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A Comparative Study on Omani and Iranian Fourth-Grade Students' Mathematics Achievement

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Abstract
The present study aimed to compare Omani and Iranian fourth-grade students' performance in the TIMSS 2015 mathematics test. The TIMSS assessment sampling method was applied for selecting the statistical samples. Furthermore, the rule of gender and parents' educational level were analyzed to compare boys' and girls' performance in the TIMSS mathematics based on these factors. The results showed that there was a statistically significant difference between Omani girls' and boys' performance in the TIMSS 2015 mathematics assessment. Hence, the Iranian boys' and girls' t-test results showed that no statistically significant difference was found between Iranian boys' and girls' mathematics performance. Moreover, the ANOVA analysis showed that there is a significant difference between parents' educational level and students' mathematics achievement.
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1. Introduction

Learning mathematics always has been an unattractive subject for students. They feel horror and difficulty in mathematics and they believe that they have not been created for learning mathematics. Furthermore, mathematical subjects are usually routinely problematic for students all across the world. Maintaining excellent health habits, making educated financial decisions, and employing effective problem-solving abilities can all be made easier with a basic understanding of mathematics and basic scientific ideas (Wong & Evans, 2007).

Mathematical subjects can help to develop the mind and improve critical thinking abilities as well as mathematical skills that can be utilized to solve problems in mathematics (N. Ndekei R. Bisonga, 2021).

The TIMSS assessment, which is administered every four years by the "International Association for the Evaluation of Educational Achievement," is one of the most well-known assessment programs across the world. The TIMSS was started in 1995 and it continued in 1999, 2003, 2007, 2011, and 2015 (Mullis et al., 2009). The TIMSS main target groups are fourth and eighth-grade students from the participating countries across the world in the science and mathematics subjects respectively (Enck, 2011). The TIMSS provides critical and vital information about participating countries' educational systems, policies and it offers fundamental feedback on the students' achievement to the countries for reforming and making probabilities amendments to the educational system and to illustrate the weaknesses and strengths of the educational policies for each country through comparing the students' achievement rates among the participating countries (Çalışkan et al, 2018; Subbaiah, 2013).

Hence, as EARGED (2011) stated the major aim of the TIMSS study is to provide an evaluation system to assess the mathematics and science achievement status of the primary and secondary schools students. Mathematics programs can improve students' problem-solving skills, and dealing with problem-solving subjects in mathematics, would lead students to learn how to be strong and persistent in a hard situations. Furthermore, learning mathematics has essential benefits for daily needs such as counting, managing daily costs, and construction activities (Sissel Grønmo & et al, 2015).

Besides, the results of the assessments such as international evaluations can reveal the challenges of educational issues and weaknesses in comparison to other countries that have participated in some international evaluations such as the trend in international mathematics and science study (TIMSS) (Şen & Arıcan, 2016).

Many researchers have studied gender equality in mathematics achievements for a long time. Gender differences in mathematical abilities have been identified using several types of mathematics tests, such as the scholastic assessment (Gallagher, 1990, 1992; Gallagher and DeLisi, 1994; Hyde, Fennema, & Lamon, 1990;

Royer, Tronsky, Chan, Jackson, and Marchant, 1999; Willingham & Cole, 1997 as cited in Zhu,2007). As Ghasemi et al (2019) indicated there is no such sufficient gap between boys' and girls' achievement rates in the schools' students overall. The role of society and gender attitudes toward opening a gap between the boys' and girls' roles could provide a difference between boys' and girls' performance levels in mathematics (Eriksson, 2020).

1.1 Research Hypotheses

$H_0$1: There is no significant difference between Iranian and Omani boys' and girls' students' performance in TIMSS 2015 mathematics assessment.

$H_0$2: There is no significant difference between Iranian and Omani boys' and girls' students' performance in TIMSS 2015 mathematics assessment in all dimensions.

$H_0$3: There is no significant difference between students' parents' educational level with their achievement rate in the TIMSS 2015 mathematics assessment.

2. Related Work

2.1. Gender Difference

Else-Quest (2010) males and females have a little difference in mathematics achievement. However, males' attitude was more positive in mathematics than females. Moreover, the quality of the education system, fairness, and teachers, parents, and instructors' attitude is effective on girls' achievement in mathematics. Hyde et al (2008) study identified from grades two to eleven, there was no major difference between boys' and girls' mathematics skills. However, the boys' scores were a little bit higher than girls but as the researcher pointed out, there was no sufficient evidence about the difference. Fryer& Levitt (2010) indicated there is no difference between boys and girls upon school entry. But sixth-year girls lose their attitudes. However, this study emphasized the reasons back to girls' less spending time on mathematics, parental support, and also the tests formats which had a bias. According to Skaalvik, E. & Skaalvik (2013) male students' self-efficacy, achievement expectations, motivation, and self-enhancing were greater than females. Though, females'' intrinsic motivation for learning was higher than males. Anjum's study outcomes (2015) revealed that girls' performance in mathematics was better than boys in upper primary schools. Ajai & Imoko, (2014) showed that there is no difference between boys' and girls' performance in mathematics. Oppong Asante (2010) T illustrated that boys had a better achievement than girls in mathematics. Evans (2015) boys' high self-efficacy was greater than girls in the TIMSS mathematics achievement. In other words, gender on its own cannot be a deferential predictor of mathematics achievement. The study was focused on the fourth-grade students' mathematics TIMSS 2007 and 2011 achievements. Nevertheless, in the medium level of self-efficacy, girls' performance was better than boys. Consequently, the study's results indicated that gender alone is not a significant predictor in mathematics. Kiamanesh (2006) compared the Iranian boys' and girls' mathematics performances in the TIMSS 2003 and 1999 with each other. He indicated that the girls' performance was better than boys. Therefore, he concluded that gender difference was found between boys and girls. Reilly et al., (2019) indicated that there is a gender difference between Omani boys' and girls' achievements in the TIMSS mathematics. In other words, the study illustrated that girls performed better than Omani boys. Osman et al., (2020) showed that unlike the unusual opinion about male well performance, Omani girls' mathematics achievements were greater than boys. In other words, Omani females consistently outperformed males in mathematics and science at all grade levels up to higher education and beyond. Zayed & Jansen (2018) carried out a study on third-grade Omani students. The outcomes revealed, that gender difference only was found only in memory tests in which girls performed better than boys. Hence many studies are related to TIMSS assessment that has been conducted by many researchers (Mullis & et al. 2008; Lee & Park, 2011; Minaei &Ghaffari, 2015).

2.2 Parents' Educational Level with Students' Achievement

Passiri (2017) stated, that there is a significant relationship between parents' educational level with students' academic successes. In other words, parents' higher educational level influences students' higher academic achievements. Educated parents help their children to receive more essential information. Asitha (2011) demonstrated that there is a significant positive relationship between parents' educational level with students' success rate in mathematics achievement. The study showed that the students whose parents completed university or equal degree had better achievement than those whose parents just completed upper secondary. Imam & Pratap (2015) stated parents' education can be considered an essential factor in students' mathematics achievement. The students with high-level educated parents had a greater achievement rate in mathematics than the students'' whose parents were from low education class. Díaz (2003) showed that parents' educational level is related to their children's performance in academic achievements.

3. Methods

The research methodology was a quantitative research approach. The statistical population of the study has been selected from all Omani and Iranian fourth-grade students.

3.1 Population and samples

The statistical samples of this study have been selected from all Omani and Iranian fourth-grade students who participated in the TIMSS 2015 mathematics assessment. There were 9105 Omani and 3823 Iranian boys' and girls' students; who participated in the TIMSS 2015 mathematics test.

3.2 Sampling Procedure

The sampling method, sample size, and all procedures related to the selection of the statistical sample followed the TIMSS sampling method. In other words, for data collection, TIMSS mathematics fourth-grade items and students' demographical information have been applied. Likewise, students' demographical details have been collected from the TIMSS mathematics items section which required the students to provide their demographical information such, as age, gender, etc. Table 1 indicates the information of the statistical sample.

Table 1 the Status of the Gender Distribution among Omani and Iranian Students

Country	Gender	Number	Percent	Total
Iran	Male Female	1960 1863	51.20 48.66	3828
Oman	Male Female	4581 4524	50.31 49.68	9105

3.3 Checking the Reliability

To find out the items' reliability Cronbach's Alpha was applied. Cronbach's alpha has been applied to measuring multiple research tools for many years by researchers in the education field. The most common application of the Cronbach is for the devilment of scales that have been applied for measuring attitudes, (Taber, 2017). The output of the Cronbach is presented in table 2.

Table 2 Reliability Statistics

	Reliability Statistics		
Country	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Oman	.71	.73	178
Iran	.68	.70	178

In the present study, 178 items were selected to analyze Iranian and Omani students' TIMSS 2015 mathematics achievement test. The TIMSS mathematics fourth-grade assessment has been designed based on two major domains: **1. Content domains**, which are presented to identify **areas or subject matter** that evaluate the **understanding of mathematics**; and (2) C**ognitive domains**, for describing the **thinking processes** that students encounter with them as they would deal with **mathematics content**. The TIMSS mathematics fourth-grade consists of three content domains as well as three cognitive domains. The content domains are: **numbers, geometric shapes, and measurement and data display** and the cognitive domains are: **knowing, applying, and reasoning**. The number of items for each domain and subdomains is respectively 96, 59, and 24 for numbers, Geometric shapes, and Measurement and Data display which are under the category of Content Domains and the number of items for subdomains of Cognitive Domain 74, 72 and 33 items are respectively for Knowing, Applying and Reasoning (Mullis, I.V.S. & Martin, M.O. (Eds.) 2013).

Table 3 TIMSS Mathematics Test Domains

Content Domain	Multiple-Choice		Constructed Response		Total Items
	4 options	*Compound*	*1 point*	*2 point*	
Numbers	44	2	37	12	95
Geometric shapes and Measurement	35	-	18	6	59
Data display	8	-	12	8	28
Achieved Percentage of Score Points	%49		%51		%100
Total Options	87	2	67	26	182
	89		93		

4. Results

The findings of the present research study have been presented below. To analyze the data the t-independent and ANOVA tests have been used.

4.1 First Research Hypothesis

$H_0$1: There is no significant difference between Omani and Iranian boys' and girls' performance in the TIMSS 2015 mathematics assessment.

To answer the first research hypothesis t-independent test was applied. The descriptive information of the t-independent analysis has been written in table 4.

Table 4 the t-independent test descriptive statistics

Descriptive Statistics of Mathematics Achievement				
Country	Sex of Students	N	Mean	Std. Deviation
Oman	Girls	4524	2131.26	466.23
	Boys	4581	2037.39	485.18
Iran	Girls	1863	6557.87	1296.48
	Boys	1960	6501.14	1418.53

The Omani girls' and boys' mean and standard deviation are presented respectively, (**Boys:** M=2131.26; SD=466.23); (**Girls:** M=2037.39; SD=485.18). Moreover, the Iranian girls' and boys' mean and standard deviation are indicated as follows: (**Boys:** M=6557.87; SD=1296.48); (**Girls:** M=6501.14; SD=1418.53). Therefore, the above information shows that the number of Omani participants' is greater than Iranian students in the TIMSS 2015 mathematics fourth-grade assessment. Omani and Iranian Boys' and girls' t-independent outcomes are presented in table 5.

Table 5 T-independent test

Country	T-independent test						
	F	t	Df	Sig.	Mean Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Oman	14.5	9.41	9103	.000	93.87	74.32	113.42
Iran	14.0	1.29	3821	.198	-50.242	-50.41	-50.1

As indicated in table 5, the t-statistics of Omani students; ($t=9.41$; $df=9103$; $p<0.01$), indicate that there is a statistically significant difference between Omani girls' and boys' mathematics performance in the TIMSS 2015 mathematics assessment. Furthermore, the t-test results for Iranian boys and girls showed that there is no statistically significant difference between Iranian boys' and girls' mathematics performance ($t=1.29$; $df=3821$; $p>0.05$).

As shown in table 5, the value of Lower and Upper is positive for Omani students. Therefore, it is illustrated that the first group's mean (Girls= 2131.26) is greater than the second group's mean (Boys=2037.39). To sum up, the t-independent analysis indicated that Omani boys' and girls' performance is not the same whilst Iranian boys' and girls' performance is the same. Hence, Omani girls outperformed the boys in the TIMSS mathematics assessment.

4.2 Second Research Hypothesis

To compare boys' and girls' performance in the mathematics dimensions, the t-independent test was applied. The null hypothesis assumes that there is no statistically significant difference between boys' and girls' performance in the mathematics dimensions for both Omani and Iranian students. The mathematics dimensions in the TIMSS 2015 fourth grade are as follows: **Data Display, Geometry, Numbers, Knowing, Applying, and Reasoning.** The Omani students' t-independent descriptive information for each dimension has been presented in table 6.

Table 6 the t-independent test descriptive statistics of mathematics dimensions of Omani students

Descriptive statistics (Omani Students)				
Dimensions	Sex of Students	N	Mean	Std. Deviation
Data Display	Female	4524	2092.85	498.96
	Male	4581	1963.71	515.04
Geometry	Female	4524	2141.04	484.25
	Male	4581	2064.05	489.67
Number	Female	4524	2112.48	475.56
	Male	4581	2032.66	486.99
Knowing	Female	4524	2120.96	501.56
	Male	4581	2010.13	513.32
Applying	Female	4524	2132.52	469.49
	Male	4581	2062.24	478.13
Reasoning	Female	4524	2092.59	449.91
	Male	4581	2018.77	463.15

Table 6 represents the mathematics dimensions' mean and standard deviation of Omani students. As shown in Table 6, the girls' mean is greater than boys in all mathematics dimensions.

Table 7 T-independent test of Omani students' performance in the TIMSS mathematics fourth-grade

t-independent test for Omani Students						
Dimensions	T	Df	Sig.	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Data Display	12.15	9103	.000	129.15	108.31	149.98
Geometry	7.54	9103	.000	76.99	56.98	96.99
Number	7.91	9103	.000	79.82	60.04	99.59
Knowing	10.42	9103	.000	110.83	89.98	131.68
Applying	7.08	9103	.000	70.28	50.81	89.75
Reasoning	7.71	9103	.000	73.82	55.06	92.58

Table 7 indicates the t-independent analysis of the mathematics dimensions of Omani students. The given information in table 7, indicates that the girls' mean is greater in all dimensions than boys. However, the greatest mean difference was found for **Data Display** and **Knowing** which are respectively presented as (**Data Display; Mean Difference**=129.15) and (**Knowing; Mean Difference**=110.83). Furthermore, it would be concluded that Omani girls' **data display** and **knowing knowledge** are better than boys.

Table 8 the t-independent test descriptive statistics of mathematics dimensions of Iranian students

Descriptive statistics (Iranian Students)				
Dimensions	Sex of Students	N	Mean	Std. Deviation
Data Display	Female	1863	2072.60	455.76
	Male	1960	2055.91	490.99
Geometry	Female	1863	2237.11	427.53
	Male	1960	2180.02	476.75
Number	Female	1863	2212.45	446.99
	Male	1960	2196.96	488.02
Knowing	Female	1863	2176.85	466.22
	Male	1960	2150.63	508.56
Applying	Female	1863	2228.62	425.75
	Male	1960	2192.58	477.74
Reasoning	Female	1863	2152.41	445.21
	Male	1960	2157.93	471.53

Table 8 shows the descriptive statistics of Iranian students' performance in the mathematics dimensions. According to table 8, the girls' mean is greater than boys in **geometry** (M=2237.11) and **applying** (M=2228.62). However, the **knowing** mean is also greater than boys but the difference is not great. Table 9 provides more details about the means.

Table 9 T-independent test of Iranian students' performance in the TIMSS mathematics fourth-grade

t-independent test for Iranian Students						
Dimensions	t	df	Sig.	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Data Display	1.088	3821	.277	16.69	-13.38	46.78
Geometry	3.891	3821	.000	57.086	28.32	85.85
Number	1.022	3821	.307	15.49	-14.23	45.21
Knowing	1.659	3821	.097	26.21	-4.77	57.19
Applying	2.457	3821	.014	36.03	7.29	64.78
Reasoning	-.372	3821	.710	-5.52	-34.63	23.59

The t-independent results show that the Iranian girls had a better performance than boys in **Geometry** and **Applying, (Geometry: Mean Difference**=57.086; **Applying: Mean Difference**=36.03). Furthermore, Iranian girls' knowledge of **Geometry** and **Applying** is greater than boys in the TIMSS 2015 mathematics fourth-grade.

4.3 Third Research Hypothesis

For analyzing parents' educational level with students' achievement rate, the ANOVA test was used. The results of the analysis are illustrated in table 10.

Table 10 ANOVA Analysis Descriptive Statistics of Omani Students

Descriptive Statistics					
Parents' Educational level	N	Mean	Std. Deviation	95% Confidence Interval for Mean	
				Lower	Upper
University or Higher	2413	2265.14	464.34	2246.61	2283.68
Post-secondary but not University	905	2165.14	479.61	2133.85	2196.43
Upper Secondary	1478	2104.08	448.83	2081.18	2126.99
Lower Secondary	1083	2050.38	440.60	2024.12	2076.66
Some Primary, Lower Secondary or No School	1855	1932.70	466.60	1911.46	1953.95
Total	7734	2112.85	477.36794	2102.21	2123.50

Table 11 shows the results of the ANOVA test of Omani students.

Table 11 ANOVA Analysis Outcomes of Omani Students

ANOVA					
Students' Parent's Education with their Mathematics Performance					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	122977351.300	4	30744337.82	144.96	.000
Within Groups	1639219866.000	7729	212086.93		
Total	1762197218.000	7733			

Table 11 explains the difference between parents' educational level and students' achievement in the TIMSS 2015 mathematics fourth grade. The details of the table show, that there is a significant difference between parents' educational level and students' achievement ($F=144.96$; $P<0.05$).

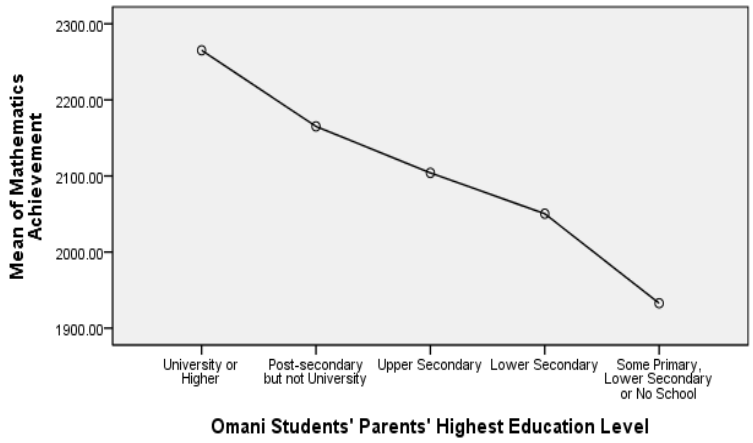
However, if the p-value is below 0.05 in the ANOVA, the ANOVA is not able to provide more details as to what extent the difference exists among the groups. To find out the difference among the groups a Post Hoch test has been applied.

Table 12 Post Hoch Test Outcomes of Omani Students

(I) Parents' Education Level	(J) Parents' Education Level	Mean Difference (I-J)	Sig.
University or Higher	Post-secondary but not University	99.999*	.000
	Upper Secondary	161.057*	.000
	Lower Secondary	214.757*	.000
	Some Primary, Lower Secondary, or No School	332.437*	.000
Post-secondary but not University	University or Higher	-99.999*	.000
	Upper Secondary	61.058*	.015
	Lower Secondary	114.758*	.000
	Some Primary, Lower Secondary or No School	232.437*	.000
Upper Secondary	University or Higher	-161.057*	.000
	Post-secondary but not University	-61.058*	.015
	Lower Secondary	53.699*	.029
	Some Primary, Lower Secondary or No School	171.379*	.000
Lower Secondary	University or Higher	-214.757*	.000
	Post-secondary but not University	-114.758*	.000
	Upper Secondary	-53.699*	.029
	Some Primary, Lower Secondary, or No School	117.679*	.000
Some Primary, Lower Secondary, or No School	University or Higher	-332.437*	.000
	Post-secondary but not University	-232.437*	.000
	Upper Secondary	-171.379*	.000
	Lower Secondary	-117.679*	.000

Table 12 included the Post Hoch analysis outcomes of differences between the parent's education level and students' mathematics achievement. The Post Hoch outcomes showed that there is a significant difference between all parents' educational levels and students' achievement.

Plot 1 Omani students' parents highest education level with their achievement rate



Hence, since all educational levels are significant differences, it is better to select the highest p-value which in this case, the students whose parents had the upper secondary and lower secondary degree had a greater achievement rate in mathematics than each other (sig: 0.029). Moreover, the second difference could be concluded for the students whose parents had a post-secondary but not university degree with the students whose parents had completed upper secondary (Sig:0.029). However, as it indicated, the greater difference belonged to the students whose parents had the upper secondary degree. Furthermore, parents' education can affect students' achievement.

Table 13 ANOVA Analysis Descriptive Statistics of Iranian Students

Descriptive Statistics					
Parents' Educational level	N	Mean	Std. Deviation	95% Confidence Interval for Mean	
				Lower	Upper
University or Higher	613	7618.41	1138.420	7528.12	7708.71
Post-secondary but not University	448	7065.28	1106.33	6962.55	7168.00
Upper Secondary	1074	6606.47	1247.91	6531.76	6681.19
Lower Secondary	811	6149.00	1226.35	6064.47	6233.53
Some Primary, Lower Secondary or No School	733	5763.22	1210.33	5675.45	5850.98
Not Applicable	16	5919.92	1386.58	5181.06	6658.78
Total	3695	6559.32	1351.06	6515.74	6602.90

Table 13 represents the descriptive information of the ANOVA test for Iranian students.

Table 14 ANOVA Analysis Outcomes of Iranian Students

ANOVA					
Students' Parent's Education with Their Mathematics Performance					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1405734116.000	4	351433528.90	243.53	.000
Within Groups	5301745893.00	3674	1443044.60		
Total	6707480009.00	3678			

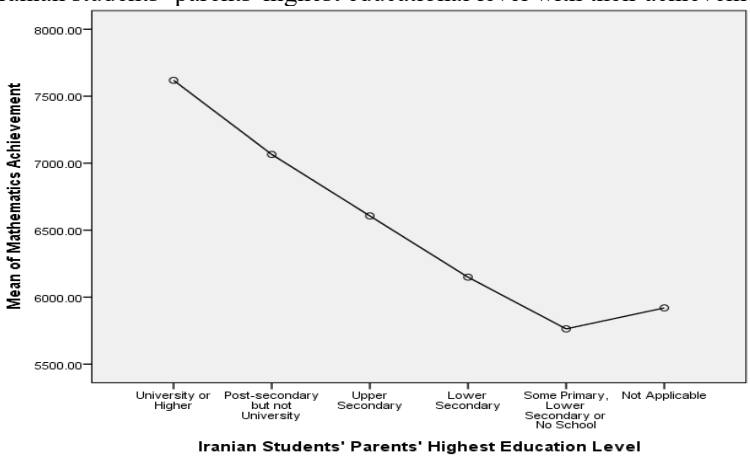
Table 14 indicates the results of the ANOVA to compare Iranian students' mathematics achievement with their parent's education level. The results showed that there is a significant difference between parents' educational level with students' achievement rate in the TIMSS 2015 mathematics test. To find out the difference among the groups a Post Hoch test was applied. The outcomes are presented in table 15.

Table 15 Post Hoch Test Outcomes of Iranian Students

(I) Parents' Highest Education Level	(J) Parents' Highest Education Level	Mean Difference (I-J)	Sig.
University or Higher	Post-secondary but not University	553.135*	.000
	Upper Secondary	1011.940*	.000
	Lower Secondary	1469.413*	.000
	Some Primary, Lower Secondary, or No School	1855.195*	.000
Post-secondary but not University	University or Higher	-553.135*	.000
	Upper Secondary	458.805*	.000
	Lower Secondary	916.277*	.000
	Some Primary, Lower Secondary or No School	1302.059*	.000
Upper Secondary	University or Higher	-1011.940*	.000
	Post-secondary but not University	-458.805*	.000
	Lower Secondary	457.473*	.000
	Some Primary, Lower Secondary or No School	843.254*	.000
Lower Secondary	University or Higher	-1469.413*	.000
	Post-secondary but not University	-916.277*	.000
	Upper Secondary	-457.473*	.000
	Some Primary, Lower Secondary, or No School	385.782*	.000
Some Primary, Lower Secondary, or No School	University or Higher	-1855.195*	.000
	Post-secondary but not University	-1302.059*	.000
	Upper Secondary	-843.254*	.000
	Lower Secondary	-385.782*	.000

Table 15 shows that there is a significant difference among all group's means. In other words, each

Plot 2 Iranian students' parents' highest educational level with their achievement rate



educational level. Therefore, parents' educational level could be identified as an important factor for their children to achieve a better rank in mathematics achievement.

5. Discussion

The present study attempted to assess Omani and Iranian fourth-grade students' mathematics achievement in the TIMSS 2015. The nature of the study followed a secondary analysis approach. In other words, the large assessment of the TIMSS was prepared by the IEA. Thereafter, the researchers analyzed the collected data to find out the difference between the rate of mathematics performance between Omani and Iranian students.

Moreover, the gender difference and parents' education effects have been analyzed to find out their role on students' performance in the TIMSS mathematics test. The results of the analysis showed that there was a statistically significant difference between Omani girls' and boys' mathematics performance in the TIMSS 2015 mathematics assessment. Furthermore, there was not any statistically significant difference between Iranian boys' and girls' mathematics performance. Therefore, Omani boys outperformed girls whilst Iranian boys' and girls' performance was the same. Furthermore, mathematics dimensions analysis outputs revealed that the Omani girls outperformed the boys in **Data Display** and **Knowing**. In other words, Omani girls were better at **data display** and **knowing knowledge** skills than boys. Hence, Iranian girls had a better performance than boys in **Geometry** and **Applying** skills. The ANOVA analysis was applied to find out the differences between parents' educational levels with their children's achievement rates in mathematics. The results indicated that there is a significant difference between parents' education level and students' achievement in TIMSS mathematics. Therefore, parents' educational level could affect students' achievement.

6. Conclusion

The results showed a significant difference between Omani girls' and boys' mathematics achievement in the TIMSS 2015 mathematics fourth-grade. However, the analysis of the t-test illustrated that there was no significant difference between Iranian boys' and girls' achievements in the TIMSS 2015 mathematics. The Omani students' findings are in line with (Reilly et al., 2019; Osman et al., 2020). Hence, the Iranian results are in contrast with those (Kiamanesh, 2006) and the results are in line with; Rafipour & Jokar, 2014).

Consequently, the major debate about the gender factor would be implied on demographical and cultural factors than its direct effect on mathematics achievement. Furthermore, many studies indicated that students' self-efficacy, has a direct impact on their mathematics achievement that the boys' and girls' self-efficacy is different from each other (Evan, 2015; Else-Quest, 2010; Kenney-Benson, 2006; Skaalvik, E., & Skaalvik, 2013).

Likewise, the findings of the ANOVA analysis of Omani students revealed that students whose parents completed upper secondary and lower secondary school showed different achievement rates in mathematics (sig: 0.029). Furthermore, the second distinction might be drawn between students whose parents completed upper secondary school and students whose parents had a post-secondary but not university degree (Sig:0.029). However, the students whose parents had a post-secondary education had a higher advantage. Furthermore, parents' education can have an impact on their children's achievement. Similarly, the findings of Iranian students' parental educational level concerning their mathematics performance revealed a substantial disparity among all groups. In other words, each student's mathematical achievement varies depending on the educational level of his or her parents. As a result, parents' educational level may be seen as a critical determinant in their children's achievement test results.

These findings are in line with Asitha (2011), Imam & Pratap (2015), Cai (2003), P I & Suthanthira (2019), Amponsah & et al (2018), Daz (2003), Passiri (2017).

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