# Teaching Competencies For Science Teachers: A Future Perspective Typology

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Abstract

The purpose of this research is to quantify the level of competence among elementary school science instructors in Zarqa Governorate, and to quantify the importance of statistical disparities in competence across gender, years of experience, and educational qualification. The researcher used a descriptive design and quantitative approach, with the questionnaire acting as the major data collecting tool, to achieve the study's goals. A total of 249 educators from the first Zarqa Directorate were surveyed for the study. Elementary school science instructors in Zarqa Governorate scored highly on measures of planning, implementation, classroom management, use of teaching aids, teaching, and evaluation. The findings also showed that primary school teachers' views on teaching skills were unrelated to demographic factors like gender, years of experience, or level of education.

Keyword: teaching competencies, science teachers, Jordan.

**Introduction**

The improvement of a teacher's standing, his degree of knowledge, and the progress of the profession to which he belongs serve as the cornerstones upon which all other professions are advanced (Wagiran et al., 2019). The profession of teaching is also in charge of bringing about renewal and change in society, guiding culture, and creating a contemporary society capable of overcoming external difficulties (Cspedes & Gutirrez, 2017). Education is a force to be reckoned with in bringing about growth and progress since it carries such a

significant weight in modern societies in supporting the economic and social structure (Nikola, 2021).

The function of the teacher is crucial in the creation of generations, its influence on the progress of the existing nation, and its contribution to identifying the traits and qualities of its future (Isozaki, 2018). It is no longer sufficient for the teacher to be an expert in the scientific material he teaches in order to do his work effectively and successfully, and he is no longer just a cunt of knowledge as it was in the traditional school (Glenny & Michael, 2021). This is because of the scientific and technological explosion that our current era is witnessing. He should instead act as a directive, coordinator, encourager, and motivator for the education of the students, capable of understanding their needs and developmental characteristics, directing and guiding them, and creating the right environment to encourage their active participation and self-learning, developing their tendencies and abilities, support their integrated growth, and get them ready for the challenges of modern life (Sulaiman & Ismail, 2020).

The primary tenet of the notion of teaching competencies is that it is possible to break down the teaching process into a collection of behaviors. The behavioral school had an impact on the competency-based movement for teacher preparation (Tapani & Salonen, 2019). The teacher is the most significant component of the educational process inputs because they must motivate students, encourage them to think creatively, develop information, and engage them in participatory learning. They are also organically related to the program based on procedural behavioral objectives (Fauth et al., 2019).

To reflect the factor of commitment and responsibility to achieve the goals and to confirm the suitability of the programs for the needs of the learners, the focus on competencies is one of the most prominent trends prevailing in teacher preparation and training programs (Ali et al., 2017). This development has taken the shape of a widespread movement known as competency-based teacher education. This approach emphasizes training educators with the knowledge, concepts, skills, attitudes, and values they'll need to do their jobs efficiently, and effectively (Hakim, 2015).

Competency-based teacher education is one of the most prominent trends in the preparation and training of instructors today. This approach is predicated on plainly and accurately delineating the teaching competencies required by both the student and the teacher, as well as providing the teacher with the criteria by which he can evaluate his mastery of these competencies. In addition to teaching him to do the opposite of what is taught in typical teacher preparation programs based on theoretical knowledge (Lohmann et al., 2021).

The subject of the teaching competencies that a teacher must possess in order to practice the teaching profession is one of the most widely discussed topics due to its significant impact on the teacher's function (Ebere, & Isaac, 2023). The International Committee of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) indicated the need to improve the competencies of teachers through the adoption of policies and measures, the most important of which is teacher training before and during service, achieving sustainable education by enhancing their academic and professional competencies in theory and practice (De Vera et al., 2021).

Therefore, contemporary educational trends demanded an emphasis on the role of the instructor, particularly the science teacher. Because the science teacher teaches through inquiry and discovery in the laboratory and minimizes memorization, he teaches his students how to think rather than how to memorize information (Yan et al., 2022). Therefore, science instructors must have structured experiences that enable them to comprehend and analyze the thinking process and methods for fostering it in students. The positive impact of the teacher's cognitive abilities is reflected in his performance in the classroom. He gains an understanding of thinking strategies and concludes that the ultimate purpose of education is to cultivate students' thinking abilities (Huang et al., 2020). The concept of sufficiency is an endeavor to employ multiple educational standards rather than focusing on a single aspect. Some research in the field of education reveals that a science teacher who lacks a set of personal and performance competencies cannot lead the educational process and keep up with cognitive development in terms of his curriculum and teaching methods (Zhang et al., 2021). Researchers accorded it a great deal of

attention in educational systems because it has demonstrated its efficacy and success in assisting instructors in various disciplines to carry out the teaching process with great competence and efficiency (Nor et al., 2019).

Teaching competence is comprised of precisely defined behavioral objectives that outline all the requisite knowledge, skills, and dispositions for achieving effective teaching. Therefore, it is necessary for science teachers to possess the teaching competencies necessary for them to carry out the teaching process in general and to perform their role inside and outside of the classroom effectively, which contributes to the achievement of the desired learning patterns among students.

**Research Questions:**

The present study sought to provide answers to the following questions.

1. What is the degree of availability of teaching competencies among science teachers in elementary schools in Zarqa Governorate?
2. Does the viewpoint of teachers in elementary schools differ regarding the teaching competencies they possess according to the variables of gender, number of years of experience, and educational qualification?

**Literature Review**

The concept of competencies is one of the oldest in the field of education, as the success of a teacher's teaching performance is correlated with the degree to which he possesses the competencies required for teaching (Aprianti & Sahid, 2020). Competence is innate to the individual until it is exercised, as it can grow and develop in the instructor through his experience and knowledge of the field of education and its affairs, as well as how to manage them. Therefore, the teacher must possess the teaching competencies that will enhance his performance. In addition to personal and other competencies, these include adequate lesson planning, implementation, and classroom administration (Al-Bulushi et al., 2018).

Teaching competencies are the result of a teacher's knowledge, skills, and dispositions, which are reflected in his or her ability to accomplish specific goals in various disciplines with a certain

degree of mastery (Albareda-Tiana et al., 2018). Teaching competencies manifest in the teacher's classroom behavior and can be measured using a note card designed for this purpose. Teaching competencies are the skills and abilities that instructors must possess in order to complete the teaching process effectively and proficiently, at a certain level of performance, with the least amount of effort, time, and expense (Al-Khasawneh, 2019).

Yan et al. (2022) defined teaching competencies as a set of knowledge, skills, procedures, and directives that a teacher requires to perform his job with the least amount of cost, effort, and time, and without which he cannot perform his duty as required; their availability is then a requirement for his work permit. Competence is defined as the ability to do something effectively and proficiently, and at a level of performance with minimal effort, time, and cost; competence can be cognitive or performance; cognitive competence is the starting point and basis for performance competence; performance competence refers to observable processes and procedures that vary according to the tasks they are associated with (Al-Bulushi et al., 2018). The objective of the educational process is to induce desirable behavioral changes in the learners. Positive changes in the behavior of the students are essential to the effectiveness of instruction (Zhang et al., 2021). The efficacy of the instructor as an educator, as demonstrated by his teaching competencies, influences these changes. As a result of the general advancement of numerous sciences, particularly the humanities and behavioral sciences, education in this era underwent a series of modifications to its concept, objectives, methods, and programs (Ebere, & Isaac, 2023). The idea of competency-based teacher education has emerged.

There is a variety of educational competencies based on their constituent parts, as they have been categorized into four fundamental groups:

1. Cognitive competencies: refers to the knowledge, cognitive processes, mental abilities, awareness, and intellectual skills required for a person to conduct his tasks in various fields or activities related to these tasks. This aspect relates to facts and processes, and the sufficiency of information in

this aspect depends on the educational institution's cognitive strategy (Ananba, 2018).

2. Performance competencies: these competencies refer to the performance competencies exhibited by the individual, such as motor skills and subjects pertaining to physical and motor formation. The performance of these abilities is contingent on the individual's accumulated cognitive competencies (Al-Oboh, 2020).
3. Emotional competencies: refer to the individual's attitudes, preparations, inclinations, attitudes, values, beliefs, and emotional behavior that influence his work performance. These include the individual's sensitivity and self-acceptance, as well as his attitudes toward the profession, among other factors (Al-Tarawneh, 2019).
4. Productive competencies: refer to the impact of a teacher's performance on previous competencies in the field; these should receive attention in teacher preparation programs, which aim to qualify competent teachers (Al-Zoubi, 2022).

The process of determining the science teacher's competencies is extremely important because it relies on foundations that must be relied on during the selection and selection processes (Cspedes, & Gutirrez, 2017). The philosophical basis, which is considered the governing basis, in light of which goals are set that are consistent with the values and philosophy of society to determine the desired outcomes of the education process, which leads to defining a specific concept of the role of the teacher, in light of which the educational competencies necessary to perform this role are determined in a sound scientific manner that keeps pace with the development of education (Isozaki, 2018). In addition, the empirical basis that focuses on empirical concepts to form a scientific foundation aids in deriving phrases related to the necessary educational competencies, given that the humanities are inputs that can permit the derivation or development of an empirical model for the role of the teacher in determining the performance or cognitive competencies (Glenny & Michael, 2021). In addition to the premise of the study material containing experiences or knowledge provided to the learner in order to determine the required educational competencies through knowledge construction. The competencies that are determined based on this criterion typically emphasize specialized competencies that

are primarily knowledge-based. Lastly, the foundation of practice, which is deemed essential for refining the teacher's demeanor and providing him with experiences that traditional programs for his preparation cannot provide (Tapani & Salonen, 2019). From this perspective, the foundation of practice is based on the notion that the required educational competencies for the teacher can be determined by carefully analyzing what competent teachers do during their teaching practice (Fauth et al., 2019). Through his performance of his teaching tasks, such as managing discussion and dialogue, student participation in the educational process, class management, questioning, and reinforcement, a good and capable teacher can provide a good model for distinguished and effective performance, allowing for the determination of the desired competencies in light of this foundation (Lohmann et al., 2021).

Some literature and studies, such as Al-Oboh (2020) and Al-Zoubi (2022) mentioned the most important competencies necessary for the teacher, including:

1. Planning competencies: The planning phase of a lecture is one of the most crucial phases, as the success of an instructor in the classroom is dependent on the precision of his planning. Good performance in teaching can only be attained through careful planning prior to instruction (Nikola, 2021). Planning is one of the contemporary concepts that derives its practical and scientific intellectual meanings from the nature and complexity of modern society and life. Despite the novelty of this concept, it received greater attention than any other concept before it became the focus of numerous endeavors of various types. Planning is the teacher's prior perception of the situation and the teaching procedures he employs with the pupils in order to attain the desired educational objectives (Tapani & Salonen, 2019). As for the adequacy of planning for teaching, it is the teacher's ability to prepare in advance and organize the educational situation accurately and carefully, specifying the required steps and stages, as well as the required balance between selecting the appropriate means or activities and the desired outcomes (Ali et al., 2017).

2. Implementation competencies: This plan is only notional until it is implemented and deployed on the ground. Teaching does not measure the extent to which the teacher possesses the knowledge and facts to be communicated to the students as much as it measures the extent to which the teacher possesses the procedures and methods that qualify him to communicate these various knowledge and facts to the students so that they can interact with the educational environment (Ebere & Isaac, 2023). An effective teacher who is well-versed in his specialty is one who adapts the method of presentation to the topic being explained and does not rely on the traditional method of speech, in which the role of the learner is passive, receiving knowledge and information (De Vera, 2021). During the process of implementing a lesson, there are certain educational considerations that every teacher must pay attention to and take into account in order to stimulate the learner's vitality and activity and prevent him from experiencing tedium (Huang, 2020). The successful educator is one who can effectively and promptly activate these principles.
3. Classroom management competencies: Classroom management is one of the pillars of the educational process, as it plays a significant role in the academic achievement of students and in the success of the teaching and learning processes, due to the psychological and social demands it imposes, which are among the most important factors in the process's success (Zhang et al., 2021). Classroom management is both an art and a science because it requires the teacher's personal traits, which are embodied in the way he interacts with students inside and outside the classroom, as well as training on effective classroom management skills and procedures (Aprianti & Sahid, 2020). Classroom management is defined as a set of activities that the teacher uses to develop appropriate behavioral patterns among his students, eliminate inappropriate patterns, foster good human relations with them, create an effective social environment in the classroom, and ensure its continuity (Al-Bulushi, 2018).
4. Competencies in the use of teaching aids: Teaching aids are an integral component of the educational process. Educational means refers to all forms of media used to

facilitate the acquisition of knowledge, skills, and facts during the educational process. Textbooks, blackboards, maps, models, and transparencies are examples of teaching aides that work to enhance student's learning experiences and assist the instructor in developing his or her work methodology (Albareda-Tiana et al., 2018). Teaching aids are defined as all available capabilities used by the instructor to transmit theoretical knowledge and practical skills to the student and elucidate them in order to achieve the objective with the least amount of effort and in the shortest amount of time (Huang et al., 2020). Teaching aids play a crucial role in conveying scientific information to students, arousing their interest and reviving their activity, and taking individual differences into account. It is essential that the instructional materials are directly related to and integrated with the lesson's objective (Nor, 2019). The openness of knowledge and technological advancement that characterizes the current era have supported the trend of using educational means, and the Internet's global accessibility has aided in selecting the most appropriate educational means. In order to accomplish his desired objectives, the science teacher must select appropriate educational methods for each lesson, as well as work to capture students' attention and foster their capacity for creative thought (Al-Oboh, 2020).

5. Teaching Competency: It is the method by which the teacher communicates the knowledge, skills, and activities contained in the textbook to the student through interaction between the two parties (Wagiran et al., 2019). It is preferable for the teacher to diversify his teaching methods to account for individual differences and to employ contemporary teaching methods that foster critical thinking and place the student at the center of the educational process (De Vera, 2021). Especially in view of the cognitive development we are experiencing and the significance of modern educational methods. Cooperative learning and ideation are examples of these techniques (Huang, 2020).
6. Assessment competency: It is a set of procedures performed by the teacher before, during, and after the teaching process in order to obtain quantitative or qualitative data about the learning outcomes in order to

determine the extent of behavioral change in the students using a set of instruments (oral and written questions, or observing a specific behavioral performance) (Zhang, 2021).

A good science teacher is someone who is enthusiastic about sharing knowledge with his pupils and who values their students as unique individuals (Aprianti & Sahid, 2020). Personal qualities that make a good teacher include vigor, enthusiasm, love for one's students, good morals, patience, erudition, eloquence, and the quality of one's speech; mental and physical health; and sincerity in one's work (Al-Bulushi et al., 2018). In addition to the professional characteristics of being knowledgeable in his scientific subject, working to enrich the curriculum and homework, being able to control the class, facing emergency situations, being able to make the right decision at the right time, and knowing the best teaching methods that provoke thought and attract attention, it takes individual differences into account and is able to use the appropriate teaching aids (Al-Zoubi, 2022).

**Previous Studies**

Ananba (2018) identified the competencies that must be available for teachers of education in Ajloun Governorate, and the study sample consisted of (96) male and female teachers in Ajloun Governorate, and the results of the study showed that the teaching competencies that must be available in Ajloun came with a high evaluation score. There are also statistically significant differences in the responses of the study individuals according to the variables of personality, gender, experience and educational qualification, in favor of a bachelor's degree and teaching experience (5 to 10 years).

Al-Khasawneh (2019) revealed the teaching competencies required for teachers of swimming courses from the point of view of students of the College of Physical Education. The study sample consisted of (324) male and female students. The results of the study showed that the teaching competencies required for teachers of swimming courses, from the point of view of the students of the Faculty of Physical Education, came with a moderate evaluation score. In addition, there were no statistically significant differences between the responses of the study sample to the teaching competencies required for

teachers of swimming courses from the point of view of the students of the Faculty of Physical Education, due to the variable (gender). The results showed that there were statistically significant differences between the responses of the study sample, due to the variable (the academic year) and in favor of the (third and fourth) academic years.

Al-Tarawneh et al. (2019) revealed the level of teaching competencies possessed by a faculty member at Al-Salt College for Human Sciences at Al-Balqa Applied University from the students' point of view in the light of education quality standards. The study sample consisted of (468) male and female students. The results showed that the order of the domains was according to the following: planning for teaching, evaluation of teaching, implementation of teaching, and finally communication and classroom interaction, and it came between high and medium degrees.

Al-Oboh (2020) revealed the degree to which faculty members possess teaching competencies from the point of view of postgraduate students (Masters) in Jordanian private universities in the capital Amman Governorate. The study sample consisted of (348) students. The results of the study showed that the degree of faculty members' possession of teaching competencies from the point of view of postgraduate students (Master's) in Jordanian private universities in the capital, Amman, was high. In addition, there were no statistically significant differences due to the variables of gender and specialization.

Al-Zoubi (2022) examined the extent to which secondary school teachers in Amman Governorate possess teaching competencies and their relationship to technological innovations. The sample of the research comprised (350) school teachers in Amman Governorate. The study used the descriptive approach. The results showed that the relative weight of the axis of teaching competencies was (69%) at a high level, while the relative weight of the axis of technological innovations was (68.8%) at a high level. In addition to the existence of a statistically significant relationship between teaching competencies and technological innovations. Aside from the dimension of planning competencies, there are no differences between the average respondents' responses

regarding the teaching competencies of secondary school teachers in the Amman Governorate according to the gender variable.

## Methodology

A descriptive design and quantitative technique were employed in this study to provide a thorough, factual, and methodical overview of a population's traits and information. According to Saunders et al. (2016), descriptive quantitative research aims to characterize or describe the features of the subject or situation under study. The results are then given as an analysis.

### Population and Sample

According to the Jordanian Ministry of Education's annual statistics report, the study population consisted of all of the teachers in the first Zarqa Directorate, who totaled 833 teachers. To select the sample size, the researcher collected data from (265) teachers using Morgan's table as a guide. In the first Zarqa district, teachers were chosen using a simple random selection process. Out of the (265) questionnaires, (254) were returned, and (6) were removed for the respondents' incomplete responses, bringing the total to (249) questionnaires that may be used for analysis.

### Study Instrument

The current study used questionnaires to gauge teacher opinions on each issue using a Likert scale with a five-point scale ranging from "1" (extremely low) to "5" (extremely high). There were two sections to the questionnaire. Part 1 gathers background data on the responders, including their "gender, years of experience, and educational qualification". Part (2) contained 35 items to assess six dimensions of teaching competencies, including planning competencies (items 1-6), implementation competencies (items 7-12), classroom management competencies (items 13-17), competencies in the use of teaching aids (items 18-22), teaching competency (items 23-29), and assessment competency (items 30-35). The items in this section are based on research by Al-Oboh (2020) and Al-Zoubi (2022).

### Instrument Validity

The validity of the research instrument was ensured by having it reviewed by ten experts from the faculty of Jordanian universities who specialize in curriculum and teaching methods for linguistic formulation, scientific accuracy, and clarity. The opinions of experts indicate that all things have been accepted with a few minor language changes.

Instrument Reliability

Instrument dependability is the capacity to provide consistent results while using the same instrument on the same population under the same circumstances. The Cronbach alpha test has been used to confirm the internal correctness of respondents' replies. Bryman and Bell (2011) and Saunders et al. (2016) said that a value of (60%) or above reflects a satisfactory value for the dependability of the replies, as demonstrated in Table 1.

**Table 1. Test of Cronbach Alpha**

| Dimension | Value |
|---|---|
| Planning competencies | 0.813 |
| Implementation competencies | 0.850 |
| Classroom management competencies | 0.832 |
| Competencies in the use of teaching aids | 0.844 |
| Teaching competency | 0.879 |
| Assessment competency | 0.815 |
| **Teaching competencies as all** | **0.846** |

According to Table 1, the results of the internal consistency coefficient for the teaching competency dimensions were acceptable and varied from (0.813-0.879). This demonstrates that the study instrument had internal consistency between items, as indicated by Cronbach Alpha coefficient values that were greater than (0.60) for all instrument parameters.

Data Analysis

SPSS software was used to calculate means, the independent sample t-test, and one-way analysis of variance (ANOVA) in order to address the research queries. When comparing three or more means, Cuevas et al. (2004) recommend using the ANOVA One-Way test as opposed to the independent sample t-test. Following is an explanation of the results, which were determined by the methods used to characterize them. The

item's mean score is less than or equal to 2.33; the item's grade is low. The range of the item's mean score is between 2.34 and 3.67; the item's grade is moderate. The item's mean score is greater than or equal to (3.68); the item's grade is high.

**Findings and Discussion**

The descriptive analysis was utilized to describe the respondent profile in terms of "gender, years of experience, and educational qualification." Approximately 61.4% of respondents were male, while 38.6% of respondents were male. Regarding teachers with 6-10 years of experience, 46.2% of respondents were in this category, 34.9% were teachers with 1-5 years of experience, 12.1% had less than one year of experience, and 6.8% had more than 10 years of experience. Regarding educational qualification, table 2 reveals that 79.9% of respondents hold a bachelor's degree, 17.3% of respondents hold a master's degree, and 2.0% of respondents hold a higher diploma. 0.8% of respondents held a doctorate.

**Table 2: The respondents profile**

| Variables | Category | N | % |
|---|---|---|---|
| Gender | Male | 153 | 61.4 |
| | Female | 96 | 38.6 |
| Years of experience | Less than 1 years | 30 | 12.1 |
| | 1-5 years | 87 | 34.9 |
| | 6-10 years | 115 | 46.2 |
| | More than 10 | 17 | 6.8 |
| Educational background | Bachelor's | 199 | 79.9 |
| | Higher diploma | 5 | 2.0 |
| | Master | 43 | 17.3 |
| | Ph.d | 2 | 0.8 |

The first research question was addressed by calculating the means and standard deviations for all variables pertaining to the degree of availability of teaching competencies among science teachers in elementary schools in the Governorate of Zarqa.

**Table 3: Mean scores and standard deviation**

| N | Item | Mean | St.dev | Result |
|---|---|---|---|---|
| | **Planning competencies** | | | |
| 1 | Formulates the steps for conducting each of the lessons well | 4.23 | 0.75 | H |

| | | | | |
|---|---|---|---|---|
| 2 | Keen to arrange the steps of each lesson well | 4.19 | 0.77 | H |
| 3 | Formulate the objectives of the lesson in a correct behavioral manner | 4.07 | 0.74 | H |
| 4 | Diversify levels of behavioral goals | 4.21 | 0.79 | H |
| 5 | Determines appropriate actions to achieve goals | 3.71 | 0.81 | H |
| 6 | Take into account the distribution of time according to the plan | 3.98 | 0.83 | H |
| | **Total** | **4.07** | **0.59** | **H** |
| | **Implementation competencies** | | | |
| 7 | Links the previous lesson to the current lesson | 4.22 | 0.72 | H |
| 8 | Links the educational material to the student's environment | 4.19 | 0.74 | H |
| 9 | Uses sound words, both spoken and written, in the lesson | 4.06 | 0.75 | H |
| 10 | It moves from one idea to another smoothly | 4.04 | 0.74 | H |
| 11 | Students are encouraged to present a large number of ideas | 3.79 | 0.79 | H |
| 12 | Displays various examples to achieve understanding of concepts | 4.05 | 0.74 | H |
| | **Total** | **4.06** | **0.60** | H |
| | **Classroom management competencies** | | | |
| 13 | Creates a suitable psychological environment for the class | 4.08 | 0.70 | H |
| 14 | Creates an appropriate social environment to ensure positive interaction among students | 4.06 | 0.71 | H |
| 15 | Pay attention to what is going on in class | 4.12 | 0.72 | H |
| 16 | Uses methods to attract students' attention continuously | 4.20 | 0.66 | H |
| 17 | Encourages collaborative work in the lesson | 4.15 | 0.67 | H |
| | **Total** | **4.12** | **0.53** | H |
| | **Competencies in the use of teaching aids** | | | |
| 18 | Choose the appropriate method for the educational situation | 3.87 | 0.79 | H |
| 19 | Use more than one method during the lesson | 3.71 | 0.77 | H |
| 20 | Displays the medium at the right time | 4.12 | 0.70 | H |
| 21 | Scientific accuracy is observed in the content of the teaching aid | 4.05 | 0.72 | H |
| 22 | Keen on the clarity of the educational method | 3.85 | 0.78 | H |

| | | | | |
|---|---|---|---|---|
| | **Total** | **3.92** | **0.61** | H |
| | **Teaching competency** | | | |
| 23 | uses modern teaching methods | 4.17 | 0.72 | H |
| 24 | uses methods that work on developing the student's life skills | 4.07 | 0.76 | H |
| 25 | Design appropriate learning activities to achieve the objectives of the lesson | 4.11 | 0.73 | H |
| 26 | Develops various activities to take account of individual differences | 4.00 | 0.75 | H |
| 27 | The question is directed to all students | 3.75 | 0.81 | H |
| 28 | Asks thought-provoking questions | 3.89 | 0.79 | H |
| 29 | Allows time to answer questions that require thinking | 4.15 | 0.72 | H |
| | **Total** | **4.02** | **0.62** | H |
| | **Assessment competency** | | | H |
| 30 | Uses a variety of evaluation methods (oral questions, written questions) | 3.75 | 0.82 | H |
| 31 | Formulate evaluation questions in a clear and specific way | 4.00 | 0.75 | H |
| 32 | The results of the evaluation are used to design remedial and enrichment activities for students | 3.88 | 0.79 | H |
| 33 | Students discuss their mistakes during evaluation | 4.12 | 0.72 | H |
| 34 | Follow up on class assignments constantly | 4.20 | 0.69 | H |
| 35 | Students are encouraged to use self-evaluation | 4.05 | 0.71 | H |
| | **Total** | **4.00** | **0.58** | H |
| | **Over all** | **4.03** | **0.25** | H |

According to Table 4, the average score for teacher competencies was 4.03, with a standard deviation of 0.25. In other words, this is how primary school instructors in the Governorate of Zarqa see their own teaching abilities. Table 4 also revealed a mean score of (4.07), with a standard deviation of (0.59), for planning skills. This indicates that elementary school teachers in the Governorate of Zarqa have strong skills

in lesson preparation. With a mean score of 4.21, "Diversify levels of behavioral goals" (item 4) has the highest mean value of all the planning competency components. Means are lowest for item 5 ("Determines appropriate actions to achieve goals") with a value of (3.71). In addition, Table 4 reveals a mean value of (4.06) and a standard deviation of (0.60) for the implementation competencies. This indicates that elementary school teachers in the Governorate of Zarqa have strong implementation skills. Among the elements of the implementation competences, the item with the highest mean value is 7 ("Links the previous lesson to the current lesson"), with a score of (4.22). Item 11, which reads, "Students are encouraged to present a large number of ideas," had the lowest mean score (3.79) of all the questions.

The data revealed a mean value of (4.12), with a standard deviation of (0.53), for classroom management abilities. In other words, primary school teachers in the Governorate of Zarqa have strong competencies in classroom management. The mean value of the classroom management competences is 4.20, and the item with the highest mean value is #16 ("Uses methods to attract students' attention continuously"). Item 14 "Creates an appropriate social environment to ensure positive interaction among students" has the lowest mean value of (4.06) of all the items. The findings indicated a mean value of (3.92) with a standard deviation of (0.61) for competencies in the use of pedagogical aids. This indicates a high level of competence among elementary school teachers in the Governorate of Zarqa with regard to the usage of instructional aids. With a mean score of 4.12, "Displays the medium at the right time" (item 20) is the competency in the use of instructional aid that is most highly valued. However, the mean value of the items is lowest for 19 ("Use more than one method during the lesson"), with a value of (3.71).

The findings indicated a mean value of (4.02) with a standard deviation of (0.62) for teachers' competence in the classroom. As a result, primary school teachers in the Governorate of Zarqa have a high level of expertise in their field. The item with the highest mean value in the teaching competence is 23 ("uses modern teaching methods"), with a value of 4.17. Among the items, the mean value for item 28 ("Asks thought-provoking questions") is the lowest at 3.89. Assessment competence was

found to have a mean value of 4.00 and a standard deviation of 0.58 according to the data shown in the table above. This indicates that elementary school teachers in the Governorate of Zarqa are skilled at administering and interpreting standardized tests. The item with the highest mean score (4.20) on the competence evaluation is #34 ("Follow up on class assignments constantly"). The mean is a measure of central tendency, and it falls to a low of 3.75 for item 30 which reads, "Uses a variety of evaluation methods (oral questions, written questions)".

The researcher explains this finding by noting how many scientific education programs place a premium on developing teachers' instructional planning skills. In addition to the aforementioned, the researcher believes that regular knowledge of the teachers' records pertaining to the field of teaching planning and their provision of appropriate and continuous feedback on this process contributed significantly to the competency of these students in the field of teaching planning. The researcher also attributes this result to the teacher's benefit from the principles and theoretical foundations of contemporary teaching trends, which affirm that the student is the focal point of the educational process. Therefore, it must be acknowledged and treated with respect and admiration. This result is also attributable to the teacher's dedication to the directives of the practical education program management and the educational supervisor, which emphasize the importance of respecting the cooperating teacher and accepting his directives, as well as adhering to school regulations and instructions, which contributes to gaining the trust of all parties in the school, including teachers, students, and administration. The researcher also believes that this result may be attributable to the instructor's prior expertise implementing teaching situations. Possessing this proficiency requires extensive practical experience and a sufficient amount of time, and the time period stipulated by the practical education program is sufficient for a teacher to acquire this proficiency in an appropriate manner. This result can be ascribed to the fact that, as part of their academic preparation, teachers take a course related to the process of teaching evaluation, namely measurement and evaluation, which is deemed adequate for students to possess this proficiency. This

result can be attributed to the student teacher's experience in developing appropriate evaluation tools, such as tests, checklists, and assessment scales, and the availability of this experience to these teachers. This finding is congruent with Ananba (2018), Al-Tarawneh et al. (2019), Al-Oboh (2020), and Al-Zoubi (2022).

The second research question was addressed by using the independent sample t-test and one-way analysis of variance to determine whether or not there were statistically significant differences in how male and female elementary school teachers rated their own teaching competencies.

**Table 5. T- test**

| Variables | N | Mean | St.dev | df | t | Sig |
|---|---|---|---|---|---|---|
| Male | 96 | 3.81 | 0.32 | 247 | 1.12 | 0.095 |
| Female | 153 | 3.86 | 0.29 | | | |

Table (5) revealed that the mean male responses were (3.71), while the mean female responses were (3.78). In addition, the Sig of the two gender groups is (0.095), indicating that, from the perspective of teachers in elementary schools, gender has no significant impact on teaching competencies. These results converge with Al-Oboh (2020), Al-Khasawneh (2019), and Al-Zoubi (2022) results. Furthermore, this result is inconsistent with the findings of Ananba (2018).

**Table 6. ANOVA**

| Variable | Gropus | Sum of Squares | df | Mean Square | F | Sig |
|---|---|---|---|---|---|---|
| Years of experience | Between groups | 0.16 | 3 | 0.041 | 0.588 | 0.523 |
| | Within groups | 21.35 | 246 | 0.089 | | |
| | Total | 21.51 | 249 | | | |
| Educational qualification | Between groups | 0.18 | 3 | 0.045 | 0.705 | 0.630 |
| | Within groups | 21.33 | 246 | 0.087 | | |
| | Total | 21.51 | 249 | | | |

According to Table 6, there are no disparities between categories in terms of years of experience and levels of education. Where the Sig is (0.613), which indicates that years

of experience and educational qualification have no statistically significant effect on the perspectives of teachers in elementary schools regarding teaching competencies. This result is consistent with Al-Oboh's (2020) research. In addition, this result contradicts the findings of Ananba (2018).

## Conclusions

This study sought to determine the extent to which science teachers in elementary schools in the Governorate of Zarqa possessed the necessary teaching competencies. The results indicated that planning competencies, implementation competencies, classroom management competencies, competencies in the use of teaching aides, teaching competencies, and assessment competencies were high among Zarqa Governorate elementary school science teachers. The results indicated that classroom management competencies ranked first among teaching competencies, followed by planning competencies, with competencies in the use of teaching aides ranking last among science teachers in elementary schools in the Governorate of Zarqa. Schools generally agree with the claim made above that most scientific teacher specialty courses place a premium on abilities related to lesson planning. Also, these teachers' competency in the field of teaching planning was considerably aided by the instructors' frequent awareness of records relevant to the field of teaching planning and their supply of suitable and continuous feedback on this process.

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## References

Al Rub, M. O. A., Khasawneh, M. A. S., Ayasrah, M. N., Alkhawaldeh, M. A., Alqsaireen, E. M., & Al Taqatqa, F. A. S. (2023). BASIC PSYCHOLOGICAL NEEDS OF PERSONS WITH DISABILITIES IN THE KINGDOM OF SAUDI ARABIA DURING COVID-19. Journal of Southwest Jiaotong University, 58(3).

Al Taqatqa, F. A. S., Khasawneh, M. A. S., Alkhawaldeh, M. A., Al Rub, M. O. A., & Alqsaireen, E. M. (2023). TRANSITION

MANAGEMENT OF STUDENTS WITH AUTISM IN INCLUSION SCHOOLS. Journal of Southwest Jiaotong University, 58(4).

Alanazi, A. S., Almulla, A. A., & Khasawneh, M. A. S. (2023). Exploring the E-learning Supporting Systems for Students with Special Needs. Revista de Gestão Social e Ambiental, 17(7), e03917-e03917.

Al-Awawdeh, N., Al-shaboul, I. A., & Khasawneh, M. A. S. (2023). ADVANCING FOREIGN LANGUAGE TEACHING WITH AI-ASSISTED MODELS; INSIGHTS FROM LECTURERS AND UNIVERSITY ADMINISTRATORS. Journal of Namibian Studies: History Politics Culture, 33, 1491-1506.

Albareda-Tiana, S., Vidal-Raméntol, S., Pujol-Valls, M., & Fernández-Morilla, M. (2018). Holistic approaches to develop sustainability and research competencies in pre-service teacher training. Sustainability, 10(10), 3698. http://dx.doi.org/10.3390/su10103698

Al-Bulushi, M., Al-Said, S., & Lietzén, O. (2018). Teacher competencies in Oman: How gender and teaching experience are associated with self-assessment. Education, 5(3), 261-282.

Al-Gaseem, M. M., & Khasawneh, M. A. S. (2023). Environmental Orientation for Art Teachers Education Program (EOATEP). Journal of Higher Education Theory and Practice, 23(12), 209-223.

Al-Hassan, O. M. (2018). Developments of early childhood education in Jordan. Early Years, 38(4), 351-362. https://doi.org/10.1080/09575146.2018.1512562

Ali, M. F. B., Ahmad, A. R., & Seman, A. A. (2017). Teachers' competencies in teaching and learning history. Open Journal of Social Sciences, 5(08), 220. http://dx.doi.org/10.4236/jss.2017.58018

Al-Khasawneh, K. (2019). Teaching competencies required for teachers of swimming courses from the point of view of students of the Faculty of Physical Education (unpublished master's thesis). Yarmouk University. Jordan.

Alkhawaldeh, M. A., & Khasawneh, M. A. S. (2023). Investigating The Effects Of Bite-Sized Learning Modules On Knowledge Acquisition And Retention In Jordan And Saudi Arabia. Journal of Namibian Studies: History Politics Culture, 35, 812-828.

Alkhawaldeh, M. A., Alwaely, S. A., Al Sabi, Y. N., Abueita, S. D., Alomari, N., Al Taqatqa, F. A. S., ... & Al-Shaar, A. S. (2023). Al-Rousan, A. H., Ayasrah, M. N., & Khasawneh, M. A. S. (2023). Psychological Stability and its Relationship to Academic Performance Among Secondary School Students.

Alkhawaldeh, M. A., Khasawneh, M. A. S., Alqsaireen, E. M., Ayasrah, M. N., Al Taqatqa, F. A. S., & Al Rub, M. O. A. (2023). EVIDENCE-BASED INTERVENTIONS IN DEVELOPING COMMUNICATION SKILLS AMONG STUDENTS WITH AUTISM SPECTRUM DISORDER (ASD). Journal of Southwest Jiaotong University, 58(4).

Alkhawaldeh, M. A., Khasawneh, M. A. S., Alqsaireen, E. M., Ayasrah, M. N., Al Taqatqa, F. A. S., & Al Rub, M. O. A. (2023). EVIDENCE-BASED INTERVENTIONS IN DEVELOPING COMMUNICATION SKILLS AMONG STUDENTS WITH AUTISM SPECTRUM DISORDER (ASD). Journal of Southwest Jiaotong University, 58(4).

Almulla, A. A., Alanazi, A. S., & Khasawneh, M. A. S. (2023). The Relationship between Nutritional Intake and Mother's Education Level with the Nutritional Status of Children with Special Needs. Journal for ReAttach Therapy and Developmental Diversities, 6(8s), 686-692.

Al-Oboh, J. (2020). The degree of faculty members' possession of teaching competencies from the point of view of postgraduate "Master's" students in Jordanian private universities in the capital, Amman (unpublished master's thesis). Middle East University. Jordan.

Alomari, M. A., Alqudah, R. A., Al Rub, M. A., Alqsaireen, E. M., & Khasawneh, M. A. (2023). The Role of Media in Educational Social Construction of Children with Special Needs.

Alomari, M. A., Daradkah, S. A., Al Rub, M. A., Alqsaireen, E. M., & Khasawneh, M. A. (2023). Utilization of Multimedia Services in Libraries for Students with Disabilities.

Alqsaireen, E. M., Khasawneh, M. A. S., Alkhawaldeh, M. A., Al Taqatqa, F. A. S., Al Rub, M. O. A., & Ayasrah, M. N. (2023). RELATIONSHIP BETWEEN SOCIAL SUPPORT AND PSYCHOLOGICAL CONDITIONS FOR INDIVIDUALS WITH PHYSICAL DISABILITIES. Journal of Southwest Jiaotong University, 58(3).

Alqsaireen, E. M., Khasawneh, M. A. S., Alkhawaldeh, M. A., Al Taqatqa, F. A. S., Ayasrah, M. N., & Al Rub, M. O. A. (2023). CORRELATION OF SOCIAL COHESION WITH

PSYCHOLOGICAL AND SOCIAL SUPPORT FOR PEOPLE WITH SPECIAL NEEDS. Journal of Southwest Jiaotong University, 58(3).

Al-Tarawneh, S., Al-Samkari, M., & Ramamneh, A. (2019). Teaching competencies of faculty members at Al-Salt College for Human Sciences at Al-Balqa Applied University from students' point of view in the light of education quality standards. Journal of Educational Studies. 46 (3), 495-509. http://dx.doi.org/10.5539/ibr.v5n10p154

Alwaely, S. A., El-Zeiny, M. E., Alqudah, H., Mohammad Alamarnih, E. F., Ibrahim Salman, O. K., Halim, M., & Saleem Khasawneh, M. A. (2023). THE IMPACT OF TEACHER EVALUATION ON PROFESSIONAL DEVELOPMENT AND STUDENT ACHIEVEMENT. Environmental & Social Management Journal/Revista de Gestão Social e Ambiental, 17(7).

Al-Zoubi, R. (2022). The degree of secondary school teachers' possession of teaching competencies and their relationship to technological innovations in Amman Governorate. Journal of the Faculty of Education (Assiut), 38(10.2), 31-70. http://dx.doi.org/10.26389/ajsrp.a261118

Ananba, W. (2018). The teaching competencies that should be available to male and female teachers of physical education in Ajloun governorate from their point of view (unpublished master's thesis). Yarmouk University. Jordan.

Aprianti, V., & Sahid, S. (2020). The relationship between teachers' competency and Fourth Industrial Revolution (4IR) learning among economics teachers. Universal Journal of Educational Research, 8(11A), 63-70. http://dx.doi.org/10.13189/ujer.2020.082108

Ayasrah, M. N., & Saleem Khasawneh, M. A. (2022). The Effect of Psychological Stress of Parents on the Sexual Behavior of Children with Autism. Clinical Schizophrenia & Related Psychoses, 16.

Ayasrah, M. N., & Saleem Khasawneh, M. A. (2023). Reintegrating Psychological Innovations to Improve Mental and Psychological Health in Children with Autism. Clinical Schizophrenia & Related Psychoses, 17.

Bani-Rshaid, A. M., Hussein, N. Y., Ababneh, R. M., & Khasawneh, M. A. S. (2023). The Impact of Using social media On the Academic and Social Levels of Students with Disabilities at

University Level. Journal of Namibian Studies: History Politics Culture, 34, 3422-3433.

Cspedes, J. C., & Gutirrez, W. S. (2017). The future of the teaching profession from the perspective of students with a Major in Education. Journal of New Approaches in Educational Research (NAER Journal), 6(2), 87-92. http://dx.doi.org/10.7821/naer.2017.7.191

Darawsheh, S. R., Al-Darabah, I. T., Bedaiwy, A. A., Gmach, I., Alfandi, A. A. A., Elsharkasy, A. S., ... & Khasawneh, M. A. S. (2023). Emotional Intelligence for English Students with Learning Disabilities in Light of Some Variables.

Darawsheh, S. R., Asha, I. K. K., AbuSaif, R., Alhejoj, A. F., & Khasawneh, M. A. S. (2023). An outline of the professional quality of teachers who teach children with special needs. Journal of Education and e-Learning Research, 10(3), 358-363.

De Vera, J. L., Andrada, M. D., Bello, A., & De Vera, M. G. (2021). Teachers' competencies in educational technology integration on instructional methodologies in the new normal. Lukad: An Online Journal of Pedagogy, 1(1), 61-80. http://dx.doi.org/10.1080/1475939x.2015.1096822

Ebere, W. S., & Isaac, O. E. (2023). Fostering Teacher's Education Competencies for Global Competitiveness: A Motivational Approach. J Adv Educ Philos, 7(1), 34-40. http://dx.doi.org/10.36348/jaep.2023.v07i01.005

Fauth, B., Decristan, J., Decker, A. T., Büttner, G., Hardy, I., Klieme, E., & Kunter, M. (2019). The effects of teacher competence on student outcomes in elementary science education: The mediating role of teaching quality. Teaching and Teacher Education, 86, 102882. http://dx.doi.org/10.1016/j.tate.2019.102882

Glenny G., & Michael, J. (2021). Teacher Competencies of College Teachers. Int. J. of Aquatic Science, 12(2), 603-609.

Hakim, A. (2015). Contribution of competence teacher (pedagogical, personality, professional competence and social) on the performance of learning. The International Journal of Engineering and Science, 4(2), 1-12. http://dx.doi.org/10.2991/assehr.k.210407.272

Huang, Y., An, L., Liu, L., Zhuo, Z., & Wang, P. (2020). Exploring factors link to teachers' competencies in entrepreneurship education. Frontiers in Psychology, 11, 563381. http://dx.doi.org/10.3389/fpsyg.2020.563381

Isozaki, T. (2018). Science teacher education in Japan: past, present, and future. Asia-Pacific Science Education, 4(1), 1-14. http://dx.doi.org/10.1186/s41029-018-0027-2

jadallah abed Khasawneh, Y., & Khasawneh, M. A. S. (2023). The Effectiveness of Digital Tools in Developing Translation Skills. Journal of Namibian Studies: History Politics Culture, 34, 7038-7058

jadallah abed Khasawneh, Y., & Khasawneh, M. A. S. (2023). The Role of Corpus Linguistics in Translation Teaching and Research; Analysing the Perspectives of Doctorate Researchers and Lecturers. Journal of Namibian Studies: History Politics Culture, 34, 7078-7101.

jadallah abed Khasawneh, Y., & Khasawneh, M. A. S. (2023). The Use of Artificial Intelligence in Improving Machine Translation Post-Editing; Insights from Translation Editors. Journal of Namibian Studies: History Politics Culture, 34, 7123-7146.

Khasawneh, M. A. S. (2021). Improving Reading Comprehension Skills among English Language Students with Learning Disabilities According to Some Variables. Celt: A Journal of Culture, English Language Teaching & Literature, 21(1), 172-184.

Khasawneh, M. A. S. (2021). Investigating Writing Challenges Encountered by Saudi EFL1 Learners: Implications for Improvement. Edukacja Ustawiczna Dorosłych, 115(4), 31-41.

Khasawneh, M. A. S. (2021). TechHub/The Relationship of Curriculum, Teaching Methods, Assessment Methods, and School and Home Environment with Learning Difficulties in English Language from the Students' Perspectives. TechHub Journal, 23(1), 285-295.

Khasawneh, M. A. S. (2022). Developing the skills of visual-motor coordination disorder among students with learning disabilities. Science and Education, 3(9), 284-294.

Khasawneh, M. A. S. (2022). Improving the written expression skills among EFL students using an electronic training program. Science and Education, 3(9), 271-283.Khasawneh, M. A. S. (2022). Students with disabilities. Science and Education, 3(9), 253-270.

Khasawneh, M. A. S. (2023). Analysis of the Application of Pedagogical Technology to the Learning of Children with ASD. International Journal of Special Education, 38(1), 82-89.

Khasawneh, M. A. S. (2023). ANALYSIS OF THE EFFECTIVENESS OF TALKING COMPUTERS AS A LEARNING MEDIA FOR BLIND STUDENTS. Journal of Southwest Jiaotong University, 58(2).

Khasawneh, M. A. S. (2023). DEVELOPMENT OF AUDIO-VISUAL MEDIA OF LANGUAGE LEARNING FOR CHILDREN WITH AUTISM. Journal of Southwest Jiaotong University, 58(2).

Khasawneh, M. A. S. (2023). Existence of Students with Special Needs in Social Normality. Journal of Namibian Studies: History Politics Culture, 34, 418-436.

Khasawneh, M. A. S. (2023). Interactive Multimedia to Improve Reading Skill of Students with Special Needs. Journal of Namibian Studies: History Politics Culture, 34, 437-456.

Khasawneh, M. A. S. (2023). Self-Adjustment of Gifted Students to Parental Treatment. Journal of Namibian Studies: History Politics Culture, 33, 2155-2165.

Khasawneh, M. A. S. (2023). SOCIAL ATTITUDE OF CHILDREN WITH SPECIAL NEEDS IN THE LEARNING PROCESS. Journal of Southwest Jiaotong University, 58(2).

Khasawneh, M. A. S. (2023). The Effect of Learning Patterns on Achievement Motivation Among Public School Students. Journal of Namibian Studies: History Politics Culture, 33, 2166-2176.

Khasawneh, M. A. S. (2023). THE RELATIONSHIP BETWEEN INTELLECTUAL EXTREMISM AND SOCIAL VALUES AMONG SAUDI UNIVERSITY STUDENTS. Journal of Southwest Jiaotong University, 58(2).

Khasawneh, M. A. S. The effect of using a language games-based electronic program on the acquisition of language patterns among people with learning difficulties in the English language during the Covid-19 pandemic.

Khasawneh, M. A. S. THE EFFECTIVENESS OF A TRAINING PROGRAM BASED ON ERIKSON'S THEORY IN DEVELOPING ACHIEVEMENT SKILLS AMONG STUDENTS WITH LEARNING DISABILITIES IN JORDAN.

Khasawneh, M. A. S., & jadallah abed Khasawneh, Y. (2023). The Potentials of Artificial Intelligence in Stimulating Motivation and Improving Performance of Undergraduates in Foreign Languages. Journal of Namibian Studies: History Politics Culture, 34, 7059-7077.

Khasawneh, M. A. S., & jadallah abed Khasawneh, Y. (2023). The Roles of Formulaic Sequences and Discourse Markers in Academic Writing; Insights from Lecturers and Other Researchers. Journal of Namibian Studies: History Politics Culture, 34, 7102-7122.

Khasawneh, M. A. S., & jadallah abed Khasawneh, Y. (2023). Uncovering The Impact of Mindfulness-Based Interventions on Digital Distractions in The Learning Environment. Journal of Namibian Studies: History Politics Culture, 34, 7147-7163.

Khasawneh, M. A. S., & Khasawneh, Y. J. A. (2023). Achieving Assessment Equity and Fairness: Identifying and Eliminating Bias in Assessment Tools and Practices.

Khasawneh, S., & Ahmad, M. Training program for the development of reading skills in English for students with learning difficulties Training program for the development of reading skills in English for students with learning difficulties.

Khasawneh, Y. J. A. (2023). An Investigation of Pre-Service Teacher Preparation Programs in Teacher Education and Co-Teaching Models.

Khasawneh, Y. J. A., Alsarayreh, R., Al Ajlouni, A. A., Eyadat, H. M., Ayasrah, M. N., & Khasawneh, M. A. S. (2023). An examination of teacher collaboration in professional learning communities and collaborative teaching practices. Journal of Education and e-Learning.

Lohmann, J., Breithecker, J., Ohl, U., Gieß-Stüber, P., & Brandl-Bredenbeck, H. P. (2021). Teachers' professional action competence in education for sustainable development: A systematic review from the perspective of physical education. Sustainability, 13(23), 13343. http://dx.doi.org/10.3390/su132313343

Mu'tasem, M., Al-Rousan, A. H., Ayasrah, M. N., & Khasawneh, M. A. S. (2023). Ethical behaviour and its relationship to perceived violence by a child with a mental disability. Journal for ReAttach therapy and developmental diversities, 6(6s), 468-477.

Nikola, S. (2021). Teachers' Key Competencies for Innovative Teaching. International Journal of Cognitive Research in Science, Engineering and Education, 9(3), 331-345. http://dx.doi.org/10.23947/2334-8496-2021-9-3-331-345

Nor, N. M., Embong, R., Muda, H., Yunus, K., & Nor, J. M. (2019). Effects of teachers' teaching competencies on students' academic performance mediated by holistic centered learning style based on SUMUR Program at Secondary Religious Schools. International Journal of Academic Research in Progressive Education and Development, 8(2), 25-38. http://dx.doi.org/10.6007/ijarped/v8-i2/5600

Sulaiman, J., & Ismail, S. N. (2020). Teacher competence and 21st century skills in transformation schools 2025 (TS25). Universal Journal of Educational Research, 8(8), 3536-3544. http://dx.doi.org/10.13189/ujer.2020.080829

Tapani, A., & Salonen, A. O. (2019). Identifying teachers' competencies in Finnish vocational education. International journal for research in vocational education and training, 6(3), 243-260. http://dx.doi.org/10.13152/ijrvet.6.3.3

Wagiran, W., Pardjono, P., Suyanto, W., Sofyan, H., Soenarto, S., & Yudantoko, A. (2019). Competencies of future vocational teachers: Perspective of in-service teachers and educational experts. Jurnal Cakrawala Pendidikan, 38(2), 387-397. http://dx.doi.org/10.21831/cp.v38i2.25393

Yan, Z., Na, M., Alam, S. S., Masukujjaman, M., & Lu, Y. X. (2022). Teacher Competencies and School Improvement Specialist Coaching (SISC+) Programme in Malaysia as a Model for Improvement of Quality Education in China. Sustainability, 14(23), 16273. http://dx.doi.org/10.3390/su142316273

Zhang, Y., Ye, F., & Liu, X. (2021). Teaching Competencies of Language Teachers in Research Universities in Beijing: Perspectives from SoTL and Institutional Theory. Sustainability, 13(9), 4943. http://dx.doi.org/10.3390/su13094943