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The Social & Economic Survey Research Institute

Qatar Education Study - June 2019

School Facilities Report - Executive Summary

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Qatar Education Study 2018

Executive Summary
June 2019

School Facilities Report

Social & Economic Survey Research Institute (SESRI)
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About the Social and Economic Survey Research Institute

This report was prepared by the Social and Economic Survey Research Institute (SESRI), an independent research organization at Qatar University. Since its inception in 2008, SESRI has developed a strong survey-based infrastructure and provides high quality data that serves to inform and guide priority setting, planning, policy formulation, and research in the State of Qatar.

The mandate of the Institute is to conduct survey research on economic, social and cultural issues that are of direct and vital significance to the development and welfare of Qatari society. Equally important, the Institute strives to build capacity within Qatar University (QU) in survey research methodology by serving as a platform for QU faculty and students to conduct their own research. Along those lines, the Institute offers training in survey research with special emphasis on topics of interest to the academic community and to Qatari society as a whole.

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ACKNOWLEDGEMENTS

The Social and Economic Survey Research Institute (SESRI) at Qatar University would like to extend appreciation and thanks to the following for their support and contributions:

The Ministry of Education and Higher Education.
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Dr. Ahmed Al-Emadi, Dean, College of Education, Qatar University.
Dr. Ahmed Mohammed Hamed Megreya, College of Education, Qatar University.
Dr. Saed Sabah, Head of Educational Sciences Dept., College of Education, Qatar University.
Dr. Abdullah Abu-Tineh, Director of National Center for Educational Development, College of Education, Qatar University.
Mrs. Reema Abu Khadija, Ministry of Education and Higher Education.

SESRI is grateful to Mr. John Lee Pratt Holmes, Unit Head of CATI Operations, SESRI, Qatar, for his insightful comments on the report drafts. We also thank all the students, parents, teachers, and school administrators who spared some of their valuable time to take part in the survey and answer detailed questions on a variety of subjects important to the state of education in Qatar. Our thanks also go to the interviewers and supervisors who administered the fieldwork.

The opinions conveyed in this report are those of the authors and do not necessarily reflect the views of the Social and Economic Survey Research Institute (SESRI) or Qatar University. SESRI is responsible for any errors or omissions in this report, however.

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PREFACE

This report summarizes the main results derived from the Qatar Education Study (QES) 2018. As was the case in the previous editions of the Qatar Education Study, which were implemented in 2012 and 2015, the 2018 round of QES is a set of four different surveys carried out by SESRI in October–November 2018. These consist of student, parent, teacher, and school administrator surveys.

The aim of the QES 2018 was to examine the views of participants toward various aspects of pre-college education in Qatar. More specifically, the focus of the QES 2018 is on preparatory (8th and 9th grade) and secondary (11th and 12th grade). Combined, the surveys included 3,380 participants representing 34 preparatory and secondary schools. The following table demonstrates the numbers of schools and participants involved in the QES 2018 (see Table 1).

Four types of school make up Qatar's school system: Government (public) schools, International private schools, Arabic private schools and Community schools, which follow the curricula of particular countries. In addition to the first two types, Arabic private and Community schools are subsumed under the 'other' category in this study.

The information included in this report is based on the main results arrived at from the 2018 Qatar Education Study (QES). As a whole, the five QES reports provide valuable information on areas that are of crucial importance to the school system in Qatar, including students' motivation and future aspirations, school facilities, the school curriculum, student and parental satisfaction, and private tutoring.

The main goal of these five reports is to inform education policy and practice whilst also contributing to achieving the overall goals outlined in the *Qatar National Vision 2030* (*QNV 2030*). Based on the results provided in these reports, relevant implications for policy and practice will be offered as they relate to the specific areas covered in each report.

Table 1: Numbers of Schools and Participants in the Qatar Education Study 2018

Total Number of surveyed schools	34 Schools		
	Government Schools 61.76% (n=21) schools	**International schools** 20.59% (n=7) schools	**Other Schools** 17.65% (n=6) schools
Total number of surveyed students	1639 Students		
	Government Schools 52.96% (n=868) students	**International schools** 29.47% (n=483) students	**Other Schools** 17.57% (n=288) students
Total number of surveyed parents	1142 Parents		
	Government Schools 46.58% (n=532) parents	**International schools** 34.15% (n=390) parents	**Other Schools** 19.26% (n=220) parents
Total number of surveyed teachers	424 Teachers		
	Government Schools 62.97% (n=267) teachers	**International schools** 26.42% (n=112) teachers	**Other Schools** 10.61% (n=45) teachers
Total number of surveyed school administrators	175 Administrators		
	Government Schools 69.71% (n=122) administrators	**International schools** 13.14% (n=23) administrators	**Other Schools** 17.15% (n=30) administrators

The QES 2018 explores the views expressed by students, parents, teachers and school administrators and their attitudes toward the existing preparatory and secondary school system in Qatar. Available literature that examines K-12 education generally in Qatar remains limited and the overall school system in the country is largely under-researched.

The schools covered in this study represent a cross-section of the major school types (i.e., Government, International and other schools) as well as

coeducational and single-gender programs. Taking this into account, the design of the QES 2018 allows for analyzing the data with a view to drawing comparisons within and between groups of students, parents, teachers, and school officials. This allows for studying relevant issues from the combined perspective of students, parents, teachers and administrators.

By examining respondents' beliefs about various aspects of the school system in Qatar, this study seeks to provide a realistic and up-to-date portrait of preparatory (8th and 9th grade) and secondary (11th and 12th grade) education in Qatar based on the results derived from the survey. The study's results will aid in painting a picture of the state of affairs at the different schools in Qatar and as such will depict what works and doesn't work in the school system. Ultimately, the study will be useful in tapping areas of schooling that need improvement and ways of fostering student success as they look forward to the future.

The results reported here shed light on four areas directly related to policy and decision making:

- Science Laboratories
- Library
- Sports Facilities
- Cafeteria

We welcome your questions and comments, which may be directed to sesri@qu.edu.qa.

INTRODUCTION

Qatar's leadership have prioritized the development of the education sector since the reign of the Emir Sheikh Hamad bin Khalifa Al-Thani. Educational development was further emphasized when the Qatar National Vision for 2030 was launched in 2008. Qatar's plans for economic diversification included a vision for Qatar as an educational hub in the region (John, p.10, 2018). The education sector has been expanding to meet with rising demands from expatriates and nationals. In 2018, the Qatari government allocated QAR 19.0 billion (US$ 5.2 billion), equivalent to 9.4% of its total expenditure, for the education sector (Alpen Capital, p.11, 2018). The investments Qatar has made in education have paid off. In a study performed by Alpen Capital, Qatar was ranked the highest among GCC countries in primary and higher education sectors (Alpen Capital, p.11, 2018). Moreover, on a global scale, the 2017-2018 Global Competitiveness Report indicated that "Qatar ranked 5th for its quality of higher education and training, 10th for quality of primary education, and 6th for the quality of its higher education and training (Alpen Capital, p.11, 2018). These figures show that Qatar's education sector is already exceptional. However, there is always room for improvement.

The Alpen Capital report demonstrated that Qatar is witnessing a shift towards increasing demand for private education, more parents are enrolling their students in private international schools than before (Alpen Capital, p.33, 2018). International private schools offer diverse curricula and are especially beneficial to the expat population who aim to return their home countries at some point (Alpen Capital, p.33, 2018). The increase in demand for strong international schools in Qatar has facilitated access to high quality education. The increase in demand for international schools has led to an improvement to Qatar's education infrastructure across all schools as the population's expectations have risen.

This report highlights the availability and quality of school facilities in Qatar. It illuminates the teachers and students' opinions in government, international, community and Arabic private schools. The facilities evaluated in the survey include libraries, science laboratories, cafeteria, and sports facilities. These facilities are fundamental aspects of students' learning experiences, and help promote a diverse, nutritious, and active environment for their education. The experience of learning can improve significantly when schools invest in facilities. Students' cognitive abilities, including memory and focus, reach optimal levels when libraries are offered at school, for example (Kuhlthau, 2010). Science laboratories provide opportunities for students to experience practical applications of theories (Hofstein & Lunetta, 2004). In addition, having varied sports

facilities that are of good quality positively affects students' mental and physical health (Pesce et al., 2009). The availability of quality meals in a school cafeteria is likewise important for education as researchers have found strong links between the quality of school meals and academic achievement (Anderson, Gallagher and Ritchie, 2017). Teachers likewise benefit from facilities like science laboratories, sports facilities, and libraries as these amenities help them deliver the necessary material more creatively.

Following the Qatar Education Study (QES) surveys conducted in 2012 and 2015, the QES 2018 aims to examine the changes in Qatar's education system. When the survey was first administered in 2012, the National Development Strategy (NDS) and the Education and Training Sector Strategy 2011-2016 (ETSS) were only recently implemented (Supreme Education Council, 2012). The QES 2015 was able to examine the impact of these strategies at a later stage. The QES 2018 can provide further insight into the success of these national strategies. Importantly, after the previous two surveys, Qatar experienced a blockade by three of its neighboring countries. In light of this major challenge, it is necessary to evaluate if the blockade imposed upon Qatar had significant implications for the country's education sector.

Structure of the Report

a) Section one examines the responses related to science laboratories
b) Section two evaluates the results related to the library
c) Section three provides findings pertaining to sports facilities, and
d) Section four summarizes the results related to the cafeteria.

An examination of the views and perceptions of the different stakeholders presented in the survey will be useful when creating future plans for Qatar's education policies. The report includes recommendations and is designed to help policy makers in creating and adjusting school requirements.

The Majority of Administrators, Teachers and Students Rated the Quality of the Facilities as Very Good or Good

Facilities have become essential indicators of the overall school quality because they are directly related to students' learning experience. Many parents consider the facilities schools provide before enrolling their children. Students' experiences within these facilities can have a measurable impact on the education they gain and parents instinctively understand this. For example, if the school provides a visually stimulating,

well-maintained library then students feel encouraged to read at a young age and as a consequence are more likely to excel academically. Therefore, the results of this report on facilities should be weighed by policy makers as an important component in their plans to improve the quality of education in Qatar. In the Qatar Education Study 2018, administrators, teachers and students were asked to rate the quality of the following four facilities in their respective schools: cafeteria, sports, library, and science laboratories (labs). They were provided with four rating options: very good, good, poor, and very poor.

Generally, the majority of administrators rated the quality of the four (cafeteria, sports facilities, library and science labs) positively as either very good or good. It is important to mention that administrators are unlikely to directly use the sports facilities, library and the science labs and so a high social desirability bias may be influencing their responses. Because this respondent bias is likely to weigh heavily, the researchers decided to remove the responses of the administrators from the sports facilities, library and science labs section of the report.

Similarly, a majority of teachers rated the quality of the four school facilities as very good or good. The results are lower for Arabic private schools than community, international and government schools. In Arabic private schools, two thirds of the teachers (65%) reported that the science labs were of very good or good quality (see Table 2). That Table also summarizes the views of each stakeholder by all four facilities. After the summary, the report will go into detail for each facility type.

Results indicate that compared to their teachers, students reported lower quality assessments of the four school facilities (cafeteria, sports, library and labs). The disparity between students and teachers' opinions may be the result of a different perception of what is important as a component of quality. While teachers may be more concerned with the content and diversity of books offered, students may pay more attention to the aesthetics of the library. Research suggests visual design and color scheme may have a larger impact on students' perception, for example (Ivey and Broaddus, 2001). The difference in age and experience between students and teachers is another plausible factor where divergence in opinion becomes a function of expectations.

Table 2: Ratings of the Four School Facilities, by Administrators, Teachers and Students

Items	Government	Arabic Private	Community	International
Sports Facilities				
Administrators	99	100	94	96
Teachers	81	100	100	100
Students	87	78	78	88
Library				
Administrators	100	100	100	92
Teachers	98	94	100	97
Students	89	68	84	88
Science Laboratories				
Administrators	98	92	100	100
Teachers	97	65	100	100
Students	88	67	86	89
Cafeteria Food				
Administrators	98	100	100	89
Teachers	89	100	96	96
Students	58	72	65	63

SCIENCE LABORATORIES

Teachers have found that science labs are very beneficial for students' learning experience (Hofstein & Lunetta, 2004). Science labs are used to provide students with 'hands on' practice with materials that enhance their understanding of the natural world (Hofstein & Lunetta, 2004). During science lab sessions, students are sometimes requested to work in groups or individually. Teachers often use these sessions as opportunities for interactive learning to engage students and ignite their curiosity. Experiments in school science labs vary in their length, while some experiments may last several weeks others can be conducted in 20 minutes (Hofstein & Lunetta, 2004).

Teaching science in labs allows students to observe, treat and manipulate objects and materials, which is intended to enhance their learning experience and make the lesson more memorable. Moreover, several studies reported that learning science in laboratories correlates with improved scientific literacy in students (National Research Council, 1996). The social environment during a lab session is usually less formal than in the quotidian class periods; therefore, school laboratories offer opportunities for creative collaborations among students (Hofstein & Mamlok-Naaman, 2007). According to Hofstein and Lunetta (2004) "laboratory work is an important medium for enhancing attitudes, stimulating interest and enjoyment, and motivating students to learn science" (Hofstein & Lunetta, 2004, p. 34). Similarly, Tobin (1990) suggested that laboratory activities allow students to learn scientific theory through conducting experiments.

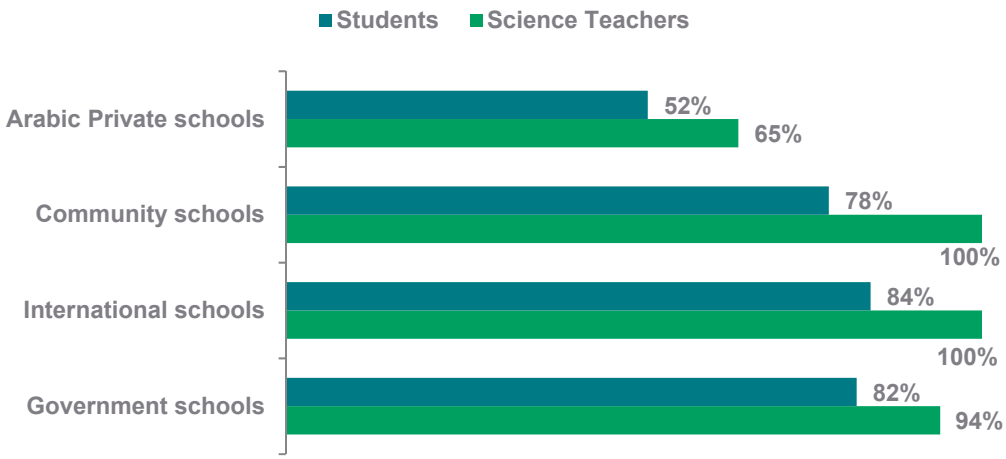
The Majority of Teachers and Students Indicated that their School has Science Labs

In the Qatar Education Study (QES) 2018, science teachers and students were asked about the availability of science labs in their schools. On average among the four school types, 98% of both science teachers and students indicated that their school has science labs. Interestingly, female students (99%) reported that that their school has science labs at a slightly higher rate than their male (96%) counterparts among the four school types.

Science teachers and students who reported that their school has science labs were asked if the number of science labs is sufficient. Overall, the majority of both students and science teachers reported that the number of science labs is sufficient in the government, international and community schools. Regarding government schools, 94% of the science

teachers reported that the number of science labs is sufficient, compared to 82% of the students. These results are similar to those related to their counterparts in the international and community schools. All of the science teachers in international schools and community schools reported that the number of science labs is sufficient, compared to 84% of international school students and 78% of community school students. A lower percentage of science teachers and students in the Arabic private schools reported science labs as sufficient in number with around two thirds (65%) of the teachers and a little over half (52%) of the students indicating this (see Figure 1).

Figure 1: Sufficiency of Science Laboratories in Schools by Science Teachers and Students



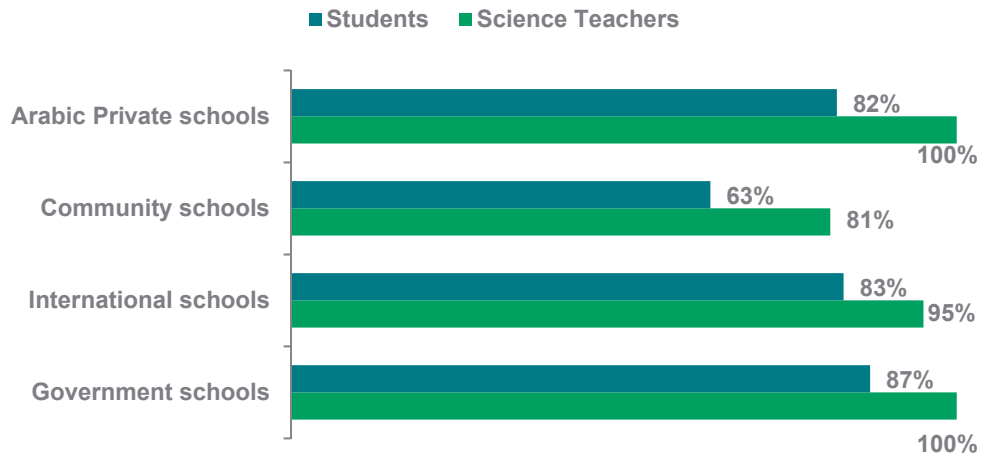
Science Teachers Reported a Higher Visitation Frequency of their Students to School Labs than their Students did

In QES 2018, results also indicate that compared to their students, science teachers reported a higher visitation frequency of their students to school labs than their students did. Science teachers who reported that their school has science labs were asked how often, in a typical week, their students use the science labs. They were given the following four options: never, once a week, twice a week, and three times a week or more. Regardless of the school type, all science teachers reported that their students use the science lab once a week or more. Similarly, students who reported that their school has science labs were asked how often, in a

typical week, they use the science labs. Around 89% of Arabic private schools students, 85% of government schools students, 62% of international schools students and 44% of community schools students stated that they visit the school lab once a week or more.

Science teachers who indicated that their students use the science labs once a week or more, were further asked to specify how often their students conduct experiments under their supervision. In the QES 2018 survey they were given the following four options: never, once a week, twice a week, and three times a week or more. In their responses all of government and Arabic private school science teachers, 95% of international school science teachers and 81% of community school teachers reported that students conduct experiments under the supervision of their science teachers once a week or more. And once again students presented with the same question and provided with the same four options indicated a lower frequency. Around 87% of government, 83% of international, 82% of Arabic private and 63% of community school science students reported that they conduct experiments under the supervision of their science teacher once a week or more (see Figure 2). Notably, a higher percentage of female students (90%) reported that they conduct experiments weekly or greater in comparison with their male (77%) counterparts.

Figure 2: Percentage of Students' and Teachers' Reporting Use of Science Labs for Experiments once a week or more

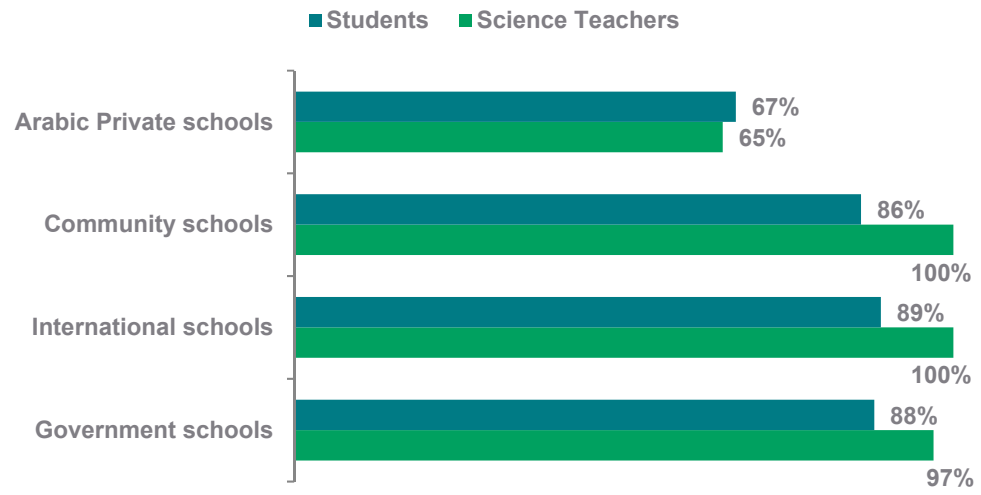


The Majority of Teachers and Students Rated the Quality of the Science Labs as Very Good or Good

Science teachers and students who reported having school science labs were asked to rate the quality of science labs. They were provided with same four options of very good, good, poor, and very poor. Generally, the majority of both science teachers and students reported that science labs are either very good or good in government, international and community schools. In government schools, 97% of the teachers reported that science labs were very good or good. In comparison, 88% of the government school students reported lab quality as very good or good. Similar results are present among their counterparts in international and community schools with all of the science teachers reporting science labs as very good or good but only 89% and 86% of students in international and community schools, respectively, reporting this level of quality. The results are lower for Arabic private schools with around two thirds of the science teachers and students (respectively 65% and 67%) reporting science labs as of very good or good quality (see Figure 3).

Notably, among all the schools, a higher percentage of female students (90%) reported that that the lab quality was of good or very good quality in comparison to their male (83%) counterparts.

Figure 3: Evaluation of the Quality of Science Laboratories in Schools by Science Teachers and Students



LIBRARY

"Education has now shifted from being teacher centric to student centric, in other words from directed instruction to active learning, knowledge discovery and construction" (Azura & Majid, 2005). Emerging research reveals a new paradigm in school education in which students are encouraged to take ownership of their education. One of the main ways students are able to develop their intellectual faculties is through fostering a love of reading. When students become avid readers, they also become independent learners. Libraries are central in nurturing an environment where student curiosity is stimulated.

Reading helps students learn to think productively and analytically (Azura & Majid, 2005). Researchers have found that school libraries "are the dynamic learning centers in (the) information age" (Kuhlthau, 2010). School libraries are the main venue where skills are developed. Examples of skills that develop through reading include concentration, communication, comprehension, memory. Moreover, school libraries also play a role in the development of school teachers. Libraries have been found to play a major role in enhancing teachers' proficiency and schoolroom performance. Increasingly, libraries are also a center for media and electronic research central to the digital future. This section provides an overview of how the school library is perceived by respondents in the QES 2018 survey.

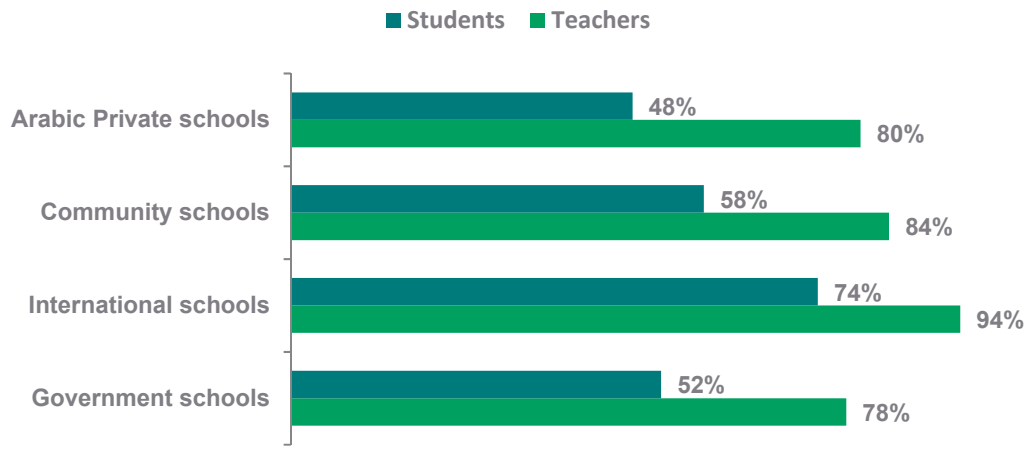
Teachers Report a Higher Student Visitation Frequency to the School Library than the Students themselves

In the QES 2018 questionnaire, teachers and students were asked whether their schools have a library. All teachers indicated awareness that their school has a library, and 98% of students indicated presence of a school library, including 99% of the female students and 96% of the males.

When evaluating library use, teachers were asked how often "in a typical week" their students use the school library. Students self-reported how often they visited the library in a typical week. The following options were provided: never, once a week, twice a week and three times a week or more. In examining the responses, it is noteworthy that teachers report a higher frequency of student library visitation than that indicated by the students themselves. This pattern is apparent in all the schools. Around 78% of government school teachers reported that students visit the school

library once or more a week as compared to 52% of their school students. Similarly, whereas 94% of international school teachers, 84% of community school teachers, and 80% of Arabic private school teachers reported that students visit the school library at least once a week, the corresponding student reports are 20-32% lower. Around 74% of international school students, 58% of community school students, and 48% of Arabic private school students reported visiting their school library. A discrepancy is apparent between teachers' and students' perceptions of student use of the school library (see Figure 4).

Figure 4: Percentage of Students Using Library once a week or more, Reports from Teachers and Students in QES2018

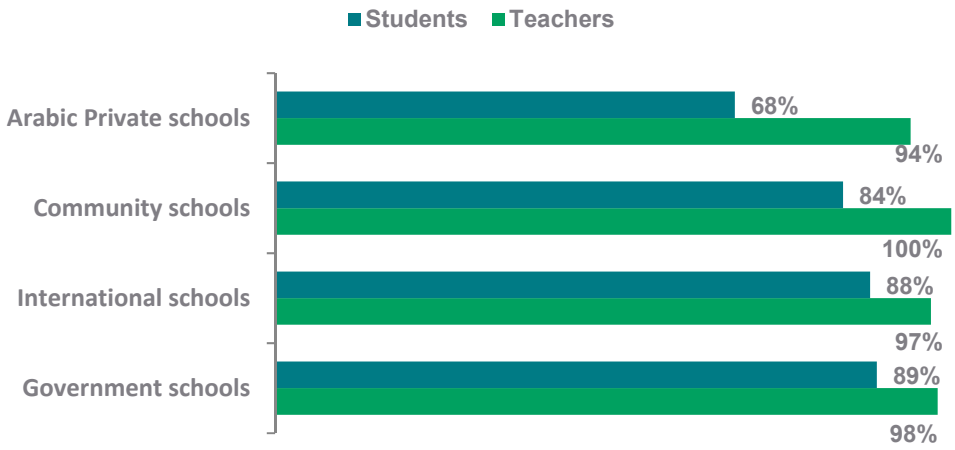


The Majority of Teachers and Students Rated the Quality of the Library as Very Good or Good

Teachers and students who indicated that their school has a library were asked to rate the quality of the library at the school using the same four options of very good, good, poor, and very poor. All the community school teachers and the majority of the school teachers at the other schools characterized the school library as very good or good (98% government, 97% international and 94% of Arabic private). Students' assessment of school libraries was similarly positive. Around 89% of students in government, 88% of International and 84% of community schools reported the quality of their library as good or very good. However, only 68% of

students from the Arabic private school reported their library quality as good or very good (see Figure 5).

Figure 5: Quality of School Library Rated "Very good or good" by Teachers and Students in QES 2018



SPORTS FACILITIES

Physical activity is vital for school students; it helps improve confidence levels, concentration and weight management. It is important for students to exercise in schools as it helps them develop healthy habits at a young age. Researchers have found that exercise in school can enhance student performance by improving their memory (Pesce et al., 2009). Mick Green and Barrie Houlihan explain that exposing youth to sports "not only contributes to satisfying individual needs such as individual fitness, fun, and well-being, but also produces external effects like social integration, and socialization." (Green & Holihan, p.3, 2005).

Although students can participate in sports activities with minimal sports facilities, it is often the case that having a wide variety of school sports facilities fosters a more prevalent sports culture within schools. Qatar has taken a special interest in developing a sports culture among its youth, and is recognized as a sports hub (Bromber & Krawietz, 2013). Qatar has invested heavily in Aspire academy, for example. Aspire is a school dedicated to developing school athletes. Aspire zone also offers many sports activities that cater to the youth in Qatar.

In addition, childhood and adolescent obesity has reached epidemic proportions in Qatar (Mandeya and Kridli, 2014). "The 2006 Qatar World Health Survey (WHS) reported that 16% of Qatari children were too large for their age as measured by body mass index (BMI), per (WHO) guidelines" (Mandeya and Kridli, p.2, 2014). The report also showed that 5% of children under the young age of 5 were considered overweight. These figures have adverse implications for the health of Qatar's population. It is believed that the availability, variety and quality of sports facilities will help reduce the obesity epidemic in Qatar. Students who are involved in physical exercise are far more likely to maintain a healthy weight. Hence, policy makers should pay special attention to the sports facilities offered in schools, and participation rates.

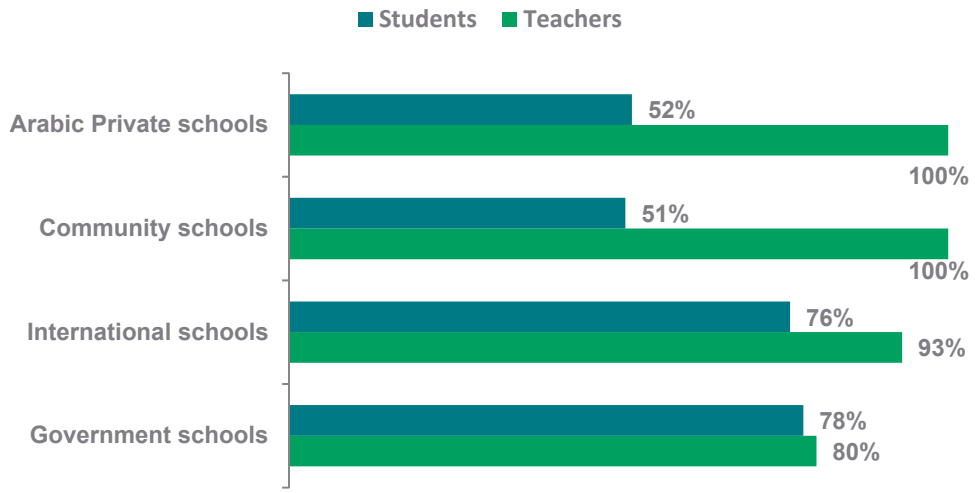
Around half of the Students in Community and Government Schools Reported the Number of School Sports Facilities as Insufficient

In the QES 2018, students and teachers were asked if their schools have sports facilities. All teachers in community, government, international and Arabic private schools reported that their schools provided sports facilities for their students. Among students, the majority reported having sports

facilities in their schools, including, in ascending order, those at Arabic private (77%), community (94%), government (94%), and international (97%) schools.

In addition, teachers and students who indicated that their school has sports facilities were asked if the number of sports facilities were sufficient. Here again there seemed to be a discrepancy between teachers and students' perceptions. All teachers in community and Arabic private schools and most teachers in government and international schools (80% and 93%, respectively), regarded their schools as providing sufficient sports facilities. In contrast, only 51% of students in community schools and 52% of students in Arabic private schools saw their schools as offering sufficient sports facilities. The contrast between teacher and student perceptions was somewhat lower for international school students (76%). Only for government schools were students perceptions more or less aligned with their teachers with 78% reporting that their schools offered sufficient sports facilities (see Figure 6).

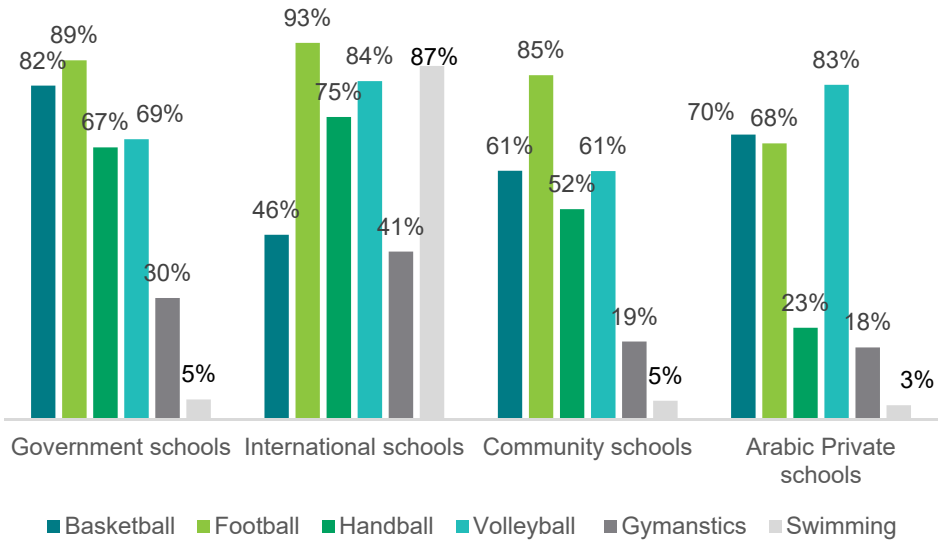
Figure 6: Sufficiency of Sports Facilities in Schools by Teachers and Students



Sports Facilities Vary Among the Four School Types.

Students were asked to specify the sports facilities available at their school. The results in Figure 7 below shows that 82% of government schools, 61% of community schools, 70% of Arabic private schools offer basketball activities. Meanwhile, only 46% of international schools offered basketball. Swimming appeared to be the facility most rarely offered in government (5%), community (5%) and Arabic private schools (3%). However, this sports activity is widely offered in international schools, 87% of respondents reported the availability of swimming as an activity in their school.

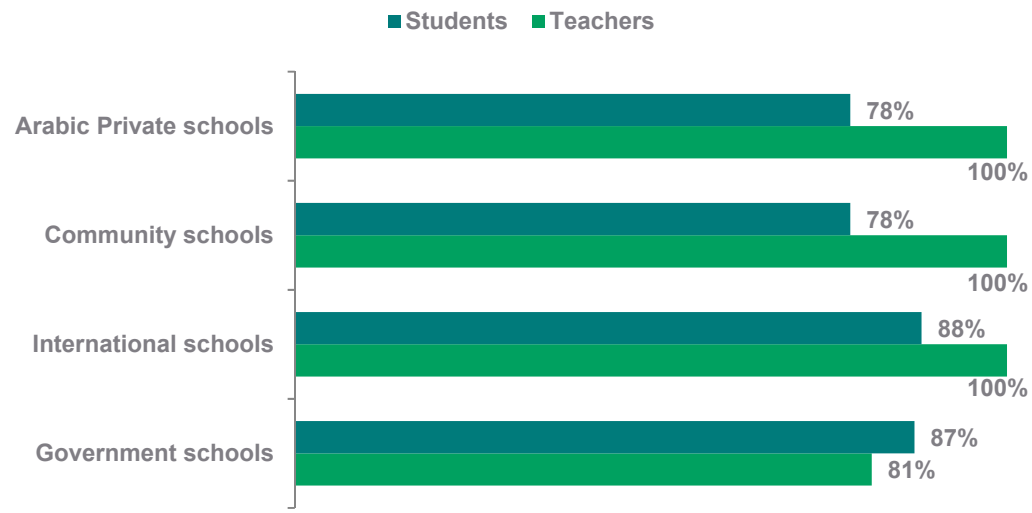
Figure 7: The Sports Facilities Available in Schools by Teachers and Students



The Majority of Teachers and Students Rated the Quality of Sports Facilities as 'Very Good' or 'Good'

Teachers and students who indicated that their school has sports facilities were asked to rate the quality of the sports facilities using the same four options: very good, good, poor, and very poor. The results point to positive ratings from both students and teachers. Indeed, all teachers in Community, International and Arabic private schools rated sports facilities as either 'good' or 'very good'. Teachers in government schools were also satisfied with the quality of sports facilities with 81% responding positively. Results further indicate that students likewise seem to be satisfied with the quality of sports facilities offered. Around 87% of government, 88% of international schools and 78% of both community and Arabic private schools students deemed the facilities to be of 'good' or 'very good' quality (see Figure 8). And once again there is a slight gender gap with a higher percentage of female students (89%) reporting the quality of sports facilities as good or very good in comparison to their male (84%) counterparts.

Figure 8: Percentage of Students and Teachers who have described the Quality of Sports Facilities in their School as 'Good' or 'Very Good'



THE CAFETERIA

The school cafeteria is an important feature of a healthy school environment. Offering healthy nutritious meals at affordable prices is essential for the wellbeing of students and teachers alike. Numerous medical studies have shown a clear link between school nutrition and students' cognition. Benefits include concentration and memory, (Gómez-Pinilla, 2008), students' physical development, including eyesight, and student behavior, including reduction in hyperactivity (Bryan, et al, 2004). Researchers in the field have found strong links between the nutritional quality of school meals and students' academic achievement (Anderson, Gallagher and Ritchie, 2017). Indeed they directly link quality food with quality academic achievement: "when a school contracts with a healthy lunch company, students at the school score better on end-of-year academic tests" (Anderson, Gallagher and Ritchie, 2017). The researchers also assert that "increasing the nutritional quality of school meals appears to be a promising, cost-effective way to improve student learning" (Anderson, Gallagher and Ritchie, 2017). It is therefore imperative that schools provide students and teachers with cafeterias that offer nutritious food at affordable prices.

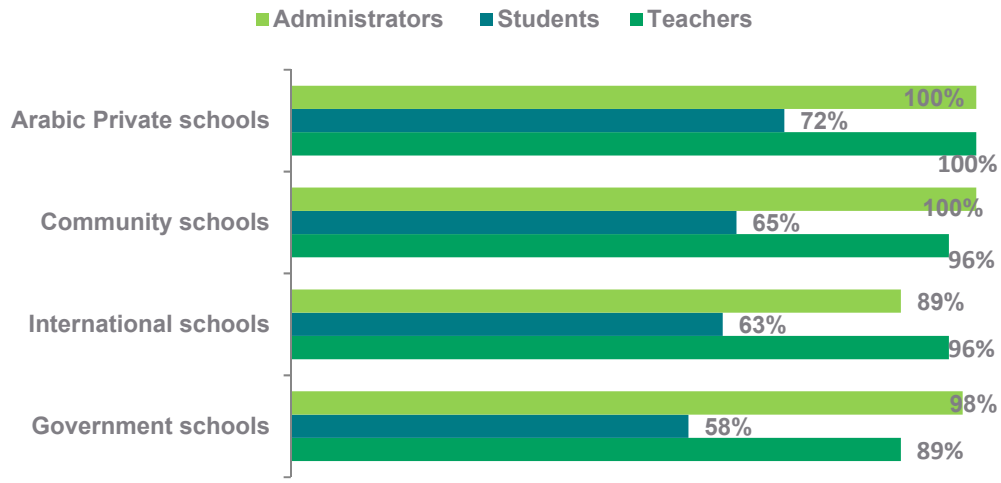
The Majority of Administrators, Teachers and Students Rated Food Quality as Good or Very Good

In the QES 2018, administrators, teachers and students were asked whether their school has a cafeteria. All of the administrators in Arabic private, community and government schools reported having a school cafeteria, while 70% of administrators in international schools reported having a cafeteria. Similarly, all of the teachers in Arabic private, community and government schools reported having a school cafeteria, whereas 92% of school teachers in international schools reported having a cafeteria. Among students in Arabic private, community and government schools, most reported having a cafeteria (96%, 99%, and 98%, respectively) and 89% of students (closer to the teachers reporting than to administrators) in international schools reported having a cafeteria. Some international schools do not have a cafeteria and rely on students to bring food from home.

Those administrators, teachers and students who reported that their school has a cafeteria were asked a follow-up to rate its quality as either very good, good, poor, or very poor. All administrators at the Arabic private school and community school rated the food quality as good or very good. A similarly high 98% of the administrators at the government schools and a somewhat lower 89% of international school administrators rated the

food quality as good or very good. Among teachers and students, the majority rated food quality positively but teachers rated food quality far higher than their students. All of the teachers in Arabic private schools and 96% of teachers in both the community and international schools rated the quality of food as good or very good. Teachers and students at government schools seemed to be the least satisfied with the quality of food with 89% of teachers and 58% students giving food quality positive marks. Students in international (63%), community (65%) and Arabic private (72%) schools were somewhat more positive than their peers at the government schools about the quality of food. Nevertheless, these students selected the 'good' or 'very good' description 28-33% less often than their teachers (see Figure 9). Notably, among all schools, a similar percentage of female (57%) and male students (56%) reported that the quality of the cafeteria is good or very good so there is no gender variance.

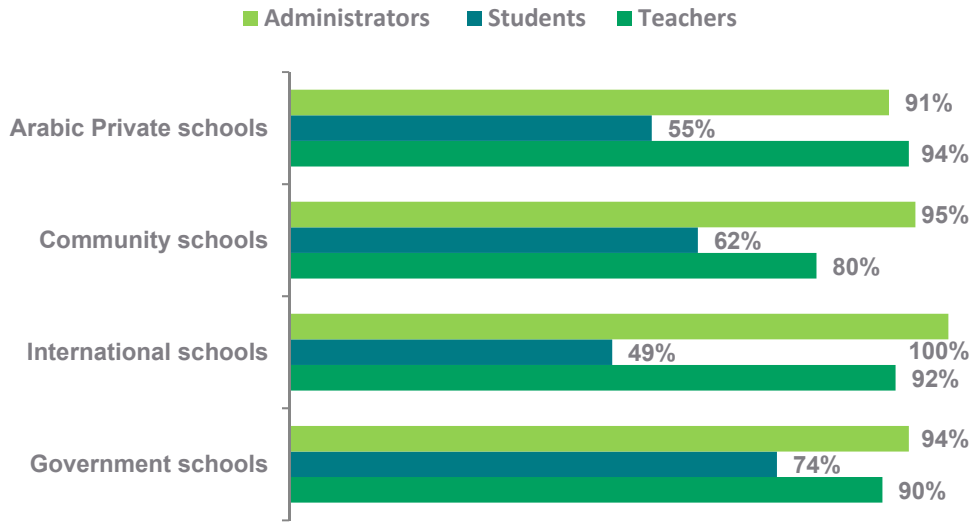
Figure 9: Administrators, Teachers' and Students' Ratings of the quality of food at the School Cafeteria ("Very good" or "Good")



Around Half of the Students in International Schools Reported that the Price of Food is Expensive

With respect to food prices at the school cafeteria, administrators, teachers and students were asked to rate the price of the food at the cafeteria as being either expensive, reasonable, or inexpensive. All international school administrators and the majority of the administrators at schools were satisfied with the prices, meaning they indicated "reasonable" or "inexpensive." For administrators in government (94%), community (95%), and Arabic private (92%) schools a large majority concurred that food prices were reasonable or inexpensive. Also, the majority of teachers at schools were satisfied with the prices, especially in government (90%), international (92%), and Arabic private (94%) schools but somewhat less so at community (80%) schools. It is important to mention that on this issue as well, students' perceptions of prices are at odds with those of their teachers. Students characterized food pricing as "expensive" far more than their teachers. This may simply reflect that teachers receive monthly incomes as employees and have a greater sense of agency over food choices whereas students are dependent on money from their parents. Nevertheless, in the case of government, community and Arabic private schools, a majority of 74%, 62% and 55% of students, respectively, described the price of food as reasonable or inexpensive. It is the students at international schools who were the least satisfied with the prices of food offered in the cafeteria, with only 49% of these students describing the food as reasonable or inexpensive (see Figure 10). Interestingly, a much higher percentage of male students (46%) characterized the food at the cafeteria as expensive in comparison with their female (25%) counterparts.

Figure 10: Percentage of Teachers and Students that Rated the Price of Food at School Cafeterias as 'Reasonable' or 'Inexpensive'



CONCLUSION AND RECOMMENDATIONS

Facilities are essential features of the school environment and have a strong impact on students' experience of learning. Research has shown that high quality school facilities such as libraries and sports facilities can benefit students' memory, academic performance, behavior and ability to concentrate in school. Policy and decision makers should, therefore, take into consideration the impact of school facilities and adopt a long-term, cost-benefit perspective to improve and maintain their school facilities.

After careful consideration of the results of Qatar Education Study 2018, this section provides important recommendations for policy makers. The recommendations relate to targets identified in the Qatar National Development Strategy (NDS) and Qatar National Vision (QNV) 2030. Indeed, one of the main pillars of the QNV is human development, and education is the main method for achieving that. This report highlights the important contribution four facilities have in fostering a positive learning environment in schools:

- Science Laboratories
- Library
- Sports Facilities
- Cafeteria

A) RECOMMENDATIONS FOR SCIENCE LABORATORIES

Results indicate that the majority of government, international and community schools in Qatar have science labs. Comparatively speaking, Arabic private schools had lower ratings in this dimension with only around two thirds of teachers and half of the students reporting their science labs to be sufficient. This finding was echoed in the comparatively lower ratings given by students and teachers in the Arabic private schools. For although around two thirds of their teachers and students reported that the science labs were of very good or good quality, this was at least 20 points lower than reports from their peers in government, international and community schools.

Capitalizing on the quality of science labs is critical for offering a positive and supportive learning and teaching environment for both students and science teachers. A clear finding therefore is that Arabic private schools should consider providing more science labs, especially since science labs have become fundamental to learning science. Students must learn how to conduct experiments and use the scientific method within a laboratory setting.

Teaching science in the 21st century requires that students apply theories in controlled laboratory settings. In fact, science teachers should grade students on how well they are able to conduct experiments and the learning they derive from such experiments in the writing of lab reports. It is imperative for students to learn how to structure a lab report while in school as these skills are expected in higher education. Moreover, students must learn the necessary safety precautions such as how to handle a Bunsen burner and when it is necessary to wear safety goggles, especially if they hope to pursue further education or work in a science lab environment. Students should be encouraged to experiment with reagents in a controlled setting with safety precautions. This helps spark an interest in science. Teachers must always be aware of all their students during experiments to ensure that no student is harmed during the process, and this is facilitated by having a well-designed laboratory environment.

B) RECOMMENDATIONS FOR LIBRARY

Since access to books (and other multimedia resources libraries offer) is vital to the development of critical and analytical thought in students, the availability, quality and use of libraries are elements worthy of attention. School libraries are widely available in schools in Qatar. Based on the QES 2018 results, the school libraries appear to be of considerable quality. On the other hand, results also reveal average to below average use of library resources, especially among government and Arabic private school students. One way to augment available library resources is for parents and teachers to encourage students to visit the Qatar National Library, a state-of-the-art facility that is home to more than one million books, with further access to more than 500,000 e-books, periodicals and newspapers, and special collections (Qatar National Library, 2019). Exposure to other libraries positively affects children's motivation to learn because it opens their mind to the large variety of books and resources available (Edmunds & Bauserman, 2006). Schools can actively help students take the first step in visiting and learning how to use the library to build habits of research and a love of reading.

C) RECOMMENDATIONS FOR SPORTS FACILITIES

A sports culture enhances physical and mental health in populations, and encourages social integration among varying groups. The availability and quality of sports facilities in school are important measures of the youth's engagement in sport and physical activity. While most schools have sports facilities, it seems that students, especially those at community and Arabic private schools, would like to see more sports facilities. Swimming is a facility that is rarely offered in Arabic private, community and government

schools. Decision makers should look into encouraging schools to offer this activity because of its numerous health benefits.

Motivating students to use sports facilities at higher rates is an important step towards decreasing obesity and its related health problems, nurturing a culture of lifelong sports practice among residents and citizens, and contributing to better overall school achievement in academics. Moreover, since Qatar has invested heavily in creating a variety of sports facilities, schools should find creative ways to encourage parents to take their children to the various public facilities offered in Aspire as well as to encourage exercise in Qatar's various public parks when the weather is suitable.

D) RECOMMENDATIONS FOR THE CAFETERIA AND CATERING SERVICES

It is critical that students and teachers have access to high quality food during school hours. Likewise, students and teachers should perceive that the food provided is affordable, appealing and nutritional. As previously mentioned, food is a main driver of cognitive function in addition to physical health. Data in this report shows that cafeterias are less available in international schools. It is recommended that schools lacking a cafeteria develop a plan to provide one. It is also recommended that schools try to improve the quality, nutritious value and pricing of food in existing facilities to encourage students and teachers to eat well during school hours. Schools may also encourage students and staff to eat healthier by launching internal awareness campaigns about the nutritious benefits of certain foods. Students and teachers can also benefit from workshops that teach them how to read food labels and make a plan for better diet and exercise.

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Appendix: Survey Methodology

Results from the Qatar Education Study (QES) come from four surveys administered under the direction of the Survey Operations Division at the Social and Economic Survey Research Institute (SESRI). The surveys were sent to central stakeholders in K-12 education: students, parents, teachers, and administrators. Feedback from these stakeholders is critical to evaluating whether the reforms implemented in fulfillment of the targets outlined in the Qatar National Development Strategy 2011-2016 (NDS) are succeeding, and if not, which reforms may need reevaluation and additional support from the Supreme Education Council (SEC). This survey design is especially appropriate because it paints a clear picture of the participants' school experience.

Sample design

Sampling is the process of selecting those individuals from a population to estimate characteristics of the whole population. It plays a critical part in any school survey since the ability to make valid inferences to the population, which is the target of the investigation, relies upon a rigorous sample design. In the following, we discuss issues related to the sampling design used in the QES.

Students were the target population for the survey sampling. The sampling frame, which is a list of all those individuals in a population who can be selected, was developed by SESRI based on a comprehensive list of all public and private schools in Qatar, which was provided by the Supreme Council of Education. In this frame, all schools are listed with information about school names, address, school gender (boy, girl, or coed), system (government, international, or other type of schools), and the number of students in grades 8, 9, 11, and 12.

Based on the information about the school size, school system, gender and grade, we divided the sampling frame into several subpopulations (i.e., stratum). This stratification divided members of the population into subgroups that are relatively homogenous before sampling begins. We tried to make every member of the population have the same probability of being selected (i.e., self-weighting) so proportionate sampling was used to make the proportion of students in each stratum similar between the frame and the sample. That means the number of sampled schools needed to be proportionate to the number of respondents across strata in the frame (assuming that the same number of students was selected from each school).

Inside each stratum, students were randomly selected following a two-stage sampling process, which is probably the most commonly used sample design in educational research (UNESCO International Institute for Educational

Planning 2009). In the first stage, the school was selected with probability proportionate to its size (i.e., PPS). This gives an equal chance of selection for students while allowing for a similar number of students to be chosen from each school for each strata. In the second stage, for ease of the field work, we randomly selected one class for each grade in the school and all students in the class were included in the survey.

In the student study, students in grades 11 and 12 in the secondary schools and students in grades 8 and 9 in the preparatory schools were selected. For the parent study, the parents of the students selected in the student study were sent questionnaires. Lead teachers of the classrooms selected for the study were sent questionnaires as were the administrators for the school.

We account for the complex sampling design in the data analysis to ensure the unbiasedness and efficiency of the statistical estimates. Particularly, a weighting variable was created to take into account the selection probability and the non-response. Weighting is a mathematical correction used to give some respondents in a survey more influence than others in the data analysis. This is sometimes needed so that a sample better reflects the population under study.

Sample size, non-response, and sampling error

The sample size of this survey is 43 schools. However, 4 schools refused our survey requests. For the remaining 39 surveyed schools, all students in the selected classes fully participated in the survey. In the final data, we have 1,803 students, 1,462 parents, 495 teachers, and 234 administrators from these 37 schools.

With the above number of completions, the maximum sampling error for a percentage is +/-2.4 percentage points for the student survey. The calculation of this sampling error takes into account the design effects (i.e., the effects from weighting, stratification, and clustering). One possible interpretation of sampling errors is: if the survey is conducted 100 times using the exact same procedure, the sampling errors would include the "true value" in 95 out of the 100 surveys. Note that the sampling errors can be calculated in this survey since the sample is based on a sampling scheme with known probabilities. This feature of random sampling is an essential element that distinguishes probability samples from other sampling methods, such as quota sampling or convenience sampling.

Questionnaire development

The questions were designed in English and then translated into Arabic by professional translators. After the translation, the Arabic version was carefully checked by researchers at SESRI who are fluent in both English and Arabic. Next, the questionnaire was tested in a pre-test of four randomly selected schools. This pretest gave valuable information allowing us to refine question wording, response categories, introductions, transitions, interviewer instructions, and interview length. Based on this information, the final version of the questionnaire was created and then programmed for data entry purpose. The questionnaires were sent to stakeholders in November 2015. Parents of the students who received the student questionnaire were also sent the parent questionnaire to be completed at home. Data were collected from teachers and administrators through interviews conducted in their respective schools.

Survey Administration

Each interviewer participated in a training program covering fundamentals of the school survey, interviewing techniques, and standard protocols for administering survey instruments. All interviewers practiced the questionnaire before going to the schools. In general, interviewers were expected to:

- Locate and enlist the cooperation of schools and students.
- Motivate teachers and students to do a robust and thorough job.
- Clarify any confusion/concerns.
- Observe the quality of responses.

Data were collected from students and parents using paper questionnaires (Paper-and-Pencil Interviewing – PAPI). Teachers and administrators from the selected schools were interviewed by SESRI fieldworkers using Computer-Assisted Personal Interviewing (CAPI).

Data Management

After data collection was completed, interviewers manually entered responses from students and parents into Blaise, which is a computer-assisted interviewing system and survey processing tool. The responses were then merged into a single Blaise data file. This dataset was then cleaned, identified, coded and saved in STATA formats for analysis. After weighting the final responses, the data were analyzed using STATA 14, which is general purpose statistical software packages commonly used in the social sciences. Tables and graphs were generated in Microsoft Excel and Word.