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Mathematics Teachers' Self-Efficacy in Saudi Arabia Following Reform of Mathematics Curricula

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ABSTRACT

The significance of teachers' self-efficacy (TSE) in school psychology research has increased due to its implications for teaching effectiveness, instructional practices and students' academic achievement. TSE has its roots in Rotter's theory of locus of control, which was later extended by Bandura (1977, 1986, 1997) to emphasise the role of personal competencies. TSE refers to teachers' confidence in their ability to teach their students, support their learning and help them achieve academic success. This study sought to determine the level of mathematics TSE in the Kingdom of Saudi Arabia after the reform of the mathematics curriculum and to investigate any differences in the levels of TSE that might be attributed to gender or teaching experience. The research adopted a quantitative approach, employing an online questionnaire to collect data from 360 male and female mathematics teachers. The questionnaire included 16 items derived from the previous literature and adapted to fit with the changes to the curriculum. The results indicate a high level of TSE among mathematics teachers, with no significant differences based on gender or experience.

KEY WORDS: *Mathematics teachers- self-efficacy- Curriculum reform*

Introduction

Within the field of school psychology research, teachers' self-efficacy (TSE) has garnered increasing attention due to its implications for teaching effectiveness, instructional practices and students' academic achievement (Klassen & Tze, 2014; Klassen et al., 2009). The application of the concept of self-efficacy in teaching has its roots in Rotter's theory of the locus of control, which highlights how individuals differ in their beliefs about the factors that shape outcomes. While some teachers take the view that external factors such as simple luck or fate play a major role, others maintain that it is internal factors, namely a person's own actions and skills, which determine outcomes (Zee & Koomen, 2016). Rotter's theory was subsequently extended and modified by Bandura (1977, 1986, 1997), who highlighted the key role of personal competencies in the individual's locus of control. As capabilities are specific to particular domains, it has been possible to modify and apply the concept of self-efficacy to the domain of teaching (Tschannen-Moran & Woolfolk Hoy, 2001; Tschannen-Moran et al., 1998), incorporating what teachers believe about instructional practices, classroom organisation and control and student engagement.

Bandura (1997) defined self-efficacy as teachers' evaluation of their skills in designing and implementing actions that are needed to ensure desired outcomes are achieved. Individuals who believe strongly in their ability to achieve their goals will mirror this belief in their resolve and the efforts they undertake to do so. According to Woolfolk Hoy (1998), self-efficacy describes the degree to which an individual believes in his/her ability to function successfully in a specific setting. When applied to teaching, self-efficacy refers to teachers' confidence that they have the instructional skills to teach their students, support their learning and help them reach the appropriate level of academic achievement. Bandura (1977) also noted that the influence of TSE on teachers' effort and resolve

improves the effectiveness of their classroom practices. Tschannen-Moran and Woolfolk Hoy (2001) classified TSE in relation to three dimensions: instructional stratagems, classroom management and student engagement.

Research examining teacher motivation has identified TSE as a key motivational characteristic among teachers, reflecting their belief in their ability to influence student engagement and learning, even in challenging circumstances (Klassen & Chiu, 2010; Tschannen-Moran & Woolfolk Hoy, 2001). Similarly, Kunter et al. (2013) and Roth et al. (2007) have asserted that teacher motivation is of considerable significance for student learning and effective teaching. TSE has been found to be a reliable predictor of teacher effectiveness (Klassen & Tze, 2014) and educational research studies have found that it has a major impact on teachers' welfare, student achievement and motivation (Caprara et al., 2006; Klassen et al., 2011). According to Tschannen-Moran and Woolfolk Hoy (2001), TSE can be summed up as individuals' evaluation of their ability to achieve the required outcomes in terms of student engagement and learning, even if the students lack motivation or present challenges in the classroom. Teachers who have a developed sense of TSE tend to press on when faced with hurdles and problems and Ross (1995) thus argued that TSE is a crucial factor in determining how teachers carry out their roles. Moreover, Lauermann and Butler (2021) contend that there is a solid theoretical basis for arguing that teachers with higher levels of self-efficacy can have a positive impact on student outcomes. However, empirical studies on the link between TSE and student outcomes have produced mixed results, although most such studies have employed descriptive and correlational approaches, which are based on the questionable premise that only observed variables are relevant (Lauermann & ten Hagen, 2021; Pekrun, 2021).

Studies have found positive links between strong TSE and teachers' openness to implementing new teaching methods (Liem et al., 2008;

Thurlings et al., 2015) and improved classroom instruction (Holzberger et al., 2013;). Conversely, teachers with weak TSE are more likely to experience anxiety (Gresham, 2008) and professional burnout (Aloe et al., 2014; Collie et al., 2012; Klassen & Chiu, 2010; Zee & Koomen, 2016). TSE beliefs shape performance and goal setting, effort and resolve in meeting aims, and this in turn informs the teacher's self-efficacy assessment (Bandura, 1997). Consequently, TSE has taken a central role in the context of educational research.

As pointed out by Hattie (2009) and verified by educational research, teaching quality has a major influence on students' achievement in learning achievement. A helpful framework used to describe teaching quality is the Three Basic Dimensions (TBD): classroom management, cognitive activation and student support (Lipowsky et al., 2009; Seidel & Shavelson, 2007). Classroom management consists of implementing strategies to minimise disruption, introduce transparency through rules and routines and thereby ensure students focus on their tasks. Cognitive activation is the use of discussion in teaching and learning to encourage higher-order thinking and enable students to gain an in-depth understanding of the focus of learning. Student support concerns giving students constructive feedback and suggestions on how to correct mistakes, while building a positive relationship with the individuals in the class.

Self-Efficacy in Mathematics Teaching

Mathematical abilities and understanding are crucial in many areas of life and teachers play a significant role in engaging students and supporting their learning in this subject. The last few decades have seen a growing realisation that mathematics and scientific knowledge is key to the development of societies and offers a range of opportunities and advantages. However, many students find mathematics difficult and thus

teachers need to be highly proficient in teaching this subject. Negative experiences of mathematics learning in the past can lead to students lacking confidence in their abilities and low motivation to learn the subject. As highlighted by Genser and Çakıroğlu (2003) and Showalter (2005), mathematics teachers thus play an important role in engaging their students and supporting their learning.

Learners respond to a range of cognitive, emotional and post-cognitive factors, which are shaped by the teacher's skills and approach. Emotional factors, for example the teacher's SE, can have a major influence on teaching practices in the classroom. Self-efficacy reflects the teacher's belief in his/her capability to undertake and manage particular tasks (Bandura, 2007). According to Al-Waeli and Aladdin (2013), these beliefs determine various elements linked to academic achievement, such as expectations, choices, resolve, determination and a perception of responsibility; these reflect the resolution to tackle difficult situations and issues and the determination to continue striving even when confronting failure. According to Skaalvik and Skaalvik (2007), it is these beliefs which underpin the educational process since they are closely related to how teachers and students behave.

In the field of mathematics education, TSE relates to teachers' individual beliefs regarding their ability to establish and meet instructional aims and objectives successfully in teaching mathematics. TSE is linked to teachers' confidence that they can carry out mathematics tasks and have a positive impact on their students' success, while simultaneously minimising any fear or negative reactions their students may have concerning mathematics (Kahle, 2008). Kahle (2008) adds that researchers have found that TSE and teaching self-efficacy are important for creating a positive learning environment in the classroom.

Mathematics teachers' self-efficacy is not identical to teacher competence, the latter being related to teachers' professional knowledge and abilities. TSE is a broader concept and focuses on teachers' beliefs that they are capable of harnessing their professional knowledge and skills in their practice. High self-efficacy helps teachers to be successful in using professional knowledge to good effect (Gavora, 2010). Both mathematics self-efficacy and confidence in the subject are linked to what individuals believe about mathematics, the degree of anxiety they have about the subject and their confidence that they can master it. According to Kahle (2008), mathematics self-efficacy defines confidence as the individual's belief that he/she is capable of successfully carrying out mathematical tasks in a specific area rather than in general. Moreover, Kahle (2008) notes that studies have found a connection between self-efficacy and attitude, achievement and other factors that affect mathematics teaching and learning.

Mathematics teaching self-efficacy is the individual's perception of his/her own ability to teach the subject successfully. Gavora (2010) argues that effective teachers have high levels of teaching self-efficacy and thus exhibit positive teaching behaviours. In contrast, low mathematics self-efficacy can act as an obstacle to harnessing professional knowledge and skills, which in turn can negatively affects students' learning. Teachers with high self-efficacy are more competent in the classroom and more ready to try new approaches and methods (Henson, 2001). They are less stressed at work and have a greater belief in their students' freedom (Brouwers & Tomic, 2003), as well as devoting more time to students with lower abilities (Ross & Bruce, 2007). Tschannen-Moran and Hoy (2010) note that teachers with high teaching self-efficacy are less likely to leave the profession and are more committed to teaching.

Mathematics self-efficacy is a form of confidence and is closely linked to self-efficacy towards mathematics and an individual's attitudes and beliefs about mathematics, which include both teachers' confidence in relation to the subject and the anxiety levels they experience when faced with mathematics (Kahle, 2008). Mathematics self-efficacy expands the definition of confidence by reflecting an individual's belief that he/she is capable of successfully performing mathematical tasks (Kahle, 2008). Self-efficacy differs in that it is specific to an individual's competency in one area, rather than in general. Kahle (2008) points out that related research has found that self-efficacy is closely connected to attitude, achievement and other sources which impact on mathematics.

As reported by Datnow et al. (2002) researchers have recognised that it is teachers who drive educational change, not policymakers introducing new teaching strategies for teachers to implement. Thus, the focus of research has shifted towards analysing teachers' characteristics and capacities, since certain traits could have a major impact on the implementation of reforms to the curriculum. Research has assessed various factors, including subject matter and pedagogical knowledge, teachers' ability to design schemes of work, their epistemological views and pedagogical beliefs, their viewpoints regarding efficacy, their approach to the curriculum, professional status and identity, their acceptance of discomfort, anxieties and years of experience (Anderson, 1997; Ghaith & Yaghi, 1997; Remillard, 2005, 2009; Wheatley, 2002).

Pinto (2005) argues that changes to the curriculum will only be effective in the classroom environment if teachers accept and implement innovations to a certain extent. Feldman (2000, 2002) stresses the key role played by teachers and the importance of ensuring they have a detailed and full understanding of their subject, as well as the pedagogical methods best suited to teaching it, as both are essential to deliver quality education. If a

teacher's subject knowledge is weak, he/she will be unlikely to develop and implement the effective teaching stratagems that can support and encourage student learning. It is therefore vital for teachers to be aware of their beliefs and values with regard to the nature of science and the subject they teach. Developing this awareness will enable teachers to rebuff and discard inaccurate or misleading views of scientific efforts and see science as an evolving, dynamic process.

The Study

Over the past three decades, teachers' concerns and efficacy beliefs have been studied as factors influencing their reactions to curricular reforms. However, these factors have typically been examined separately, with scholars mostly viewing efficacy beliefs as determinants of concerns. Yet, it is widely recognised that teachers' knowledge, experiences and beliefs play a crucial role in curricular change, particularly in physics teaching (Barros et al., 2012). To comprehend the challenges involved in implementing curricular innovation in the classroom, it is important to consider factors such as how teachers learn to teach, what they know, how they acquire knowledge and how they change over time.

The Saudi Science and Mathematics Curriculum Development Project (SMCDP) is regarded as one of the most promising projects in the Middle Eastern region for promoting the comprehensive development of science and mathematics education. Implemented by the Ministry of Education in Saudi Arabia, the project draws on the translation and adaptation of international educational materials, including the Macmillan/McGraw-Hill curricula, to enhance education. It aims to leverage global experience and equip the younger generation with problem-solving skills to tackle societal issues (Alshayee & Abalhameed, 2011). The project seeks to develop

curricula that promote active learning in response to recent global changes and research, as stated by the Ministry of Education (2006, p. 19). Despite the implementation of this reform, there is a dearth of research on mathematics teachers' self-efficacy in Saudi Arabia. Therefore, this study aimed to investigate the level of mathematics teachers' self-efficacy following the reform by addressing the following research questions:

1. **What is the level of mathematics teachers' self-efficacy in the Kingdom of Saudi Arabia following reform of the mathematics curriculum?**
2. **Are there any differences in the levels of mathematics teachers' self-efficacy in the Kingdom of Saudi Arabia following reform of the mathematics curriculum attributable to gender or teaching experience?**

Methods

The study adopted a quantitative approach with the aim of ensuring reliability, validity, objectivity and the generalisability of the findings. The primary data collection tool was a questionnaire as this method enables researchers to collect data from a large number of participants. Previous research has demonstrated that when data are collected from a representative sample of the population using a quantitative approach, the findings can be more easily generalised to the wider population (Fraenkel & Wallen, 2009).

The study population consisted of mathematics teachers in the Kingdom of Saudi Arabia who were actively teaching during the research period (2023). A total of 360 male and female mathematics teachers were randomly selected to participate in the study using an online questionnaire that was distributed to schools. Table 1 presents the distribution of the study sample according to the study variables, gender and years of teaching experience.

Table 1. Distribution of the study sample according to the study variables

Variable	Characteristic	Saudi Sample	
		No.	%
Gender	Male	٢٩٢	61.1
	Female	٣٥9	38.9
Teaching experience	< 10 years	٣٩	33.1
	≥ 10 years	٥٠٠	66.9
	Total	٦٥١	١٠٠

Data collection

Data were collected using an online questionnaire entitled "Questionnaire of Mathematics Teachers' Self-Efficacy" (MTSES). The questionnaire consisted of 16 items, comprising both positive and negative statements to which the respondents were asked to express their level of agreement. Of the 16 items, items 1–10 were adopted from the previous literature (Gavora, 2010; Kahle, 2008; Mark et al., 2015), while items 11–16 were added by the author to ensure the questionnaire was a good fit for the new curriculum. All items were scored using a five-point Likert scale anchored at 1 (strongly disagree) and 5 (strongly agree). Negatively worded items were reverse-coded. Table 2 displays the score distribution for the items related to levels of awareness.

Table 2. Distribution of scores for each level of awareness

No.	Score Distribution	Level of Awareness
1	1–1.80	Very low
2	1.81–2.40	Low
3	2.41–3.20	Neutral
4	3.21–4.20	High
5	4.21–5.00	Very high

Prior to administering the questionnaire in the main study, a pilot test was conducted with a sample of 30 teachers to assess its validity for application. Furthermore, the internal consistency of the questionnaire was evaluated using Pearson's correlation coefficient to estimate the correlation of each

item with the dimension to which it belonged. The coefficients ranged from 0.42 to 0.883, indicating acceptable internal consistency.

Additionally, the questionnaire was administered twice to the pilot sample, with a two-week interval between the two administrations, to assess the correlation between the scores. The resulting coefficient of 0.814 was considered high, indicating strong reliability and validity. The content validity index (CVI) was also calculated for all items in the questionnaire. The item-level CVI (I-CVI) ranged between 0.80 and 1, while the scale-level CVI (S-CVI) was 0.90. The I-CVI was computed for each item on the scale and then the mean I-CVI was calculated across items, following the approach suggested by Polit et al. (2007, p. 461). For instance, for item 1, which was evaluated by 12 experts, 10 agreed, resulting in a CVI of 0.82. The same procedure was applied to the other items and the mean was computed.

Data analysis

The data were analysed using descriptive statistics (mean [M] and standard deviation [SD]). The results for the samples were then compared to identify any potential differences using t-tests for the variables gender and teaching experience.

Results

To answer the study questions and identify the level of mathematics teachers' self-efficacy in the Kingdom of Saudi Arabia after the reform of the mathematics curriculum and then compare the results, the mean (M) and standard deviation (SD) were calculated for each dimension, as well as overall. Table 3 presents the results.

Table 3. Levels of agreement with questionnaire items

No.	Statement	M	SD	Level
1	I will continually find better ways to teach mathematics.	4.07	0.77	High
2	Even if I try very hard, I will not teach mathematics as well as I will most subjects.	3.19	0.92	Neutral
3	I know how to teach mathematics concepts effectively.	3.83	0.90	High
4	I will not be very effective in monitoring mathematics activities.	3.03	1.22	Neutral
5	I will find it difficult to use manipulatives to explain to students why mathematics works.	4.42	0.69	Very high
6	I will typically be able to answer students' questions.	4.18	1.00	High
7	I wonder if I will have the necessary skills to teach mathematics.	3.98	0.94	High
8	Given a choice, I will not invite the principal to evaluate my mathematics teaching.	4.43	0.66	Very high
9	When teaching mathematics, I will usually welcome student questions.	3.99	0.75	High
10	I do not know what to do to turn students on to mathematics.	4.32	0.68	Very high
11	I have sufficient knowledge of modern learning methods and strategies in learning mathematic	4.33	0.70	Very high
12	I understand the new curricular goals.	4.17	0.66	High
13	I feel I am successful in implementing the new curriculum.	4.24	0.65	Very high
14	I have sufficient knowledge of modern learning methods and strategies in learning mathematics that are compatible with the new curriculum.	4.25	0.70	Very high
15	I have the ability to relate what students learn to their daily lives.	4.25	0.71	Very high
16	I have the ability to use technologies when implementing the new curriculum.	4.50	0.57	Very high
	Overall	4.07		High

The results suggest that mathematics teachers in the Kingdom of Saudi Arabia exhibit a high level of self-efficacy (overall scale score: M = 4.07) following the reform of the mathematics curriculum. This finding is evident from the MTSES responses, which reflect a "very high" level of self-efficacy

for eight statements, a "high" level for six statements and a "neutral" level for two statements.

The statements that reflect a "very high" level of self-efficacy include "I have the ability to use technologies when implementing the new curriculum", "Given a choice, I will not invite the principal to evaluate my mathematics teaching", "I will find it difficult to use manipulatives to explain to students why mathematics works", "I have sufficient knowledge of modern learning methods and strategies in learning mathematics", "I do not know what to do to turn students on to mathematics", "I have sufficient knowledge of modern learning methods and strategies in learning mathematics that is compatible with the new curriculum", "I have the ability to relate what students learn to their daily lives", and "I feel I am successful in implementing the new curriculum". There could be several reasons for these reported high level of SE. One is that the Ministry of Education conducted multiple training courses throughout the year to train teachers in strategies for teaching mathematics. However, the challenge lies in teachers' implementing these strategies effectively rather than simply having the confidence to use them. Hence, further investigation is necessary to determine the extent to which mathematics teachers in the Kingdom of Saudi Arabia employ these strategies in their classes. Additionally, the new curriculum provides teachers with various choices in terms of using different strategies in each lesson and the new textbooks have examples of connecting mathematics with the students' daily lives, which may have contributed to the teachers' high level of self-efficacy concerning these statements. The use of technology in teaching mathematics is prevalent in the current era and most teachers incorporate technology in their daily lives, which may be reflected in their teaching.

The statements that reflect a "high" level of self-efficacy include "I will typically be able to answer students' questions", "I understand the

new curricular goals", "I will continually find better ways to teach mathematics", "When teaching mathematics, I will usually welcome student questions", "I wonder if I will have the necessary skills to teach mathematics", and "I know how to teach mathematics concepts effectively". These statements suggest that teachers are flexible and well-versed in teaching mathematics and their high self-efficacy may be due to their confidence in how their teaching affects students. For instance, the statement "I will continually find better ways to teach mathematics" indicates that teachers are always seeking to improve their teaching methods. Similarly, teaching concepts effectively depends on the teacher's experience and how students understand these concepts.

The statements reflecting a "neutral" level of self-efficacy include "I know how to teach mathematics concepts effectively", "Even if I try very hard, I will not teach mathematics as well as I will most subjects", and "I will not be very effective in monitoring mathematics activities". These statements suggest that, despite the high average level of self-efficacy among mathematics teachers, they still face difficulties in dealing with some teaching issues. Teachers may be uncertain about their ability to teach mathematics concepts effectively due to the challenges they encounter in their classes. Mathematics concepts may be difficult for students to grasp and teachers may need to use various strategies to make them more accessible. Additionally, teachers may perceive teaching mathematics as more challenging than other subjects, which could have affected their responses to these statements.

The statements related to teaching the new curriculum, such as "I have sufficient knowledge of modern learning methods and strategies in learning mathematics", "I understand the new curricular goals", "I feel I am successful in implementing the new curriculum", and "I have the ability to use technologies when implementing the new curriculum", predominantly

received "very high" responses, while "I have sufficient knowledge of modern learning methods and strategies in learning mathematics that is compatible with the new curricula" received a "high" response. This indicates that teachers are accustomed to the new curriculum and feel confident in teaching and implementing it.

To determine whether there were any differences in the level of mathematics teachers' self-efficacy following the reform of the mathematics curriculum based on gender or teaching experience, t-tests were conducted and the results are presented in Table 4.

Table 4. Differences in mathematics teachers' levels of self-efficacy according to gender and teaching experience

Variable	Category	N	M	SD	t-value	p-value
Gender	Male	240	66.07	5.75	.315	.175
	Female	120	65.88	5.03		
Teaching experience	< 10 years	119	65.67	5.20	.564	.213
	≥ 10 years	241	66.16	5.61		

Table 4 shows no statistically significant differences ($\alpha \leq .05$) in the level ofself-efficacy among mathematics teachers in the Kingdom of Saudi Arabia attributable to either gender or teaching experience.

Discussion

The results show that mathematics teachers in Saudi Arabia have a high level ofself-efficacy (overall scale: M = 4.07) after the reform of the mathematics curriculum. The results were clear from the MTSES above, showing that for most statements, the level was either very high or high. These results reflect the efforts of the Saudi Ministry of Education to enhance mathematics teaching and learning, especially in training teachers

to deal with the new curriculum in mathematics. These findings are consistent with Al-Rajah's (2017) study, which also found that mathematics teachers had a high level of SE. However, the study focused only on female teachers and did not address the reform of the mathematics curriculum in Saudi Arabia. The positive findings in this study are also in line with the results of research conducted outside Saudi Arabia (Evans, 2010; Siegle & McCoach, 2007; Unal & Albayrak, 2011; Yılmaz & Cavas, 2008), as well as to some extent with Hassouna's (2011) study conducted in Oman, which found an average level of self-efficacy among mathematics teachers.

Regarding differences in levels of self-efficacy among Saudi mathematics teachers related to gender or years of teaching, t-tests identified no statistically significant differences in terms of either the gender or teaching experience variables. This finding is consistent with the study of Al-Rajah et al. (2008) but contrasts with those of Alkatiri (2011) and Khalayleh (2011), which found that self-efficacy increased over the years as teachers accrued experience. There is also a contrast with the findings of Hassouna's (2011) study in Oman, which found that female teachers presented higher levels of self-efficacy than male teachers.

There are compelling theoretical reasons to believe that teachers with higher levels of self-efficacy may improve student outcomes (Lauermann & Butler, 2021). Thus, researchers have spent decades trying to empirically establish the relationship between these two variables. Two broad theoretical pathways linking teacher self-efficacy with student achievement have been proposed. The first is the indirect pathway, which posits that increasing teacher self-efficacy will improve pupil achievement through the mediating variable of teachers' classroom behaviour/practice (Lauermann & Butler, 2021). More precisely, teachers with higher levels of self-efficacy are more likely to persist in difficulties or use a broader range of teaching techniques, which may be more appropriate to the specific and diverse

challenges they face in the classroom (Lauermann & ten Hagen, 2021). The second path is the direct path, which posits that the teacher's increased self-efficacy may "escape" directly to the pupils through a process of role-playing. Increasing students' self-efficacy may improve their stability regarding their schoolwork, which then benefits their achievement (Lauermann & ten Hagen, 2021). In the Saudi context, this means that the results of this study would suggest that mathematics teachers' high levels of self-efficacy should result in high student achievement in mathematics. However, Saudi Arabia participated in the Trends in International Mathematics and Science Study (TIMSS), assessing mathematics and science education for fourth and eighth grade students. In 2003, 2007, 2011, 2015, and 2019, Saudi students scored significantly less than the international average. In addition, the country participated in the 2018 PISA study and scored an average of 373 points, which is low compared to the international average of 450. This is at odds with the findings of studies that might assume that a higher level of self-efficacy always leads to higher estimation. However, empirical results have remained mixed and very little research has gone beyond description/correlation, relying on assumptions based on "selection over the observed" (Lauermann & ten Hagen, 2021; Pekrun, 2021). Pekrun (2021) provides an alternative explanation for why changes in teacher self-efficacy do not translate into improved pupil outcomes. In particular, increased perseverance with different teaching approaches may not be sufficient to improve teaching practice. Rather, it is necessary to consider the interaction with other factors, such as knowledge and skills related to effective teaching.

Conclusion and Limitations

This study sought to identify the level of mathematics teachers' self-efficacy in the Kingdom of Saudi Arabia after the reform of the mathematics

curriculum, as well as any differences in levels of self-efficacy attributable to gender or teaching experience. The study found that Saud mathematics teachers had high levels of self-efficacy after the curriculum reform, with most scoring very high or high in agreement with statements in the questionnaire. The study found no significant differences in self-efficacy related to gender or teaching experience. Despite the high level of self-efficacy among mathematics teachers in Saudi Arabia, the country's performance in international mathematics and science education assessments has been below average. Future studies could benefit from adopting a longitudinal perspective post-reform and from recruiting a larger sample across the nation, as well as employing mixed methods to gain in-depth insights.

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