The extent of Saudi teachers' knowledge of TIMSS' policies and assessment practices

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Abstract

The teacher plays a crucial role in preparing students for work life and social participation and in raising their academic level. In the Saudi school education sector, there is dissatisfaction with student results in the Trends in International Mathematics and Science Study (TIMSS) tests. This paper explores the extent to which the teacher's role is activated in preparing students for the test. In addition, it explores the extent to which teachers have the necessary teaching and assessment skills and standards to fulfil their role effectively. This study found a lack of awareness exists among Saudi teachers regarding the standards and objectives of the TIMSS test. Furthermore, many barriers continue to affect the achievement of academic development. This paper emphasizes the importance of teacher involvement in TIMSS procedures and correctional sessions in the educational environment.

Keywords: Saudi Arabia, Teacher Knowledge, TIMSS, Assessment Policy

Introduction

In the field of education, the newly adopted Saudi programme 'Vision 2030' aims to develop the Kingdom's philosophy of education and its education policy. One of the main pillars in the development of education in the Vision 2030 is teacher development via the implementation of professional development programs (Government of Saudi Arabia, 2019). This is because education is vitally connected to society, and education contributes to the diversification of economic dependence by highlighting productive capacities and human skills, providing career opportunities, and developing human capital (Government of Saudi Arabia, 2019). To ensure the education plan progresses towards the national goals, the Ministry of Education has established independent educational measurement and evaluation institutions. Moreover, the Ministry endorses the participation of Saudi students in the most prominent international tests in the field of education. Such tests include Trends in International Mathematics and Science Study (TIMSS) and the Program for International Student Assessment (PISA), with the results providing an indication of the quality of education provision in the participating countries.

This study reviews the Saudi experience in the TIMSS test, with specific emphasis on exploring Saudi teachers' knowledge of the TIMSS test and other international tests along with their awareness of the standards and principles adopted in the tests. Hence, this study reveals the extent of the Saudi teachers' role in the discussion, implementation or preparation of students for the TIMSS test. Finally, this paper reviews the teachers' perspectives of the needs and requirements of the Saudi school education sector to raise the academic level of students.

Objective and importance of the study

Like other international tests, the TIMSS test provides accurate data and honest explanations about the quality of education in the participating countries. Therefore, a focus on TIMSS results can be critical to the development of the Saudi learning environment, to the quality of learning by students, and to the effectiveness of teachers and the curriculum. Improvement in the United States of America (hereafter US) school education sector over the past 10 years has

been entirely dependent on accurate and high-quality data (McKernan, 2001; as cited in Al-Sadaawi, 2010).

In Saudi Arabia, teachers lack a well-defined role in the process of educational reform. For this reason, this study examines the reality of activating the role of Saudi teachers in preparing students for the TIMSS tests, where the adoption of this measure is one of the priorities of the Ministry of Education in revealing the quality of school education in the Kingdom. Alreshidi (2016) points out that Saudi Arabia's results in the TIMSS tests sent a stern warning to Saudi education decision-makers about the quality of education and the low number of students in the Science and Mathematics subject areas. Therefore, it is essential to activate teacher preparation improvement programs in order to build their capacity to raise the academic level of students (Al-Nazeer, 2011; as cited in Alreshidi, 2016). Finally, the relatively poor performance of Saudi students in the TIMSS test is of significant concern for education and development policy makers in Saudi Arabia (Wiseman et al., 2008).

The role of the teacher is crucial in influencing student results in TIMSS tests. This is because the teacher is directly responsible for teaching students according to the international standards adopted for the tests, preparing students psychologically and academically to participate in the tests, and for identifying the potential obstacles faced by students in the learning environment. Therefore, this study explores the extent to which the teacher's role is activated in preparing students for the TIMSS tests. In order to be effective in this area, the teacher must have full knowledge of the TIMSS test objectives and standards, as well as the teaching skills and assessment strategies to meet the requirements of such tests. Hence, this paper focuses on the extent of Saudi teachers' knowledge of the TIMSS tests. In addition, it explores the extent to which the teachers' role is activated in preparing the educational environment and to which teachers possess the required skills and highlights the obstacles they face in facilitating the academic progress of students.

Methodology

A set of questions was formulated for the telephone interviews with teachers directly related to the study questions. Four Saudi teachers from different schools in Riyadh were selected to participate in this study. All four teachers work in schools run by the Riyadh Education Department in order to obtain answers formed under similar administrative, financial and social possibilities.

Study sample

Teachers are considered the most suitable cohort to support the achievement of the study objectives. This is because they are the main stakeholder group involved in preparing the students for their participation in international tests. Thus, four Saudi teachers from different schools in Riyadh were selected to participate in this study. All four teachers work in schools

Data collection

Data was collected via recorded telephone conversations. Each interview was recorded as consented to by the participants. Audio recording the interview is essential to facilitate an accurate review and analysis of the data collected. Furthermore, written observations were recorded during the interview to highlight the important information provided by the participants.

Data analysis

A qualitative interview method was used to collect data from participants. Consequently, qualitative data coding was adopted during in the data analysis phase to provide a clear and comprehensive picture of the information provided by the four teachers. In support of this, Bradley et al. (2007) demonstrate that the coding of qualitative data helps to formally organise the data. Furthermore, Miles and Huberman (1994) explain that coding is a marker used to index data without affecting the context in which the data occurred.

The data was coded independently (without the assistance of other parties). As Bradley et al. (2007) point out, there is a strong preference among research experts (e.g., Janesick, 2003; Morse 1994; Morse & Richards 2002) for researchers to demonstrate self-reliance when conducting data coding. Before beginning the data coding process, the written verbatim transcript of the audio recorded interview and the notes taken during and after the interviews were reviewed.

Results and Discussion

Main Themes Emerging from Interviews and Research notes

Question/Objective	Themes	Additional Notes
Knowledge of TESTS\TIMSS	- Complete ignorance - Basic knowledge. - Lack of motivation and guidance.	- Basic knowledge through Twitter. - Lack of teacher participation in the TIMSS.
Assessment Principles	- Complete ignorance. - Personal jurisprudence. - Lack of academic studies. - Study a single course.	- A single course in the undergraduate study plan on educational evaluation.
Assessment Methods	- Reliance on student book questions. - Benefits from experiences of other teachers. - Surprise tests. - Direct questions. - Homework.	- Relying on other teachers' experiences. - Personal jurisprudence in the selection of assessment methods.
Needs	- Introductory courses. - Effective participation. - Reduce teaching load. - Stop administrative tasks.	

Question/Objective	Themes	Additional Notes
	- Restructure the curriculum. - Activate technology between school and home. - Focus on writing and reading skills. - Provide educational opportunities for teachers.	

Several studies have highlighted the crucial role of the teacher in assisting students to achieve satisfactory academic results. Undoubtedly, the teacher is the cornerstone of student learning because he or she is the main reference for students in various learning strategies. The reviewed studies reveal diverse factors affecting the performance of the teacher, including teacher preparation programs, ongoing training programs, the overall clarity of the learning objectives, participation in decision making and reform processes, and the creation of an appropriate academic environment.

The importance of teachers' knowledge of international standards and tests

Regarding international assessment tests, TIMSS in particular, several studies identify the need for Saudi teachers to participate in such programs rather than to continue to ignore them as is currently the case. It is necessary to invite teachers to participate in the procedures surrounding the assessment tests and to increase their attendance at training programs in this area. For example, experienced teachers in New Zealand are nominated to attend education seminars and to participate in collaborative training programs on national assessment test procedures (Al-Sadaawi, 2010). Moreover, one of the objectives of the international assessment programs is to guide teacher towards the ideal methods for raising the level of student academic achievement (Al-Sadaawi, 2010). Additionally, TIMSS test reports can be used to gain insights into Saudi teachers' knowledge of the tests. Based on the TIMSS 2007 report, Alreshidi (2016) argues that Saudi teachers need to be trained in modern teaching strategies, problem-solving skills, and classroom management skills to improve the students' TIMSS results. Furthermore, several diagnoses of the problem leading to the poor results by Saudi students on the TIMSS tests were also discussed.

Alreshidi (2016) points out that problem-based learning (PBL) is an essential strategy for improving student academic achievement that complies with international test standards such as TIMSS. However, as a modern education strategy it creates several challenges for both students and teachers. Some student prefers traditional learning methods because they do not require mobility or mental activity, others are ignorant of the assessment methods, causing them to fear failure, and others still simply do not want to participate (Ronis, 2008; as cited in Alreshidi, 2016). Teachers should introduce students to modern teaching strategies such as PBL, research and planning, as well as receive adequate training (Monks, 2010; as cited in Alreshidi, 2016). Furthermore, TIMSS officials believe that the role of teachers is significant. Consequently, to increase the level of student involvement in their own learning, teachers were asked to focus on the skills the student should learn in the classroom. In turn, they should then try to link the objectives of the lesson to the student's daily life, create inquiries and clarifications, promote productivity, and use modern teaching methods to attract the attention of students (Mullis, Martin et al. 2008).

In addition, some studies were of the problems experienced by Saudi teachers in the education environment preventing them from meeting the curriculum learning objectives. Indeed, Alreshidi (2016) notes that the low quality of teaching by some Saudi teachers is one of the reasons for the unsatisfactory student results on the TIMSS tests. However, the TIMSS test is a measure of academic achievement because it measures what a student has learned in school. Dodeen et al. (2012) mention that the TIMSS test measures algebra, geometry, and data handling in its various forms, but Saudi teachers revealed that they only provide the students with 50% of the curriculum. This indicates the lack of awareness of Saudi teacher about the TIMSS test and the teaching standards required to raise student academic achievement levels at school and on the TIMSS tests.

A direct correlation also exists between the availability of Mathematics teaching resources in Saudi Arabia and the high-level results on the TIMSS test (Mullis et al. 2008). Hence, schools must provide suitable resources to Mathematics teachers to raise the level of student academic achievement in this subject area. Furthermore, the short lesson duration can play a critical role in teacher performance and student achievement of learning goals. Mullis et al. (2008) reported that, the global average of time spent on the study of decimals in Mathematics in around half of the lesson time; whereas, some Mathematics lessons in Saudi Arabia spend more time than this. In addition to developing an understanding of education programs on international standards and tests, the teacher also needs to support the school administration, family and the community. In addition, Dodeen et al. (2012) refer to the role of parent support, student enthusiasm and respect for the school in improving achievements at all levels.

In focusing on the TIMSS results, many countries such as Saudi Arabia are keenly interested in their global ranking. On the other hand, there is controversy about the decision to place so much emphasis on the TIMMS results. For example, TIMMS results for the US are very disappointing, yet the US economy is one of the strongest in the world and the American education system remains highly productive (Rose, 1998; as cited in Reddy, 2005). Reddy (2005) notes that national assessment studies were first introduced in the 1960s, with their promoters arguing that they provide a measurement of the nation's education performance helping policymakers improve the quality of education. In addition, TIMSS tests provide high quality and accurate data during the planning stages and the standardisation of procedures among participating countries (Joncas, 2007; as cited in Alreshidi, 2016). For example, in the 1999 TIMSS test, South Africa ranked last among the 38 participating countries, with low performance levels also reported for the Motor Activity Log (MAL), Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) measurement, and in the numeracy scores in the Systemic Evaluation (Reddy, 2005).

Accordingly, Reddy (2005) points out that the international comparisons of results in education outcomes created a wide-ranging debate in South African on the nation's education policy, resulting in planning sessions and studies involving decision makers, academics, teachers and community involvement through the media. In addition, South Africa recognises that teachers are crucial to the development of education outcomes and they have therefore been involved in the education reform sessions. Additionally, international education assessments tests such as TIMSS are a concern in terms of their focus on drawing comparisons among participating countries and assigning in an overall ranking (Shorrocks & Taylor, 2000; as cited in Reddy, 2005). Indeed, education policy makers should turn a blind eye to international comparisons in

such tests and begin to focus on how the students' results can be used to improve educational outcomes and policies (Reddy, 2005).

It is worth mentioning that most studies point to teacher awareness, training and development, analysis and problem-solving skills, and international assessment tests such as TIMSS as having a crucial role in the development of an education sector. Reddy (2005) asserts that providing accurate information to teachers about the results of the TIMSS test helps them to further develop their skills. In addition, Alreshidi (2016) emphasises the powerful impact such tests can have on continuous teacher development and improvements in student academic outcomes. Furthermore, Dodeen et al. (2012) emphasise the importance of teacher professional development for improving student TIMSS test results. They point to the better results by students whose teachers participated in development programs compared to students whose teachers did not participate in training programs. In short, higher academic achievement by students is related to the professional skills of teachers and their awareness of international tests and standards.

Teachers' skills and assessment strategies

It is generally acknowledged that professional training increases the level of productivity of workers and contributes to the achievement of business objectives. Regarding teachers, Harris and Sass (2011) emphasise that the provision of training and education to raising the quality of teaching performance directly contributes to an improvement in student academic achievement. Furthermore, Joyce and Showers (2002) point out that vocational training helps trainees to be more effective and accomplished in their work environment. From this standpoint, the importance of training teachers to improve their teaching methods and keep in touch with advances in the field is self-evident. Therefore, one intervention to improve the education sector is to train teachers on how to support students to meet the standards contained in international tests such as TIMSS. In support of this, Joyce and Showers (2002) note that teacher training consists of four fundamental pillars: developing teacher knowledge of the field, introducing concepts and practical strategies, applying practical models, and then practice and peer training. In fact, the application of these elements will contribute to a qualitative leap in the level of education personnel where they share experiences, update information and exchange field visits. According to Joyce and Showers (2002), teachers need realistic attitudes, role modelling, and the support from peers to improve their level of knowledge and to increase their effectiveness.

The teacher's knowledge of national education goals and evaluation programs also contribute to improving their performance and to dedicating their efforts towards meeting the requirements for success. In contrast, teacher ignorance of the national education goals and programs adopted by the Ministry of Education is one of the main reasons for the country's failure to achieve satisfactory results in international tests. In Saudi Arabia, several studies point to the problem of lack of adequate teacher training, university qualifications, and awareness of the adopted national goals and programs. For example, studies conducted in the Saudi education sector have indicated the need for teachers to attend specialised training programs and to raising their awareness of international educational standards such as TIMSS and PISA.

In support of this, a comparative study by Dodeen et al. (2012) revealed that most Saudi Mathematics teachers had not attended a professional development program during the previous two years. To further clarify, only 7.7% of Saudi teachers participated in development programs, compared to 65.5% of Taiwanese teachers. In fact, officials at the Saudi Ministry of Education

believe there are multiple problems related to students, teachers, and the curricula. Therefore, many developmental and evaluation programs have been established in the Saudi school education sector such as the School Employee Assessment Program, the Thinking Skills Development Program and the Schools Assessment Project. However, Al-Sadaawi (2010) points out that many of these programs have not been adequately implemented or have been discontinued for several reasons. Of most note is the claim by education specialists that it is ineffective in achieving national education goals and that an independent assessor has not been selected to evaluate the program performance (Al-Baadi, 1995; Abdaljoad, 2005; Al Daoud, 2004; AlDossary, 2000; Al Hakami, 2004). This administrative lack of implementation of educational and development programs suggests the low level of academic achievement by Saudi students on international tests should not come as a surprise.

Teacher needs and obstacles in achieving education goals

Many studies emphasise the need for teachers to develop their sense of self-efficacy for teaching along with their ability to work autonomously. These factors affect both the achievement of educational goals and the level of academic achievement by the students. This section reviews the most prominent studies to highlight the role of these factors in the performance of teachers, which naturally affects the results achieved by students in international tests such as TIMSS.

An employee's level of job satisfaction can influence his or her professional performance and impact their capacity to achieve the business objectives. Self-determination theory (SDT) seeks to explain the role played by the psychology of the employee in achieving the workplace objectives. SDT posits that three needs of the employee (teacher) must be satisfied to achieve job satisfaction and effectiveness: competence (i.e., the teacher's sense of self-worth in the work environment), relatedness (i.e., the teacher's ability and flexibility to communicate and share with colleagues), and autonomy (i.e., the freedom to select the manner in which work tasks are performed (Deci & Ryan, 2002, 2012).

Furthermore, Caprara et al. (2006) note that the three needs identified by Ryan and Deci (2000) are referred to in SDT, directly affect teachers' job satisfaction and indirectly in their professional performance where they feel proud, motivated and a sense of belongingness. Teacher satisfaction also enhances the opportunity for students to achieve high academic standards (Caprara et al., 2006). In their study of 6,000 teachers in the US, Caprara et al. (2006) found a positive correlation between teacher job satisfaction and school district academic achievement. In addition, Timms and Brough (2013) have demonstrated that people at work should be provided with opportunities to meet the three psychological needs identified in SDT. Therefore, they can demonstrate their competencies and abilities, build social relationships with others, and define their methods for achieving work goals and dealing with problems (Timms & Brough, 2013).

When the teacher's psychological needs are met it raises his or her level of readiness to develop their teaching skills and assessment strategies. The teacher also increases her or his awareness of educational programs and objectives including international tests and standards. Teachers who are disaffected with their careers and work environment do not expect to improve their students' academic results on TIMSS or other tests. Lastly, teachers who are self-sufficient and confident in their competencies can positively influence student academic achievement using innovative and flexible teaching methods and classroom management strategies (Caprara et al., 2006).

Results

This section presents the results based on their relationship to the research objectives according to the following topics:

1- Teacher knowledge of international tests, TIMSS test

The statements made by the participating teachers indicated that they did not have extensive knowledge of international tests. As for the TIMSS test, two of four teachers reported that they had recently heard of this measure on social media (Twitter). One teacher added that he was asked to nominate students to participate in a national test for sixth- and fifth-grade primary students without explaining the test objectives. Although the length of teaching experience ranged from 2 to 20 years, none of the teachers indicated that they had been provided with training or information about all types of international tests. In addition, they reported that both the school leaders and administrative offices had not provide any educational visits to teachers and students about TIMSS tests. Moreover, one teacher explained that teacher access to information about Ministry of Education goals and programs depended on accounts published on Ministry and education institution social media platforms (e.g., Twitter).

2- Teachers' knowledge of assessment for learning principles

There is agreement among the participating teachers that they do not have a good understanding of the principles of assessment for learning. Two teachers also pointed out that they had not studied a subject related to educational evaluation as an undergraduate student; however, two teachers indicated that they did study a subject related to educational evaluation as a postgraduate student (master's degree).

3. Student assessment strategies

The teachers' answers to questions regarding their student assessment practices varied. They agreed, however, that they do not know whether their methods meet the curriculum standards and the TIMSS tests. Teachers use the student textbook; that is, the quarterly tests in the book or exercise questions to assess the students. Some teachers conducted surprise tests and direct questioning techniques during the lesson to assess the students. Moreover, some teachers reported that they relied on homework for assessment as well as observations of student development within the class.

4- Needs and suggestions

The participants' interview responses revealed a general lack of job satisfaction, well-being and sense of autonomy among the teachers. The teachers blame the Ministry of Education for the poor academic results of students on the TIMSS tests and elsewhere.

To improve the academic levels of students and teachers alike, the teachers claimed the following were required:

- Greater focus on students' literacy skills.
- Replace the continuous evaluation method with paper-based tests.
- Curriculum reform and design.
- Stop the power of attorney teachers' administrative tasks.
- Cap the number of students in the class.
- Provide scholarships to teachers to complete graduate studies.

- Hold courses for teachers on international tests and the objectives of Ministerial programs.
- Involve teachers in the analysis and discussion of poor student results on TIMSS.
- Activate technology in the classroom and for communication between the school and the home.

Discussion

Teachers' role in TIMSS and other international tests:

All four teachers indicated that they were unaware of TIMSS. Teacher (M) commented, "Although I have been in the education field for 16 years, I have never heard of the TIMSS test". In addition, Teacher (F) stated, "My knowledge of the TIMSS test is limited to Twitter (a social networking app), so do not ask me about its goals or the results of Saudi students, because I really do not know." Overall, the teachers were not provided with information about international tests and TIMSS specifically. In turn, it may reasonably be concluded that the absence of the teacher's role in the procedures and preparations associated with the TIMSS tests is one of the reasons for the poor TIMSS test results by Saudi students.

The approach adopted by the Saudi Ministry of Education to prepare students for the TIMSS tests is contrary to that taken by developed countries. In New Zealand for instance, the Ministry of Education invites teachers who are experts in reform and training programs related to national tests to help prepare the students (Al-Sadaawi, 2010). There is a strong belief in the role of teachers by TIMSS organisers, who assigned teachers various tasks for implementation during the teaching process (Mullis et al., 2008). However, the findings in this study show that Saudi teachers do not receive adequate training in this regard. As a result, the essential strategic role of the teacher to prepare students for the TIMSS tests has not been activated. In addition, Saudi teachers do not appear to be included in discussions and analyses of the students' TIMSS results. Arguably, teachers should be included in such discussions and given relevant information about the TIMSS tests if they are to effectively assist the students to achieve more positive results (Roddy, 2005). Thus, activating the role of the teacher in the discussions and analyses of the problems in the educational environment may contribute to an improvement in student results. Finally, despite the stated interest of the Ministry of Education in Saudi Arabia to improve the students' results on the TIMSS tests, it has clearly neglected the role of teachers. The teacher has a crucial role to play in finding practical solutions to the various types of problems that occur in the educational environment.

Teacher awareness of assessment strategies and their application

Regarding assessment strategies, this study found that the participating teachers demonstrated a reliance on personal experience and jurisprudence and would draw on the expertise of their peers. Teacher (M) remarked, "I started teaching students right after I graduated from university. I did not know how to teach or how to deal with students, but over time and by observing expert lessons by peers I was finally able to improve." This comment demonstrates how teachers often lack expertise in some areas when they first start teaching, as that being responsible for the education of students requires more than just obtaining a university degree and passing the interview. The finding also emerged that the participating teachers did not know the principles of assessment for learning, and that the strategies they did apply (some of which conform to the principles) are the result of field experience and a reliance on textbooks. Teacher (N) illustrated this point by stating, "During my undergraduate studies, I did not study any course on how to

evaluate students." This aligns with the claim by Teacher (A) that "I studied a single course in educational assessment at the master's stage, but at the bachelor stage I did not study a course on this subject." Indeed, this indicates an apparent defect in the Saudi teacher preparation program that teachers are provided with all the information they need for their teaching work. Al-Rashidi (2016) refers to the 2007 TIMSS report and points to a clear need for Saudi teachers to be trained on teaching strategies and professional skills. Harris and Sass (2011) also emphasise the importance of teacher training and education in order to raise the academic achievements of students.

Regarding the professional training needs of teachers, Teacher (F) claimed that "During my six years as a teacher, I did not have the opportunity to participate in development or training programs." The Saudi Ministry of Education offers optional training programs for teachers. However, some teachers are unaware of their availability, while others do not have time to attend them due to work pressures (as is explained later). In addition, Teacher (N) commented, "The principal does not disclose the training opportunities for teachers because he does not want teachers to take the time away from work." This is an example of the lack of belief by some officials in the importance of teacher training as well as administrative flaws in the Saudi education environment.

In support of this, Al-Sedawi (2010) points out that many teacher development programs implemented in the Saudi education sector have failed for several reasons including a lack of faith in their effectiveness by officials and the wrong evaluation of the applied programs. Studies have demonstrated the significant and positive role that the provision of continuous training to teachers can have on student academic achievement. For example, Harris and Sass (2007) compared student achievement data in the US state of Florida for the periods 1995-1996 and 2003-2004. The authors found that teacher training had a significant impact on raising student academic achievement. Additionally, Dodeen et al. (2012) reported that Saudi Mathematics teachers had not been provided with training programs during the previous two years. It is reasonable to conclude that a failure to provide teachers with professional development programs and opportunities to improve their teaching practices will present challenges to initiative to improve the unsatisfactory academic results by Saudi students at the level of TIMSS and across the Saudi education sector more broadly

Teachers' needs and the learning environment required to improve student academic achievement and TIMSS

The participating teachers did not believe their needs were being met by the Ministry of Education. The teachers indicated dissatisfaction with their job due to a lack of flexibility and feelings that they are not appreciated in the work environment. Teacher (N) expressed this sentiment as follows; "We must blame the Ministry of Education, which caused this unfortunate reality for the teacher where he is responsible for teaching and following-up on 40 students in the classroom." In addition, Teacher (A) remarked, "Do you want the teacher to be effective and productive when he is assigned administrative tasks in addition to his teaching mission? Can the teacher meet the requirements of these long curricula, lack of time and the number of tasks responsible for the teacher always makes him in a state of discontent."

Indeed, the comments indicate that teachers feel their psychological needs are not being met to achieve a productive and effective work environment that helps to develop the students' academic levels and performance on TIMSS and other tests. Additional, Deci and Ryan (2012)

point to the role of SDT elements including competence, relevance and autonomy to teachers achieving job satisfaction, effectiveness and productivity in the work environment. Furthermore, Caprara et al. (2006) demonstrate the positive impact of teacher self-efficacy and confidence in improving their teaching performance and developing the academic level of students. In addition, Teacher (A) commented, "The Ministry of Education should clarify the objectives of the TIMSS tests for teachers by holding courses within schools and by sending brochures." Teacher (M) added, "As a teacher, I have many tasks that I take care of inside the school, so the Ministry of Education should educate us as teachers about its goals, programs and tests like TIMSS."

These findings suggest an apparent lack of communication between the Ministry of Education and teachers in the field. Furthermore, teachers point to student and curriculum problems that hinder the achievement of positive TIMSS results by students. Teacher (M) asserted, "First of all, we should consider the problem of reading and writing among students where the student reaches the sixth grade and he does not master it." Teacher (F) added further insight, stating; "The continuous assessment strategy should be discontinued at the primary level because it has shown unfortunate results in student achievement. They lack the basic skills even when they reach the eighth grade, also at the university level". Teachers increasingly recognise such problems. Therefore, the Ministry of Education must acknowledge the critical role of teachers in the process of education reform. As Carlson (2000) explains, it is difficult to achieve satisfactory education outcomes in crowded classrooms and with unqualified teachers. In addition, Saudi student data (e.g., PIRLS, 2011) indicated that 34% of fourth graders lack basic reading skills (Al-Suhaimi, 2018). Finally, creating an ideal learning environment for teachers and eliminating the difficulties they experience may lead to significant progress in the level of achievement attained by Saudi students on the TIMSS tests.

Conclusion

The Saudi Ministry of Education is very interested in the TIMSS test, which began in 2003. Despite Saudi students' participation in the TIMSS test on multiple occasions, the results have not been satisfactory. This prompted officials in the Ministry of Education to look for reasons to explain the poor results and to establish programs to improve students' academic achievements including their results in international tests. This study sought to explore the extent to which Saudi teachers' role is activated in preparing students for the TIMSS test and the accompanying developmental and executive procedures. This study found that Saudi teachers have a limited role in the preparation and implementation of the TIMSS tests. In addition, the teachers lack knowledge of the standards of teaching and evaluation globally recognised in the field of education. This disregard for educating and training Saudi teachers about TIMSS tests, skills and education standards may be a contributing factor to the generally poor academic achievement of Saudi students.

In addition, participants mentioned several requirements to improve the academic results of students. First, the Ministry of Education must take greater responsibility for preparing teachers and for activating their role in the TIMSS test. Second, action must be taken to address the dissatisfaction of Saudi teachers with the lack of flexibility in the work environment and the lack of appreciation of their professionalism. In addition, teachers believe the length of the curriculum, the lack of time, and the overcrowding of classrooms also hinder the delivery of satisfactory results in the TIMSS tests.

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