (Hood, 2013; Choi & Baek, 2002), organizational trust (Muhammadin & Seddik, 2012), social relations (Hall, 2002). While Kurnianingsih et al., (2012) explored some factors affecting students' trust in teachers.

Upon reviewing the previous literature, it seems that most studies focused on the nature of the relationship between the student and the teacher, and the relationship of trust with some variables. To the best of the researchers' knowledge, the current study is the first of its kind to identify the level of trust in science teachers among students of the scientific stream and its relationship to gender, future orientation ((medical subjects - purely scientific subjects), school type (public, private) and teachers' specialization (mathematics, physics, chemistry and life sciences) at this crucial stage.

Problem of the study

Students' trust in their teachers is a basic pillar that allows them to overcome their fear of failure and makes them individuals able to think positively and enjoy enthusiasm and optimism. Teacher-students mutual trust is the key to creating a strong learning atmosphere in the classroom and deeply affects how they advance in their learning because they feel cared for and thus, a love of learning grows within them. Furthermore, when students have a positive impact on their teacher, they are more likely to show respect and trust. As a result, they will engage in learning, behave properly and feel motivated to achieve their academic goals.

However, some students put their full trust in their good teachers until the first year of secondary education, because they used to teach them the most accurate scientific concepts, and then soon this trust starts to fade with the beginning of the last year of secondary education. The reasons might be attributed to teachers who were trusted by their students before this crucial stage and then doubts were raised about their ability to help them pass it successfully. Another reason could be the students themselves who experienced confused comparisons between their schoolteachers and their private tutors. Furthermore, the privacy of the secondary education stage and the consequent decisions regarding students' future are greatly responsible for developing frustration and heightened anxiety among them.

Therefore, this study seeks to reveal the level of trust in science teachers among students of the scientific stream at secondary education and its relationship to some variables.

Questions of the study

1. What is the level of trust in science teachers among students of the scientific stream at secondary education in Jordan?
2. Is the level of trust in science teachers differ according to students' gender (male, female), future orientation (medical subjects-purely scientific subjects), school type (private-public) and teachers' specialization (mathematics, physics, chemistry, life science)?

Method

Research Design

The descriptive correlational approach was used to reveal the level of trust in science teachers among students of the

scientific stream at secondary education and its relationship to some variables.

The current study included the following variables:

3. Independent variables: Gender (male and female), future orientation (medical subjects-purely scientific subjects), school type (private-public) and teachers' specialization (mathematics, physics, chemistry, life science).
4. Dependent variable: the level of trust in science teachers among students of the scientific stream.

Study sample and population

The study population consisted of all twelfth grade students in the scientific stream in public and private schools (3716 and 733 respectively) in Irbid Kasbah Directorate of Education for the first semester of the academic year 2022/2023 (N= 4449). The study sample consisted of male and female students, who were drawn from the study population using the cluster random sampling method (n = 1030). Table 1 shows the distribution of the study sample according to its variables (Table 1).

Study instrument

Upon reviewing the previous literature related to the level of trust in teachers, and to achieve the study objectives, a 20-paragraph questionnaire was developed to reveal the level of trust in science teachers among students of the scientific stream at secondary education in which items were positively phrased. The students' responses were analyzed in terms of the five-point Likert scale; (*strongly agree, agree, undecided, disagree, strongly disagree* with the numerical values of (*five, four, three, two* and *one*) respectively which was further categorized into five levels: very low, low, medium, high and very high degrees.

Mean scores were valued against the following criteria: (1.00 – 1.80 as very low; 1.81- 2.60 as low; 2.61 - 3.40 as medium, 3.41- 4.20 as high, 4.21- 5.00 as very high). The percentage was calculated according to the following equation: The highest value – The lowest value/category number. In the present research, the highest value was 5; the lowest value was 1; and the category numbers were 5. Thus, the appropriate class intervals were calculated as follows: 5-1/5 = 0.80 as shown below:

Table 1: The distribution of the study sample according to its variables (student's gender, future orientation, teacher's specialization, and school type)

Variable	*Category*	*No*	*%*
Gender	Male	635	61.70
	Female	395	38.30
Future orientation	Medical subjects	760	73.80
	Purely scientific subjects	270	26.20
School type	Private	212	20.60
	Public	818	79.40
Teacher specialization	Mathematics	294	28.50
	Physics	257	25.00
	Chemistry	254	24.70
	Life science	225	21.80
Total		1030	100

Class intervals for the study instruments:

Class intervals	*Level*
1.00 – 1.80	Very low
1.81- 2.60	low
2.61 - 3.40	Medium
3.41- 4.20	High
4.21- 5.00	Very high

The validity of the study instrument:

In order to test the validity of the instrument, a panel of educational experts in curricula and methods of teaching science reviewed the instrument. The team was asked to validate the content of the instrument concerning its items, appropriateness to the purposes of the current study, the language clarity, and the extent to which they represent the level of trust in science teachers. The teams' comments and recommendations were studied carefully and taken into consideration in amending the final version of the instrument. The paragraphs were accepted or excluded according to the standard of obtaining 80 % of the experts consent.

Study procedures

To check the construct validity of the instrument, the instrument was applied to a pilot group of 30 students selected randomly and left out later from the study sample. The Pearson's correlation coefficient was calculated to find out the relation between the score of each paragraph and the total degree on the scale as shown in Table 2.

Table 2: The values of correlation coefficient between the score of each paragraph and the total degree on the trust scale in science teachers

No	*Correlation coefficient with the total degree*	*No*	*Correlation coefficient with the total degree*
1	0.66	11	0.78
2	0.64	12	0.69
3	0.58	13	0.59
4	0.60	14	0.58
5	0.69	15	0.74
6	0.54	16	0.75
7	0.46	17	0.52
8	0.54	18	0.60
9	0.58	19	0.79
10	0.56	20	0.65

Table 2 shows that the values of the correlation coefficients of the items with the total degree of the scale ranged between (0.79 – 0.46). According to the criteria for accepting paragraphs demonstrated in (Odeh, 2010) these values were found educationally acceptable and thus, the number of test items in its final form is 20.

The stability coefficient value of the internal consistency of the instrument was tested and refined through test-retest method on a pilot group of 30 students randomly selected and left out later from the study sample. The participating students were asked to fill the questionnaire twice within a two-week interval. Pearson correlation coefficient was calculated between the two times. The internal consistency of the total scale was 0.79 and the test-retest reliability with a 2-week time interval was 0.81, which was considered suitable to conduct the study.

Statistical treatments

In order to answer the first question, means and standard deviations of the study sample responses to the items of the scale were calculated using SPSS statistics. To answer the second question, means and standard deviations of the study sample responses were calculated according to the study variables (student's gender, future orientation, school type, teacher's specialization). In addition, Four-way analysis of variance (4-way ANOVA) was used to investigate the effect of these variables on the level of trust in science teachers among the study sample.

Study resulmts and discussion

Result of the first question

The first study question sought the level of trust in science teachers among students of the scientific stream at secondary education in Jordan. In order to answer this question, means and standard deviations of the study sample responses to the items of the scale were calculated and arranged in descending order as shown in Table 3:

Table 3 shows that students' level of trust in science teachers was medium, while the trust level in all items ranged between

Table 3: Means and standard deviations of the study sample responses to the items of the scale arranged in descending order

Rank	*Paragraph*	*Mean*	*SD*	*Level*
1	Proficient in explaining scientific material and achieves me distinction in high school	3.67	1.37	High
2	He gives his best to achieve success and excellence in high school, regardless of the obstacles in the class	3.63	1.35	High
3	His enthusiasm leads me to excel in his subject in high school	3.53	1.31	High
4	His guidance inevitably leads me to success and excellence in high school	3.49	1.26	High
5	His eagerness to give without showing off leads me to excel in high school	3.04	1.27	Medium
6	His teaching reduces my weaknesses in the subject in order to achieve success and excellence in high school	3.02	1.34	Medium
7	His teaching develops my scientific abilities to achieve success and excellence in high school	2.97	1.23	Medium
8	His methods of dealing with questions make me more understanding, and excelling in high school	2.92	1.33	Medium
9	His personality as a persuasive and influential teacher leads me to succeed and excel in high school	2.91	1.25	Medium
10	His explanations and classes make me excel in secondary education	2.91	1.26	Medium
11	The plans and programs he proposes to achieve success and excellence keep me committed to them	2.88	1.30	Medium
12	His assessment of my academic ability to succeed and excel in secondary education matches my knowledge of myself	2.83	1.26	Medium
13	His personality as a teacher makes me express my thoughts to him without hesitation	2.81	1.25	Medium
14	His professionalism in presentation increases my retention of information to excel in secondary education	2.80	1.19	Medium
15	His guidance the night before the exam leads me to excel in secondary education	2.77	1.19	Medium
16	His Teaching avoids me taking too much time to understand and excel in secondary education	2.70	1.28	Medium
17	His teaching avoids me making an extra effort to excel in high school	2.35	1.18	Low
18	His summaries are enough for me to excel in secondary education	2.33	1.27	Low
19	His abilities drive me to stick with him without resorting to another teacher to excel in secondary education	2.32	1.25	Low
20	His explanations make me dispense with private lessons to achieve success and distinction in secondary education	2.30	1.20	Low
	Total	2.91	1.06	Medium

high, medium and low. It is noted that four areas have a high degree; twelve areas have a medium degree, and four areas have a low degree of trust.

This means that the students' level of trust in the teachers of scientific school subjects was increasing and decreasing during the continuous communication process between them. It was high in certain aspects and low in others, but in most aspects, it was medium. It also means that the students' reliance on their teachers was medium, as most of them believed that they would not find everything they hoped for from their teachers.

This result is consistent with (Kadri, 2017; Kurnianingsih et al., 2012) and inconsistent with (Mustafa, 2020; Buchwald & Schwarzer, 2000).

The researchers believe that a trustful relationship is the basis upon which students acquire knowledge from their teachers. Developing trusting relationships between students and teachers is central to building a sensitive learning environment to traumas and can dramatically foster students' level of motivation and therefore promote learning.

Moreover, students usually trust their epistemic abilities if they have a strong relation of trust with their teachers. The first four high-level paragraphs are not sufficient to get a high level of trust on the scale as a whole.

It is commonly known that a good relationship provides the basis for fruitful cooperation. However, despite their high trust in the academic competence of their teachers, the students did not ask for teachers' support and assistance, which might be attributed to the weak relationship of trust between them. In addition to the fact that teacher's abilities and characteristics did not make it easier for students to study for the secondary education exam nor prevent them from resorting to private lessons to achieve success and excellence.

This result is consistent with Qadri's study (2017), which showed that the student's relationship with the private tutor is more profound. Tutors and students are able to work much more closely and develop stronger relationships than would otherwise be possible with their public school teachers. The impact that this can have on a student is deep, as tutor will be able to know the students' scientific weaknesses in several areas better, and so will find it easier to spot potential barriers and give them assistance.

The result may also be attributed to the private tutor's marketing of himself in order to attract students' attention. It is generally known among students that having a tutor who is able to keep the student focused and interested will ensure that teaching is not only completed to a higher standard, but, more importantly, is more effective in terms of what a student is able to gain from it. Similarly, tutors can be especially effective in regards to exam preparation. The advice and support that they can provide ranges from the structuring of revision, to troubleshooting weak points in the student's learning.

This is consistent with the results of (Jasmi, 2014; Kurnianingsih et al., 2012), where it was pointed out that teachers should develop a friendly personality with students in order to engage and inspire them and achieve their high expectation, which can really make a big difference for the learners.

This interpretation is supported students' responses on 9 and 13 Paragraphs (*his personality as a persuasive and influential teacher leads me to succeed and excel in secondary education, his personality as a teacher makes me express my thoughts to him without hesitation*) that indicate the medium level of trust between students and teachers of scientific subjects.

Beyond instructing students on course materials, teachers also need to develop lines of effective communication skills with them that do not seem to be practiced enough to obtain students' full trust accompanied by a sense of psychological security.

In this line, Falcon and Castelfranchi (2002) pointed out that trust in the other might be formed due to his internal self-characteristics that are reflected in his communication style with others, or it can be formed based on external factors.

In paragraph 4 *(His guidance inevitably leads me to success and excellence in secondary education*), the teachers of scientific subjects obtained a high degree of trust, on the contrary, they obtained a medium level of trust in paragraph 15 (*His guidance the night before the exam leads me to excel in secondary education*). This might be attributed to the increased stress the night before the exam, so that the guidance does not have the same effect it has over the school year.

Paragraphs referring to teaching methods, explanation, planning, providing information, evaluating students' scientific capabilities, and providing feedback obtained a medium level of trust.

The reason might be attributed to teachers' methods of teaching in all educational learning situations, which uses a one-way information flow in a closed classroom environment, keeping information transfer in the low levels of thinking and do not encourage students of all academic levels to engage in scientific operations skills and tasks that involve higher order thinking skills. It affects students' self-confidence in learning science, and thus reflected negatively in their level of trust in their teachers.

Furthermore, the medium level of students' trust in teachers may be attributed to the failure of teachers to adequately apply realistic and diverse assessment strategies that help to better understand their students and address their weaknesses . In addition to other factors that may hinder teachers to assist in facilitating mental health and psychosocial support, such as lack of time that affects planning process.

The second research question sought whether the students' level of trust in science teachers differ according to students'

gender (male, female), future orientation (medical subjects-purely scientific subjects), school type (private-public) and teachers' specialization (mathematics, physics, chemistry, life science) or not.

To answer this question, means and standard deviations of students' level of trust in science teachers according to study variables were calculated as shown in Table 4.

Table 4 shows apparent differences in the mean scores of students' trust in science teachers according to their gender (male, female), future orientation (medical subjects-purely scientific subjects), school type (private-public) and teachers' specialization (mathematics, physics, chemistry, life science). To reveal the significance of these differences, four-way analysis of variance (4-way ANOVA) was performed, as shown in Table 5.

Table 4: Means and standard deviations of students' level of trust in science teachers according to students' gender, future, school type and teachers' specialization.

		Students' trust in science teachers	
Variable	*Levels of variables*	*Mean*	*SD*
Students' gender	male	2.99	1.00
	female	2.82	1.02
Future orientation	medical subjects	2.87	1.03
	purely scientific subjects	2.95	0.96
School type	private	2.91	1.00
	public	2.90	1.02
Teachers' specialization	mathematics	2.80	1.07
	physics	2.89	1.11
	chemistry	2.94	0.93
	life science	3.02	0.90

Table 5 indicates that there are statistically significant differences at ($\alpha = 0.05$) in the level of trust in science teachers attributed to gender variable in favor of males, as shown in Table 4. There were no significant differences in the level of trust in science teachers attributed to students' future orientation and school type. While there were statistically significant differences in the level of trust in science teachers attributed teacher's specialization variable. In order to find out the significance of the differences, Scheffe test for post hoc comparisons was performed as shown in Table 6.

Table 6 shows that there is a statistically significant difference at ($\alpha = 0.05$) between the mean scores of students' trust in science teachers attributed to teacher's specialization variable in favor of life sciences. On the contrary, mathematics teachers received the lowest level of students' trust.

The results showed that there were statistically significant differences in students' level of trust in science teachers attributed to gender in favor of males, which is inconsistent with (Moore, 2022; Buchwald & Schwarzer, Choi & Baek, 2002; 2000; Mustafa, 2020; Qadri, 2017).

The result might be attributed to the female students' belief that female teachers' abilities were mostly based on memorization, and they had practiced this behavior with them for many years, which contradicts the nature of questions related to scientific subjects that requires high thinking abilities. As a result, students believe that science male teachers outperform their female colleagues in content knowledge and wonder if female teachers can lead them towards excellence and success. In addition, what supports this explanation is the reliance of female students on male teachers' summaries whom perceived as more knowledgeable and capable of teaching science topics than female teachers.

Table 5: Results of 4-way ANOVA of students' trust in science teachers according to the study variables.

Source	*Type sum of squares*	*df*	*Mean square*	*F*	*Siq (P)*
Students' gender	12.438	1	12.438	12.227	*0.000
Future orientation	0.553	1	0.553	0.544	0.461
School type	0.006	1	0.006	0.006	0.937
Teachers' specialization	8.184	3	2.728	2.682	*0.046
Error	1040.678	1023	1.017		
Total	1061.235	1029			

Statistically significant at (0.05)

Table 6: Results of Scheffe test for post hoc comparisons of students' trust in science teachers according to teacher's specialization variable.

	Teachers' specialization		mathematics	physics	chemistry
	Scheffe	SD	2.804	2.888	2.942
Students' trust in science teachers	physics	2.888	-0.084		
	chemistry	2.942	-0.138	-0.053	
	life science	3.021	-0.217*	-0.133	-0.079

Statistically significant at (0.05)

The results also showed that there were no statistically significant differences in the level of trust in science teachers attributed to future orientation and school type.

The reason for the absence of statistically significant differences in future orientation variable may be attributed to competition and perseverance to get a university seat in these disciplines (scientific or medical) and the accompanying support from parents and society, which makes their level of enthusiasm and ambition very similar.

The absence of statistically significant differences attributed to school type might explained by the fact that despite the superiority of private schools over public schools in the field of supplies, resources, and equipment, the form and content of secondary education exam does not stem from the school environment and its material capabilities, but rather depends mainly on the science teacher and his abilities. This pushes male and female students to search for reliable teachers wherever they are, which makes the differences between the two types of schools disappear to a large extent, a result that was supported by the study of (Qadri, 2017).

The results also showed that there were statistically significant differences in the level of trust in science teachers attributed to the teacher's specialization variable, in favor of life sciences teachers compared to teachers of other subjects (chemistry, physics, mathematics), where mathematics teachers received the lowest level of trust.

The reason why life sciences teachers outperform other teachers may be attributed to the fact that life sciences teachers are able to relate scientific knowledge to their own bodies and surroundings and make their learning more meaningful. In addition to their common style of softness and joy in presenting information in the shortest way, which enhance students' trust in them. Other science teachers, especially math teachers, might expand information and offer more than one solution and method to a single question without following a consistent methodology. This leads to a decline in the level of trust in the teacher and his ability to lead his students to success and excellence.

Recommendations

Based on the results of the current study, the researchers recommend the following:

- Training students on positive thinking skills and relieving stress which enhances their trust in themselves and their teachers.
- Holding training courses for teachers including appropriate guidance, support mechanisms and communication skills with their students, which enhances trust in the teacher.
- Conducting further research on the concept of trust, taking into account other variables such as stress, tension, and academic achievement.

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