Journal of Educational and Psychological Sciences (JEPS) • Vol 8, Issue 4 (2024) • P: 63 - 53
https://journals.ajsrp.com/index.php/jeps
ISSN: 2522-3399 (Online) • ISSN: 2522-3399 (Print)

Ethical Issues Related to Low Performance Among Saudi Students in the Trends in International Mathematics and Science Study (TIMSS)

Dr. Noha Ali Almazroo
Ministry of Education | The kingdom of Saudi Arabia

Received: 31/01/2024
Revised: 13/02/2024
Accepted: 29/02/2024
Published: 30/04/2024

* Corresponding author: noha.ali.almazroo@gmail.com

Citation: Al-Mazroo, N. A. (2024). Ethical Issues Related to Low Performance Among Saudi Students in the Trends in International Mathematics and Science Study (TIMSS). *Journal of Curriculum and Teaching Methodology, 3*(4), 53 – 63 . https://doi.org/10.26389/AJSRP.N310124

ABSTRACT: Education represents one of the central processes of human life. Ethics, currently, has a significant role in all aspects of life. Therefore, ethics is considered as one of the main components of any teaching process all over the world. Teachers are responsible for the education and culture of the new generation; therefore, they have to act as role models to protect the discipline, culture, and honour of the school without compromising educational goals. Therefore, it is clear that ethics could be considered an integral part of a teaching career. This paper aims to reveal the reasons behind low achievement in the TIMSS tests among Saudi students and to propose ways to overcome such a problem. Analysis of the available literature showed that the main reasons behind student's low achievement in TIMSS tests in Saudi Arabia could be attributed to several reasons including Lack of self-efficacy in teachers, Lack of teachers' quality, Lack of differentiation methods in teaching, and Lack of knowledge to employ technology. Solutions to enhance student's accomplishments in such examinations are suggested and explained. The solutions include that teachers must be willing to participate in school decision-making, create an appropriate learning environment, actively contribute to the implementation of the school curriculum, use effective educational strategies, engage in continuous professional development, and activate professional communities. Further research is needed to examine these points in detail and suggest successful ways to be applied to improve these areas.

Keywords: Teaching Ethics, TIMSS, Educational Issues.

القضايا الأخلاقية المتعلقة بتدني أداء الطلاب السعوديين بالاتجاهات الدولية (TIMSS) في دراسة الرياضيات والعلوم

د. نهى علي المزروع
وزارة التعليم | المملكة العربية السعودية

المستخلص: يُعد التعليم حقًا إنسانيًا للجميع، ولا تتم العملية التعليمية الصحيحة إلا بإتِّساقها مع الأخلاق، ويتحمل المعلمون المسؤولية عن تعليم وتثقيف الجيل الجديد من الطلاب، ويؤدون دورًا حيويًا في الحفاظ على الانضباط والسيطرة داخل المدرسة، وبالتالي تشكل أخلاقيات مهنة التعليم أساسًا للتعليم الناجح، وهدفت الورقة العلمية الحالية إلى الكشف عن أسباب تدني نتائج الطلاب بالمملكة العربية السعودية في اختبارات التيمز TIMSS الدولية، ومن ثم اقتراح حلولًا علمية تساهم في التغلب على هذه المشكلة، حيث أظهر تحليل الأدبيات المتاحة أن تدني نتائج الطلاب السعوديين في الاختبارات الدولية TIMSS يمكن أن يعزى للأسباب التالية؛ انخفاض الكفاءة الذاتية للمعلمين، وضعف جودة أدائهم، والافتقار إلى أساليب التمايز في التدريس، وقلة مهارات توظيف التقنية في العملية التعليمية، وتوصلت الورقة إلى عدد من المقترحات والحلول لرفع مستوى نتائج الطلاب السعوديين في اختبارات تيمز الدولية TIMSS، منها؛ إلزام المعلمين بقواعد السلوك الأخلاقي في التعليم، والذي يتطلب منهم المشاركة في صنع القرار داخل المدرسة، وتهيئة بيئة تعليمية فعالة، والمساهمة في تحسين وتطوير المناهج الدراسية، وقضاء وقت في البحث عن طرق تدريس حديثة، والاطلاع على المستحدثات التقنية التعليمية، بالإضافة إلى الانخراط في التطوير المهني المستمر، وتفعيل مجتمعات التعلم المهنية.

الكلمات المفتاحية: أخلاقيات التدريس، تيمز، القضايا التربوية.

Introduction.

Education is an important component of any process in human life, and ethics is essential in every single aspect of life as well. Accordingly, ethics is regarded as one of the key constituents of any teaching process worldwide. The term ethics is derived from the Greek word Ethos, which means character or moral nature. Therefore, ethics is linked to our morals and merits. It could also be defined as everyday experiences and actions. Thus, ethics can be defined as the study of what is right and what is wrong (Brierton, Graham, Tomal, & Wilhite, 2016). In general, ethics is divided into two main categories: (a) theoretical ethics; (b) applied or practical ethics. Some examples of theoretical ethics include descriptive ethics, meta ethics, and normative ethics; professional ethics is one of the most significant components of applied ethics (Gülcan, 2015).

Teaching ethics include teachers' commitment to students as well as the profession. However, despite its significance, some teachers tend to completely ignore the ethical aspect of education; such indifference leaves a critical side in the professionalization of teaching unfulfilled. Subsequently, these teachers fail to grasp the ethical dimensions of their actions toward the education of students, resulting in students' low scores on international assessment tests, such as the Trends in International Mathematics and Science Study (TIMSS). The TIMSS is a series of international assessments of the mathematics and science knowledge of students all over the world. The International Association for the Evaluation of Educational Achievement (IEA) established the TIMSS in 1995 to allow different educational systems around the world to compare their students' performance with other countries and to gain the required knowledge about how to design an effective education policy to enhance their educational processes. The assessment is conducted once every four years for students in fourth and eighth grades in mathematics and science (Wardat, Belbase & Tairab, 2022).

Problem Statement:

Education to pass tests has recently become a benchmark for performance in both schools and educational systems. The significance of these tests has led to a phenomenon known as teaching to test in which students are taught a range of skills and knowledge related to the focus of the test, along with some test performance strategies. Thus, teachers press students to pass tests and get high grades. Because passing tests has become the goal of education, the quality of knowledge and skills might have become impaired (Griffin, 2017).

Saudi Arabia began to take part in TIMSS tests in 2003 (2003, 2007, 2011, 2015, 2019). In 2019, regarding science, fourth-grade Saudi students ranked 53th among the 58 countries participating in the examination, while eighth grade students ranked 35th among the 39 participating countries. Concerning mathematics in the same year, fourth-grade Saudi students ranked 53th among 58 participating countries, whereas eighth grade students ranked 37th among 39 participating countries (Education & Training Evaluation Commission, 2020). Clearly, there was a significant decline in Saudi students' achievements in mathematics and science compared to other countries because of ethics in teacher's practices (Shannag, Tairab, Dodeen, & Abdel-Fattah, 2013). The argument we make is based on the study by Alghamdi and Azam (2018), which confirmed that the low ranking and academic achievement of Saudi students in TIMSS relates to teachers' practices that do not account for differences among individual students. Saudi Arabia can be described as a mostly monocultural society in which students differ in their levels of knowledge, willingness to learn, motivation, and learning preferences (Alghamdi, 2014). Paying attention to these differences is essential for effective education, and overlooking them can lead to students' failure (Andrews, Drefs, Lupart, & Loreman, 2015). Teachers encounter the difficulty of significant individual differences among students owing to varied abilities, genders, and ages. Not to mention, students have different cultures, languages, and socio-economic backgrounds (Andrews et al., 2015). In addition to these elements, students do not have the same levels of motivation, nor do they share the same attitudes towards teaching and learning or the same responses to certain instructional practices and classroom environments (Felder & Brent, 2005).

Objective:

The objectives of the current paper is that it reveal the reasons behind low achievement in the TIMSS tests among Saudi students and to propose ways to overcome such a problem.

Study Design:

To achieve the objectives of the study, the researcher used the descriptive approach.

Assumptions:

A number of assumptions are at the core of this ethical issue, compounded by the following:

Lack of Self-Efficacy in Teachers:

Ololube (2006) claims that the most significant profession for the progress of any nation is teaching. Teachers' work forms the criteria for any educational institution's success or failure in reaching its purpose of integrating learning and morality. The findings of a study by Alghamdi and Azam (2018) confirm the noticeable effect of teacher self-efficacy on student achievement on TIMSS tests, as teachers' attitudes towards education, professionalism, and other characteristics influence their classroom performance and ethical practices. These findings are consistent with those of the studies of Campbell, McNamara, and Gilroy (2004) and Olayiwola (2011), who posit that teacher self-efficacy is a critical factor in teachers' classroom practices because teachers' beliefs about their competence determine how they think and behave. There is a close relationship between teachers' beliefs about their abilities and both their ethical behaviors towards students and student achievement (Barbier, Struyf, & Donche, 2022).

Several researchers, however, have revealed that some teachers lack awareness of their self-efficacy in the teaching process, which reflects negatively on students, as these teachers dedicate less time to teaching new lessons and use poor teaching methods (Alghamdi, 2017; Ololube, 2006). Teacher self-efficacy has been defined as teachers' beliefs about their general abilities to make a difference in the learning and performance of students, but the concept is continually developing. It is currently interpreted based on Bandura's concept of self-efficacy (Olayiwola, 2011).

Bandura (1977) defined self-efficacy as one's belief in his or her competency to organize and execute the courses of action necessary to manage prospective situations and produce given attainments. Bandura (1977) describes two factors of self-efficacy: (1) personal efficacy, which is a person's perception of his or her ability to perform a behavior and (2) outcome expectancy, which is a person's expectation that a certain course of action will result in sought outcomes. In the case of teachers, self-efficacy is a judgment of one's capabilities to reach the required outcomes of student learning and engagement (Bandura, 1977).

In addition, Skaalvik and Skaalvik (2007) define teacher self-efficacy as teachers' perceptions of their abilities to influence their students. These beliefs represent an important variable in the educational process because they are associated with the behaviors of the teacher and the student. A teacher's self-efficacy consists of two independent dimensions: personal teaching efficacy and general teaching efficacy. The former includes beliefs about one's ability to achieve student learning and refers to a teacher's skill in effecting positive change in students. The latter includes teachers' beliefs about their profession and its ability to achieve student learning, control the learning environment, and influence student motivation and achievement (Poulou, 2007). Skaalvik and Skaalvik (2007) also point out that teacher self-efficacy is divided into dimensions associated with teacher ethical practices, such as efficacy for instruction, efficacy for adapting instruction to individual needs, efficacy for motivating students, and efficacy for maintaining discipline. Zee and Koomen's (2016) study further demonstrates that self-efficacy is related to the amount of effort teachers must apply to accomplish a task. Teachers' beliefs about their competencies are linked to student outcomes, including motivation, achievement, and students' own senses of efficacy (Denzine, Cooney, & McKenzie, 2005). Further, teachers' efficacy is related to their instructional behaviors in the classroom. For example, their self-efficacy influences the efforts they make in teaching, the objectives they seek to achieve, and their levels of aspiration and planning (Tschannen-Moran & Hoy, 2007).

Lack of Teachers' Quality:

The quality of teachers plays a central role in increasing students' achievements and learning, teachers of high quality can improve the educational process. Hanushek and Rivkin (2010) argued that influential teachers are those who can efficiently help student meet learning goals, unlike ineffective teachers, whose students reach less impressive levels. Teachers' quality is undoubtedly one of the most significant components in the teaching-learning process (Al bursan& Tighezza, 2013). Harris and Sass (2011) showed that not all teachers share the same degree of effectiveness, so not all teachers equally encourage students' achievements. Thus, it is necessary and increasingly interesting to educators as well as researchers to determine the factors that enable teachers to be more effective.

Further, teachers' quality affects all educational policies, and while educators have researched it for decades, they have yet to agree on its characteristics nor have they established a conclusive definition of its elements (Fox & Peters, 2013). Since researchers and teachers cannot agree on a definition of teacher effectiveness or quality, they also disagree with the methods of evaluation of teacher quality. Hence, they held different opinions regarding the importance of common measurable characteristics of teacher quality,

including the level of education and certification, (Slater, Davies, & Burgess, 2012). Others researchers regarded these characteristics as necessities to produce highly qualified teachers (Rouse, 2008). Rouse (2008) alleged that the most essential criteria of effective teachers are a teacher's personality and teaching ethics, preparation, execution of instruction and assessment, classroom management skills, and evaluating students' learning progress. In fact, teachers' quality was originally qualified by their certifications or credentials, but now should be defined according to students' knowledge (Hanushek & Rivkin, 2010).

There is currently a hot debate on some of the educational challenges related to the quality of teachers in Saudi Arabia because of the country's low ranking in TIMSS findings (Alghamdi, 2017). The same findings were reached by Dodeen, Abdelfattah, Shumrani, and Hilal (2012), who investigated the influence of teachers' qualifications, perceptions, and practices on students' achievements in mathematics in TIMSS in Saudi and Taiwanese schools. The responses of mathematics teachers to the Teacher Background Questionnaire from the TIMSS in 2007 were analyzed in this study. The Saudi sample was made up of 171 teachers, whereas the Taiwanese sample was made up of 152 teachers. The results revealed that teachers' certificates and education caused significant differences in ranking among the two countries. To illustrate, more Taiwanese teachers obtained educational certification, so they were more qualified than their Saudi peers. It can be said that the qualifications of Taiwanese teachers contribute really well to their positive effect on students.

This is attributed to the fact that the required condition to be a teacher in Saudi Arabia is getting a degree in school disciplines; thus, having teacher certification is not mandatory to teach as a profession (Alghamdi, 2017). Therefore, Slater et al. (2012) suggested that the teachers who are highly qualified in their subject areas thanks to their certifications regularly and greatly improve their students' achievements. On the other side, Dodeen et al. (2012) and Al-bursan and Tighezza (2013) confirmed that teacher quality needs to be deeply considered with consequent plans for improving students' achievements.

Lack of Differentiation Methods in Teaching:

Teachers have been given the responsibility of enabling students to achieve the desired scores in TIMSS tests and making a difference in their students' achievement (Dodeen et al, 2012). Amid a large number of calls for implementing differentiated methods (DMs) in the classroom, some Saudi teachers still reject utilizing them in teaching. Instead, they adhere to conventional methods in which they transmit the maximum amount of knowledge to a large number of students in the shortest time possible whether students are engaged or not (Sibahi, 2015).

Several studies have revealed that the low achievement levels of Saudi students in science are due to the conventional teaching methods adopted by teachers who prefer the lecture format in which students are merely passive receivers of a large amount of information. Teachers using this style fail to consider the diverse learning needs of students and do not make use of DMs (AlJamaan, Omar, & Fodah, 2015; Haroun, Dicky, Abdelfattah, & Al-Salouli, 2015). Felder and Brent (2005) assert that believing that there is a comprehensive approach that fits all students and meets their needs is misguided. Santangelo and Tomlinson (2009) observe that teachers who use differentiated methods of instruction that depend on student interests are able to increase the students' engagement and enhance their motivation. This engagement results in renewed interest in the lesson. Student interest can be exploited as a catalyst to stimulate motivation and curiosity. DMs have been revealed to help students acquire positive attitudes toward learning by taking the diverse needs of those experiencing learning difficulties into account and by helping students concentrate on what they understand instead of what they do not understand (Santangelo & Tomlinson, 2009).

Moreover, DMs help teachers become innovative and flexible in using creative ideas and strategies to meet students' multiple needs (Butt & Kausar, 2010). A study conducted by Shannag et al. (2013) compares the qualifications and practices of Saudi science teachers with those of Singaporean science teachers. The responses of science teachers to the Teacher Background Questionnaire from the TIMSS in 2007 were analyzed in this study. The Saudi sample was made up of 175 science teachers, and the Singaporean sample was composed of 377 teachers. The study aimed to determine the reason behind the differences in student achievement between Saudi and Singaporean students. The comparison between the two participating countries showed significant differences in the way teachers prepared for instruction in science topics. These results indicate that Saudi science teachers used traditional teaching practices; they focused on teacher demonstration of experiments instead of letting students perform experiments themselves and insisted that students memorize principles and facts in every or almost all lessons. However, for almost all behaviors related to inquiry and to student-centered teaching, including designing and planning experiments, observing natural phenomena and

conducting experiments, the Saudi sample showed these practices significantly less than the Singaporean sample. The results indicate that the Singapore teaching methods can be described as student-centered and inquiry-oriented instruction.

Lack of Knowledge to Employ Technology:

Teachers are not well-informed regarding the skills or basic knowledge of digital technologies, which, in return, causes an inability to effectively integrate digital technology in education (Niess & Kajder, 2008). In a study conducted by Alqurashi, Gokbel, and Carbonara (2017), teachers' technological pedagogical content knowledge (TPACK) of two groups of teachers in the US and the KSA, representing two diverse cultural contents, were estimated to describe the elements influencing teachers' technological knowledge. The results showed that educational levels and teaching experience led to some differences between the two groups of teachers' TPACK scores, yet teachers from the US and the KSA received higher ratings of an understanding of pedagogy and content rather than knowledge of technology. The reason for such low technological self-efficacy is a lack of preparation to implement digital technologies supporting different learning environments (Ertmer & Ottenbreit-Leftwich, 2010).

Alqarni (2015) stated that although the Saudi government was allocating nearly one-third of its yearly budget to education, the reality of teaching in Saudi schools confirms that the majority of teachers do not make great efforts to exploit the Internet and modern technological tools, except for providing academic resources and PowerPoint presentations that do not include the appropriate conditions for the activation of technology and the use of modern communication tools. Moreover, teaching in Saudi Arabia reveals teachers' lack of the necessary skills to employ technology (Aljameel, 2022). According to Al-Maini (2011), there are a number of reasons Saudi teachers do not use technology, such as teachers' resistance and inadequate skills regarding the use of technology.

Rationale:

The entire educational process depends heavily on teachers. Thus, having committed, well-trained teachers helps push the completely educational process in the right direction. According to Alnahdi (2014), some teachers in Saudi Arabia lack the qualities that enable them to perform their duties. To illustrate, they do not feel responsible for, passionate about, and enthusiastic for teaching. Such attitude is obviously mirrored on their students. One more problem is that teachers' skills regarding classroom management and lesson planning are not as good as they should be. Accordingly, the level of accountability needs to be raised (Alnahdi, 2014). Additionally, Hargreaves and Shirley (2009) stress the essential need for qualified teachers for any educational reforms.

On the one hand, Saudi Arabia began to make changes in the education system. One of the first steps in this direction is the Ministry of Education's 2011 announcement of the new strategy that 80% of teachers' performance assessment will be based on their students' performance on standardized tests (Alnahdi, 2014). As a result, teachers unethically started pressuring students to achieve higher performance in standardized tests, rejecting the idea of changing their educational practices (Griffin, 2017), ignoring the principle of responsibility before accountability (Hargreaves & Shirley, 2009). This action plan reviews a range of possible solutions that school system coordinators must seek to change the situation to a new environment where students receive better service and teachers are more aware of their ethical practices and better understand their obligations and roles toward their students. Although change plays a positive role at school, some teachers may reject it for various reasons, such as their sense of security in the familiar and fear of the unknown. Finally, officials in education must remember that any reform in the education system is slow and it takes time to see immediate tangible results after implementing reforms.

Action Plan

Appling the Distributed Leadership Style:

The effectiveness of educational institutions is related to the dominant administrative environment since leadership is considered the key factor in successful schools. Schools should tend toward distributed leadership as an innovative approach to administration to revolutionize schools, upgrade achievement levels, and inspire teachers to adopt more practices to enhance students' academic achievement. In fact, the concept of distributed leadership emerged in the 1950s. Then, it was broadened to be eminent, influential, and widespread (Gronn, 2002). This concept was based on the activity theory that depended on the work of Vygotsky and his student Leont'ev through their study of historical, cultural psychology in the 1920s (Gedera & Williams, 2015). Later in the 1970s,

several theorists put forth the idea of distributed leadership. One of whom was Alma Harris, who paid growing attention to the models of situational knowledge and distribution patterns because such distributed leadership views teachers as partners rather than followers via their active participation in making and taking decisions and cooperation in achieving the goals of the school and improving its performance and development (Özdemir & Demircioğlu, 2015).

Additionally, educational studies have emphasized the importance of distributed leadership, such as those by Rabindarang, Bing, and Yin (2014) and Supovitz and Tognatta (2013), which showed some differences between the school performance of the members of schools that applied the distributed leadership style and other schools that did not—the former type of schools had better results. Harris (2013) argued that the integration of teachers into leadership activities is the basis of distributed leadership. Furthermore, students' outcomes are likely to improve when leadership resources are distributed across the school community. Such an increased emphasis on decentralized leadership creates an increasing focus on teachers' leadership and the development of their contribution to making decisions on students' academic curriculum.

Creating a Positive School Climate:

There is a significant interest in school climate reform, as it constitutes a safe, organized environment supporting learning and achievement. Unsurprisingly, the assessment of the school climate has become a target on the international level due to its influence on the quality of school and students' results (Thapa, Cohen, Guffey, & Higgins-D'Alessandro, 2013). In fact, there are a variety of concepts of school climate, one of which is that it includes "quality and character of school life" and is "based on patterns of people's experiences of school life and reflects norms, goals, values, interpersonal relationships, teaching and learning practices, and organizational structures" (Cohen, McCabe, Michelli, & Pickeral, 2009, p. 182). Wang and Degol (2016) posited that the school climate is supposed to include the dimensions of the academic environment, society, and safety in addition to the institutional environment that involves the characteristics of the school environment affecting the cognitive, behavioral, and psychological development. Furthermore, the utilization of the authoritative school climate framework helps people understand the school environment via two main components: disciplinary structure and student support. The disciplinary structure refers to the strict yet fair enforcement of school regulations. Correspondingly, teachers and school members should support and respect students (Gerlinger & Wo, 2016). This very aspect adopts the authoritative parenting model that first appeared in Baumrind's work (1968), which is derived from the pillar theory that was the starting point for a considerable amount of research based on parenting styles (Larzelere, Morris, & Harrist, 2013). Similarly, Voight and Nation (2016) assumed that teachers can improve the school environment by showing more interest in students, talking to them about their personal and academic interests, and maintaining order in the classroom through mutual respect and the implementation of the code of conduct. Lee (2012) used the data from a student survey in an international student assessment program in American schools to measure the teachers' relationship with their students and found that the supportive relationship between teachers and students was linked to the academic, behavioral, and emotional performance. Consequently, feeling safe in school was a prerequisite for learning and achieving physical, emotional, and social development.

Modifying and Developing Curricula:

The curriculum reflects the complexities and environments where teaching and learning occur because student learning depends on successful teaching (Dewey, 1916). Bruner devised his theory of education in the 1960s and 1970s. Such theory affected education programs devised over this period. This American psychologist worked on developing cognitive psychology and the cognitive theory of education in the field of educational education and philosophy. He assumed students' sense of learning evolves quickly and perfectly if they are committed to three modes of representation: enactive representation (action-based), iconic representation (image-based), and symbolic representation (language-based), which should be included in curriculum (Takaya, 2008).

Teachers understand students better than other educational stakeholders do, a fact that justifies teachers' substantial contributions to implementing the curriculum. Such a significant role is essential for developing curriculum in a broader sense. Including teachers in the curriculum implementation process facilitates understanding of how a certain teaching method innovated by teachers can fit a lesson perfectly. Besides, teachers can predict whether the devised curriculum will attract students' attention (Ornstein & Hunkins, 2013).

Generally, regularly modifying curricula to fit the ongoing developments has become a necessity. Accordingly, curricula that are not occasionally updated and adapted do not meet the requirements in the current era. For these reasons, all educational systems seek to improve their curricula in an attempt to change their learning philosophy and teaching methodologies via shifting from content-based teaching to competency-based education to transform the teaching and learning process into a set of interactive practices between teachers and students away from traditional teaching (Rogers, 2021).

Improving Teachers' Quality and Knowledge:

Perceptions of ethics in teachers' practice are central to students' achievement; thus, Shapira–Lishchinsky (2019) examined the ethical aspects shared by teachers in 45 countries by analyzing their responses to the TIMSS questionnaire and exploring whether there are items in the TIMSS teacher questionnaires with an implicit ethical meaning that reflect ethical aspects in teachers' practice and whether the teachers' responses reflected shared ethical perceptions. In this study, teacher professionalism, caring about students' learning, interacting with colleagues, and respecting the rules were identified. The results showed that despite the shared dimensions in the covered countries, there are differences attributed to the national policy concerning procedures, regulations, and course content of continued PD. Maeng and Bell (2015) posited that teachers are an integral part of students' achievement irrespective of the subject or the school level. Moreover, paying attention to the various teaching and planning techniques and strategies is significant to enhance students' academic achievement. In parallel, Sahlberg (2007) asserted that all successful education reforms mainly rely on the quality of teachers and that the dynamics of qualified teachers and teaching led to the effectiveness of the Finnish education system. Furthermore, empirical studies have revealed the significance of teachers' professional experience, especially their pedagogical knowledge (PK), content knowledge (CK), and pedagogical content knowledge (PCK) to upgrade the quality of teaching as well as students' outcomes (König & Pflanzl, 2016; Voss, Kunter & Baumert, 2011). In addition, teachers' technological pedagogical content knowledge includes understanding instructional approaches and methods and learning how to build on technology to improve students' learning (TPACK) (Alqurashi et al., 2017).

Shulman's work (1987) was influential in teacher professional knowledge research, as he defined the PCK theory as "that special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding" (Shulman, 1987, p.8). PCK is used to design pre-service programs to prepare teachers in addition to continual education and PD programs. Evens, Elen, Larmuseau, and Depaepe (2018) found that integrating courses on CK, PK, and PCK in the curriculum greatly improves teachers' professional knowledge.

Employ Differentiation Methods in Teaching:

Effective teaching results from a number of factors, which include the ability of teachers to understand and properly identify students' learning needs individually and collectively, mastering the taught subject, and creatively adapting the curriculum, teaching resources, strategies, learning activities, and assessment and learning environment to make sure they are relevant to the needs, interests, and learning profiles of students (Santangelo & Tomlinson, 2012). Wassermann (2015) posited that teaching is about understanding how and what and selecting the required teaching methodology depending on the situation.

Consequently, involving, challenging, and supporting students in the class can be the best way for them to learn. Thus, it is the duty of teachers to do their best to create a welcoming learning environment, which is almost impossible with the lecture format. However, improving students' learning process is possible via employing a DM that helps teachers to assess students' needs and motivate them in better ways (Stavrou & Koutselini, 2015). This kind of interaction is comparable to Vygotsky's social learning theory that learning is a social rather than individual process, and it takes place when students interact with both their teacher and other classmates. Vygotsky (1978) described the zone of proximal development (ZPD) as "the distance between the actual developmental levels as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). Thus, teachers provide students with a range of temporary assistance through which they reach the level they can build their own knowledge through the scaffolding educational strategy defined as the educational assistance provided by the teacher or the most skilled peers of the learner to bridge the gap between the current level in the skill and potential one (Shih, Chen, Chang, & Kao, 2010). Researchers have pinpointed plenty of merits of DMs topped by gains in students' achievement. Richards and Omdal (2007) suggested that differentiation through tiered

assignments boosts lower-achieving students' academic achievement. Such finding is in line with Santangelo and Tomlinson's (2009) finding that differentiating instruction depending on students' interest motivates students to engage in the class activities, thereby leading to a renewed interest in the lesson. Accordingly, student interest is used as a catalyst to provoke both curiosity and motivation. Furthermore, teachers are supposed to realize that each student learns differently, and there are many ways to teach a particular topic. Teachers should make every possible effort to provide multiple and varied opportunities for students to learn and select appropriate learning strategies to improve students' performance.

Engaging in Continuous Professional Development:

Recently, most presentations, speeches, or conversations on educational reform have involved several references to how much support and training teachers will need to vitalize essential, effective reforms in classrooms. Fullan (2010) assumed that future efforts should target students' achievement as well as teachers' success through providing suitable conditions. He held the opinion that external PD can impede teachers' learning. Rather, the work setting and learning daily schedule are required to improve teachers' skills. For him, instructors with influential, moral purposes who are committed to continuous learning and desire to be cooperative are the resourceful teachers supporting large-scale reforms. Walter and Briggs (2012) examined the findings of 35 evidence-based studies regarding teachers' PD. Such studies proved that successful teaching has a positive effect not only on teaching skills, but also on students' learning. Crucially, they also defined the most influential PD characteristics for teachers: the PD should be concrete, sustainable, supported by competent school leadership and classroom-based, consult teachers concerning their learning preferences and needs as well as their effective activities, empower teachers to cooperate with their peers, and lastly offer mentoring and coaching chances. PD is a "comprehensive, sustained, and intensive approach to improve teachers' and principals' effectiveness in raising student achievement" (Hirsh, 2009, p. 10). O'Brennan, Bradshaw, and Furlong (2014) contended that well planned and designed PD programs should focus on and present a considerable amount of data and detailed information concerning teaching practices, pedagogy, and teaching skills. PD programs should determine what methods schools may use to support their own improvement plans and how teachers may use them to better their own instruction because school-based PD helps teachers, researchers and PD contributors to determine the elements positively affecting students' learning and their behaviors.

Teachers' training should be related to the problems they encounter in the classroom through in-depth and comprehensive training programs. Hopkins (2014) emphasized that PD programs should focus on providing abundant information on teaching methods, teaching practices, and skills to promote teachers' PD and, thus, students' performance. High-quality PD programs can help teachers acquire knowledge and skills that can be applied to classroom practices. Correspondingly, Doig and Groves' (2011) findings confirmed that teachers' continual PD in all aspects depends to a large extent on the progress in employing learning communities because of the improvement of joint as well as individual efforts and common sense of responsibility.

Activating the Professional Learning Communities:

DuFour, DuFour, Eaker, Many and Mattos (2016) posited that school reform is based on the development of the skills of school employees to work as professional learning communities (PLCs). They pointed out that a PLC is more than a mere meeting; it is a continual process enabling teachers to collaborate repeatedly in action research and collective inquiry to upgrade the level of their students. It is worth mentioning that the central part of a PLC is focusing on students' learning. In fact, PLCs date back to adult learning theory (Linder, Post & Calabrese, 2012). Such a theory assumes that adults learn through experience, learn better when the learning process is centered on solving the real problems they encounter, and are self-directed and responsible for learning as well as motivated to learn due to internal rather than external incentives (Knowles, 1990). Dewey, Piaget, and Vygotsky paved the way for organizational and social learning. Hence, group experiences offer a practical environment to test social as well as and moral judgments in addition to individual understanding against reality. They actively nurtured the belief that the learning process should be socially constructed and enhanced by what each learner knows in advance and what the group, as a whole, experiences (Alshammary & Alhalafawy, 2023). In the same vein, professional learning societies are based on social constructivism, which assumes that learning is socially constructed, influenced by the interaction of learners in a social climate (Van lare & Brazer, 2013). Further, Peppers (2015) believes that effective PLC share four main characteristics that seem to be integrative and interrelated: shared vision and values, collective responsibility, reflective professional inquiry, and collaboration. Several studies have linked PLC with increasing teachers' professional knowledge, improving their practices, enhancing their collaboration, developing their leadership abilities and focusing on students' learning, thereby bettering students' achievement in international tests (Lalor & Abawi, 2014; Peppers, 2015).

Conclusion.

This paper highlighted the issue of the low performance of Saudi students on the TIMSS test by identifying the most important assumptions of the problem, revealing the profound meaning of the concept of ethics in teachers' practice. Subsequently, an appropriate action plan focusing on the ethical practices of teachers was developed to improve their teaching skills to improve students' performance. More specifically, teachers must be willing to participate in school decision-making, create an appropriate learning environment, actively contribute to the implementation of the school curriculum, use effective educational strategies, engage in continuous professional development, and activate professional communities.

References.

- Al-bursan, I., & Tighezza, E. (2013). Assessment practices of mathematics teachers in Kingdom of Saudi Arabia and South Korean: A comparison study. *Journal of Education and Psychology*, *39*(4), 25-53.
- Alghamdi, A., & Azam, S. (2018). Differentiation in Saudi pre-service science teacher program. *Journal of Baltic Science Education*, *17*(3), 428-455.
- Alghamdi, D. J. (2017). A case study of instructors and curriculum and implementation for language learning. *International Journal of Arts & Sciences*, *10*(2), 305-325.
- Alghamdi, H. (2014). The road to culturally relevant pedagogy: Expatriate teachers' pedagogical practices in the cultural context of Saudi Arabian higher education. *McGill Journal of Education*, *49*(1), 201-226.
- AlJamaan, A., Omar, S., & Fodah, O. (2015). The impact of the science writing heuristic on 10th grade chemistry students' achievement and attitude towards chemistry. *International Interdisciplinary Journal of Education, 4*(1), 32-47.
- Aljameel, I. H. (2022). Computer-Assisted Language Learning in Saudi Arabia: Past, Present, and Future. *International Education Studies*, *15*(4), 95-107.
- Al-Maini, Y. H. (2011). Using technology in EFL in Saudi Arabia. *Literacy Information and Computer Education Journal*, *2*(3), 477-480.
- Alnahdi, G. H. (2014). Educational change in Saudi Arabia. *Journal of International Education Research, 10*(1), 1-6.
- Alqarni, A. A. (2015). Educational technology in Saudi Arabia: A historical overview. *International Journal of Education, Learning and Development, 3*, 62-69.
- Alqurashi, E., Gokbel, E. N., & Carbonara, D. (2017). Teachers' knowledge in content, pedagogy and technology integration: A comparative analysis between teachers in Saudi Arabia and United States. *British Journal of Educational Technology*, *48*(6), 1414-1426.
- Alshammary, F. M., & Alhalafawy, W. S. (2023). Digital Platforms and the Improvement of Learning Outcomes: Evidence Extracted from Meta-Analysis. *Sustainability*, *15*(2), 1305.
- Amineh, R. J., & Asl, H. D. (2015). Review of constructivism and social constructivism. *Journal of Social Sciences, Literature and Languages, 1*(1), 9-16.
- Andrews, J. W., Drefs, M., Lupart, J., & Loreman, T. (2015). Foundations, principles, and student diversity. *Diversity education: Understanding and Addressing Student Diversity*, *1*, 24-73.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191-215.
- Barbier, K., Struyf, E., & Donche, V. (2022). Teachers' beliefs about and educational practices with high-ability students. *Teaching and Teacher Education*, *109*, 103566
- Brierton, J.T., Graham, B. F., Tomal, D. R., & Wilhite, R. K. (2016). *Ethics and politics in school leadership: Finding common ground.* Lanham, MD: Rowman & Littlefield.
- Butt, M., & Kausar, S. (2010). A Comparative study of using differentiated instructions of public and private school teachers. *Malaysian Journal of Distance Education, 12*(1), 105-124.
- Campbell, A., McNamara, O., & Gilroy, P. (2004). *Practitioner research and professional development in education*. London, UK: Paul Chapman Publications.
- Cohen, J., McCabe, L., Michelli, N. M., & Pickeral, T. (2009). School climate: Research, policy, practice, and teacher education. *Teachers College Record*, *111*(1), 180-213.
- Denzine, G. M., Cooney, J. B., & McKenzie, R. (2005). Confirmatory factor analysis of the Teacher Efficacy Scale for prospective teachers. *British Journal of Educational Psychology*, *75*(4), 689-708.
- Dewey, J. (1916). *Democracy and education: An introduction to the philosophy of education*. New York, NY: Macmillan.
- Dodeen, H., Abdelfattah, F., Shumrani, S., & Hilal, M. (2012). The effects of teachers' qualifications, practices, and perceptions on student achievement in TIMSS mathematics: A comparison of two countries. *International Journal of Testing*, *12*(1), 61-77.

- Doig, B., & Groves, S. (2011). Japanese lesson study: Teacher professional development through communities of inquiry. *Mathematics Teacher Education and Development*, *13*(1), 77-93.
- DuFour, R., DuFour, R., Eaker, R., Many, T., & Mattos, M. (2016). *Learning by doing: A handbook for professional learning communities at work* (3rd ed.). Bloomington, IN: Solution Tree Press.
- Ertmer, P. A., & Ottenbreit-Leftwich, A. T. (2010). Teacher technology change: How knowledge, confidence, beliefs, and culture intersect. *Journal of Research on Technology in Education*, *42*(3), 255-284.
- Evens, M., Elen, J., Larmuseau, C., & Depaepe, F. (2018). Promoting the development of teacher professional knowledge: Integrating content and pedagogy in teacher education. *Teaching and Teacher Education, 75*, 244-258.
- Felder, R. M., & Brent, R. (2005). Understanding student differences. *Journal of Engineering Education*, *94*(1), 57-72.
- Felder, R. M., & Brent, R. (2005). Understanding student differences. *Journal of Engineering Education*, *94*(1), 57-72.
- Fox, A. G., & Peters, M. L. (2013). First year teachers: Certification program and assigned subject on their self-efficacy. *Current Issues in Education*, *16*(1), 1-15.
- Fullan, M. (2010). *All systems go: The change imperative for whole system reform*. Thousand Oaks, CA: Corwin Press.
- Gedera, D. S., & Williams, P. J. (2015). *Activity theory in education: Research and practice*. New York, NY: Springer.
- Gerlinger, J., & Wo, J. C. (2016). Preventing school bullying: Should schools prioritize an authoritative school discipline approach over security measures?. *Journal of School Violence*, *15*(2), 133-157.
- Griffin, P. (2017). *Assessment for teaching*. Port Melbourne, VIC: Cambridge University Press.
- Gronn, P. (2002). Distributed leadership as a unit of analysis. *The Leadership Quarterly, 13*(4), 423-451.
- Gülcan, N. Y. (2015). Discussing the importance of teaching ethics in education. *Procedia – Social and Behavioral Sciences*, *174*, 2622-2625.
- Hanushek, E. A., & Rivkin, S. G. (2010). Generalizations about using value-added measures of teacher quality. *American Economic Review*, *100*(2), 267-71.
- Hargreaves, A. P., & Shirley, D. L. (Eds.). (2009). *The fourth way: The inspiring future for educational change*. Thousand Oaks, CA: Corwin Press.
- Haroun, R., Dicky, N., Abdelfattah, F., & Al-Salouli, M. (2015). Gender difference in teachers' mathematical knowledge for teaching in the context of single-sex classrooms. *International Journal of Science and Math Education, 14*(2), 383-396.
- Harris, A. (2013). Distributed leadership: Friend or foe?. *Educational Management Administration & Leadership, 41*(5), 545-554.
- Harris, D. N., & Sass, T. R. (2011). Teacher training, teacher quality and student achievement. *Journal of Public Economics, 95*(7-8), 798-812.
- Hirsh, S. (2009). A new definition. *Journal of Staff Development*, *30*(4), 10-16.
- Hopkins, D. (2014). *A teacher's guide to classroom research* (5th ed.). Berkshire.UK: McGraw-Hill Education.
- Knowles, M. (1990). *The adult learner: A neglected species* (4th ed.). Houston, TX: Gulf Publishing.
- König, J., & Pflanzl, B. (2016). Is teacher knowledge associated with performance? On the relationship between teachers' general pedagogical knowledge and instructional quality. *European Journal of Teacher Education*, *39*(4), 419-436.
- Lalor, B., & Abawi, L. (2014). Professional learning communities enhancing teacher experiences in international schools. *International Journal of Pedagogies and Learning, 9*(1), 76-86.
- Larzelere, R. E., Morris, A. S., & Harrist, A. W. (2013). *Authoritative parenting: Synthesizing nurturance and discipline for optimal child development.* Washington, DC: American Psychological Association.
- Lee, J. S. (2012). The effects of the teacher–student relationship and academic press on student engagement and academic performance. *International Journal of Educational Research*, *53*, 330-340.
- Linder, R. A., Post, G., & Calabrese, K. (2012). Professional learning communities: Practices for successful implementation. *Delta Kappa Gamma Bulletin, 78*(3), 13-22.
- Maeng, J. L., & Bell, R.L. (2015). Differentiating science instruction: Secondary science teachers' practices. *International Journal of Science Education, 37*(13), 2065–2090.
- Niess, M. L., Kajder, S. B., & Lee, J. (2008). *Guiding learning with technology*. Hoboken, N.J: Wiley.
- O'Brennan, L. M., Bradshaw, C. P., & Furlong, M. J. (2014). Influence of classroom and school climate on teacher perceptions of student problem behavior. *School Mental Health, 6*(2), 125-136.
- Olayiwola, I. O. (2011). Self-efficacy as predictor of job performance of public secondary school teachers in Osun State. *IFE Psychologia: An International Journal*, *19*(1), 441-455.
- Ololube, N. P. (2006). Teachers job satisfaction and motivation for school effectiveness: An assessment. *Essays in Education*, *18*(1), 9-25.
- Ornstein, A. C., & Hunkins, F. P. (2013). *Curriculum: Foundations, principles, and issues* (6th ed.). Upper Saddle River, NJ: Pearson Education.
- Özdemir, M., & Demircioğlu, E. (2015). Distributed leadership and contract relations: Evidence from Turkish high schools. *Educational Management Administration & Leadership*, *43*(6), 918-938.

- Peppers, G. (2015). Teachers' perceptions and implementation of professional learning communities in a large suburban high school. *National Teacher Education Journal, 8*(1), 25- 31.
- Poulou, M. (2007). Personal teaching efficacy and its sources: Student teachers' perceptions. *Educational Psychology*, *27*(2), 191-218.
- Rabindarang, S., Bing, K. W., & Yin, K. Y. (2014). The influence of distributed leadership on job stress in technical and vocational education. *International Journal of Academic Research in Business and Social Sciences*, *4*(1), 490-499.
- Richards, M. R. E., & Omdal, S. N. (2007). Effects of tiered instruction on academic performance in a secondary science course. *Journal of Advanced Academics, 18* (3), 424-453.
- Rogers, A. P. (2021). Exploring secondary teachers' perspectives on implementing competency‐based education. *The Journal of Competency‐Based Education*, *6*(4), 222-232.
- Rouse, W. A. (2008). National board certified teachers are making a difference in student achievement: Myth or fact?. *Leadership and Policy in Schools*, *7*(1), 64-86.
- Sahlberg, P. (2007). Education policies for raising student learning: the Finnish approach. *Journal of Education Policy*, *22*(2), 147-171.
- Santangelo, T., & Tomlinson, C. A. (2009). The application of differentiated instruction in postsecondary environments: Benefits, challenges, and future directions. *International Journal of Teaching and Learning in Higher Education*, *20*(3), 307-323.
- Santangelo, T., & Tomlinson, C. A. (2012). Teacher educators' perceptions and use of differentiated instruction practices: An exploratory investigation. *Action in Teacher Education, 34*(4), 309-327.
- Shannag, Q. A., Tairab, H., Dodeen, H., & Abdel-Fattah, F. (2013). Linking teacher quality and students' achievements in the Kingdom of Saudi Arabia and Singapore: The impact of teachers' background variables on student achievement, *Journal of Baltic Science Education, 12*(5), 652-665.
- Shapira – Lishchinsky, O. (2019). The implicit meaning of TIMSS: Exploring ethics in teachers' practice. *Teaching and Teacher Education*, *79*, 188-197.
- Shih, K. P., Chen, H. C., Chang, C. Y., & Kao, T. C. (2010). The development and implementation of scaffolding-based self-regulated learning system for e/m-learning. *Journal of Educational Technology & Society*, *13*(1), 80-93.
- Shulman, L. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review, 57*(1), 1-23.
- Sibahi, R. (2015). Exploring reflective practice among college EFL teachers in Saudi Arabia. *Arab World English Journal*, *6*(2), 337-353.
- Skaalvik, E. M., & Skaalvik, S. (2007). Dimensions of teacher self-efficacy and relations with strain factors, perceived collective teacher efficacy, and teacher burnout. *Journal of Educational Psychology*, *99*(3), 611-625.
- Slater, H., Davies, N. M., & Burgess, S. (2012). Do teachers matter? Measuring the variation in teacher effectiveness in England. *Oxford Bulletin of Economics and Statistics*, *74*(5), 629-645.
- Stavrou, T. E., & Koutselini, M. (2015). The active involvement of teachers in action research for differentiation of the teaching-learning process: Understanding the needs of students and weaknesses of the curriculum. *Journal of Education & Social Policy*, *2*(2), 97-104.
- Supovitz, J. A., & Tognatta, N. (2013). The impact of distributed leadership on collaborative team decision making. *Leadership and Policy in Schools*, *12*(2), 101-121.
- *Sustainability*, *14*(9), 5436.
- Takaya, K. (2008). Jerome Bruner's theory of education: From early Bruner to later Bruner. *Interchange, 39*(1), 1-19.
- Thapa, A. S., Cohen, J., Guffey, S., & Higgins- D'Alessandro, A. (2013). A review of school climate research. *Review of Educational Research, 83*, 357-385.
- Tschannen-Moran, M., & Hoy, A. W. (2007). The differential antecedents of self-efficacy beliefs of novice and experienced teachers. *Teaching and Teacher Education*, *23*(6), 944-956.
- Van Lare, M., & Brazer, S. (2013). Analyzing learning in professional learning communities: A conceptual framework. *Leadership and Policy in Schools*, *12(4)*, 374-396.
- Voight, A., & Nation, M. (2016). Practices for improving secondary school climate: A systematic review of the research literature. *American Journal of Community Psychology, 58*(2), 174-191.
- Voss, T., Kunter, M., & Baumert, J. (2011). Assessing teacher candidates' general pedagogical/psychological knowledge: Test construction and validation. *Journal of Educational Psychology*, *103*(4), 952-969.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Walter, C., & Briggs, J. (2012). *What professional development makes the most difference to teachers*. Oxford, UK: Oxford University Press.
- Wang, M. T., & Degol, J. L. (2016). School climate: A review of the construct, measurement, and impact on student outcomes. *Educational Psychology Review, 28*(2), 315-352.
- Wardat, Y., Belbase, S., & Tairab, H. (2022). Mathematics teachers' perceptions of trends in international mathematics and science study (TIMSS)-related practices in Abu Dhabi Emirate schools.
- Wassermann, S. (2015). What is teaching? Inside the black box of what teachers do. *Childhood Education*, *91*(2), 83-89.
- Zee, M., & Koomen, H. M. (2016). Teacher self-efficacy and its effects on classroom processes, student academic adjustment, and teacher well-being: A synthesis of 40 years of research. *Review of Educational Research, 86*(4), 981-1015.