Education Reform in Qatar for K-12 Schools

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Introduction

In 2001, Qatar started an ambitious and comprehensive program to upgrade its education system. Efforts to reform the education system are underway both at the K-12 level as well as at the college level. This paper focuses on aspects of the K-12 school level only.

Qatar retained an internationally recognized non-profit research institution to conduct an objective assessment of the Qatari education system. The assessment included visits to a number of schools to examine the physical conditions of the school facilities and to observe teaching styles at the schools, focus group interviews with school staff, students, and parents, and interviews with officials at the Ministry of Education (MoE) and with representatives of the business community. The assessment revealed a highly centralized system with little in terms of evaluation and monitoring of policies and processes, lack of communication and shared vision among education stakeholders, a top-down decision making process, and an emphasis on rote learning without much emphasis on critical thinking for the students. As a result of the assessment, it was clear that a sweeping reform was needed.

Several reform models were considered, analyzed, and presented to the Qatari reform sponsors. For all models considered, four key principles were adhered to: 1) Autonomy: moving from a highly centralized system to a highly decentralized system where the decision making shifts to the people closest to the work itself, which would empower educators to better fit the needs of their students; 2) Accountability: New Independent "Charter" schools would be held accountable to the government by entering into a contractual agreement and by being monitored regularly through standardized student assessments. The results of the student assessments would be made available to the public; 3) Variety: Diverse schooling options would be offered to fit specific needs; and 4) Choice: Parents would be able to choose schools, with the aid of publicly available data on the school environment and performance, that best fits the need of their children.

In 2002, the Emir of Qatar announced a sweeping plan based on (1) new government-funded schools that are not operated by the Ministry of Education; and (2) standardized national student tests aligned with to-be-developed curriculum standards based on international benchmarks.

Education Reform Organizational Structure

It was agreed from the outset that in order to institute fundamental changes to the system, a new education policy body, the Supreme Education Council (SEC), needed to be put in place to set broad policies and goals for the new education system. The SEC is currently comprised of three institutes:

Education Institute:
The Education Institute would be responsible for setting up the contracts with the operators of the new Independent Schools, and provide them with the financial and professional development needed to provide the students with a successful and rewarding schooling experience. The Education Institute is also responsible for developing a set of internationally-based, but tailored to the Qatari environment, curriculum guidelines for four core subjects: Arabic, English, Mathematics, and Science. The Education Institute also contracted with international school support organizations to provide educational and operational school support to school operators.

Evaluation Institute:
The Evaluation Institute acts as an independent monitoring entity that would design and deploy tools to measure quantitatively the school performance. The tools designed by the Evaluation Institute are being used to collect performance data on all MoE schools, Independent schools, and private Arabic schools.

Evaluating the Reform

The whole idea of the reform is to improve the student outcome. In addition, the evaluation had to also include measures for the education environment not just the student scores on standardized tests. The performance data would then be aggregated at the school level and presented to each school as feedback, therefore enabling schools to develop plans to address specific weaknesses pointed out by the data.

Standardized Testing

The first tool used to measure student performance was through developing a set of standardized tests. The tests were developed for all grade levels in the subjects of Arabic, English, Mathematics, and Science. The number of students taking the tests is roughly 90,000 students. The tests are based on the curriculum standards developed by the Education Institute.

The tests are administered on yearly basis to all MoE, Independent, and private Arabic schools in the country (roughly about 300 schools). Performance levels for the tests were set with the Qatari educators to express their aspirations for the students. Tests were printed and administered in both English and Arabic, depending on the type of test and school.

Student scores are aggregated at every school level and published in school report cards to show schools how their students scored overall and how they compared against like-schools in the nation.

In addition to the standardized testing mentioned above, Qatar now also participates in international tests such as PISA, PIRLS, and TIMSS.

Surveys

In addition to measuring student outcomes through testing, the Evaluation Institute also needed to obtain other measures that describe the education environment and experience from the viewpoint of various constituents in the school system.

In order to get a full picture of the education environment, surveys were designed and administered to every principal, teacher, student, and parent. In addition, a basic school profile was collected about every school listing physical characteristics about the building and facilities. Finally, the Evaluation Institute performs basic enumeration of every school on a yearly basis collecting information on students, staff, parents, and classes. Surveys were all administered in Arabic.

The surveys generally captured responses along four basic dimensions: 1) Structural characteristics: Factors describing the overall school structure and administration; 2) Educational Environment: Characteristics of schools, students, and families that affect the ability of schools to produce learning gains; 3) Instructional Processes: Characteristics of classroom instruction and style of teaching; and 4) Interactions: Interactions between students, teachers, parents, and the government bodies. In many cases, the surveys administered to different groups contain questions that probe around the same construct or concept in order to measure how that concept is perceived by, say, teachers, students, and parents. Questions around a given construct must be carefully designed such as to allow the construct to be statistically developed and analyzed.

Systems Developed to Evaluate the Reform

Data collection procedures were developed to guarantee data quality, security, and respondent privacy. Description of data collection procedures and processes is outside the scope of this paper.

The systems developed to aid in the evaluation process consisted of three main types of systems:

1. Data Collection Systems: systems used to make the surveys available to respondents, store the results, and track the survey cases and associate them with the correct respondents
2. Data Analysis Systems: systems and programs to reconcile and clean the collected data, and analyze the data and produce statistical measures
3. Data Dissemination Systems: systems for storing the data and making them available to groups of users

Data Collection Systems

Surveys and tests were administered using two basic modes: 1) Paper and Pencil Interviews (PAPI); and 2) Computer-Assisted Interviews (CAI). The CAI mode is further broken down into either Computer-Assisted Self Interview (CASI) where the respondent uses the computer to answer the survey questions, or Computer-Assisted Personal Interview (CAPI) where an Evaluation Institute staff member meets with the respondent, reads the questions and answers aloud to the respondent, and enters the answers given by the respondent. The choice of the capture mode for a given survey depends on several factors such as the respondent population, the geographic dispersion of respondents, and their proficiency in using computers.

In the Qatar case, the following modes were used:

1. The enumeration application used to enumerate students, staff, and parents is computer-based
2. Principal surveys are CAPI
3. School surveys are CAPI
4. Parent surveys are PAPI
5. Student surveys are PAPI
6. School Profile surveys are PAPI
7. Student assessments tests are paper-based

IT systems were developed for the administration of PAPI surveys to allow the surveys to be printed on high speed printers. Smart printing technology was used to allow booklets to be assembled from various components depending on the level of the respondent; foe example, student surveys were designed differently for elementary students than for preparatory students than secondary students. The smart printing systems used the metadata about a given test to determine which components should be assembled together to make up a given booklet for a given respondent. In addition, the printing software developed allowed variable information to be inserted on the cover pages to print identifying information such as the survey title, respondent name, and other information such as school, grade, and section in the case of student surveys. Finally, a unique barcode was printed on every page of a document in order to associate the document to a given respondent and to track the status of a document through the lifecycle of data collection.

Systems were also developed to scan the returned surveys through high speed scanning systems, therefore the administered surveys (and student tests) had to be turned in scannable documents with the appropriate OCR and OMR software technology. Validation rules for every question had to be programmed to detect responses that did not follow the rules; e.g., a respondent who enters character responses in numeric questions, or respondent entering numeric responses outside a predefined reasonable range. When the validation software detected one of these conditions, an image of the page would appear on a workstation screen where a scanning operator would then compare the printed response to the captured response to account for scanning errors.

In school year 2005-2006, over 900 thousand booklets were printed that consisted of about 100 different scanning forms, and over 12 million A4 duplex pages were scanned.

For CAI-based surveys, the surveys were programmed and run on laptops taken to schools. The software is designed with the validation rules built in with the appropriate soft checks or hard checks. In addition, the skip logic is programmed according to the survey design to jump through various sections of the surveys depending on specific answers.

For all survey modes, a sophisticated case management system is used to track the status of every survey or instrument (including student assessments) and to link a given case; e.g., computer survey, to a particular respondent.

Reports are also designed to aid in the status tracking of cases, to give various views of the progress of data collection, to alert the administrators of certain error conditions, and to give management staff an idea about the response levels.

The following diagram gives an overall description of the production process of PAPI instruments.
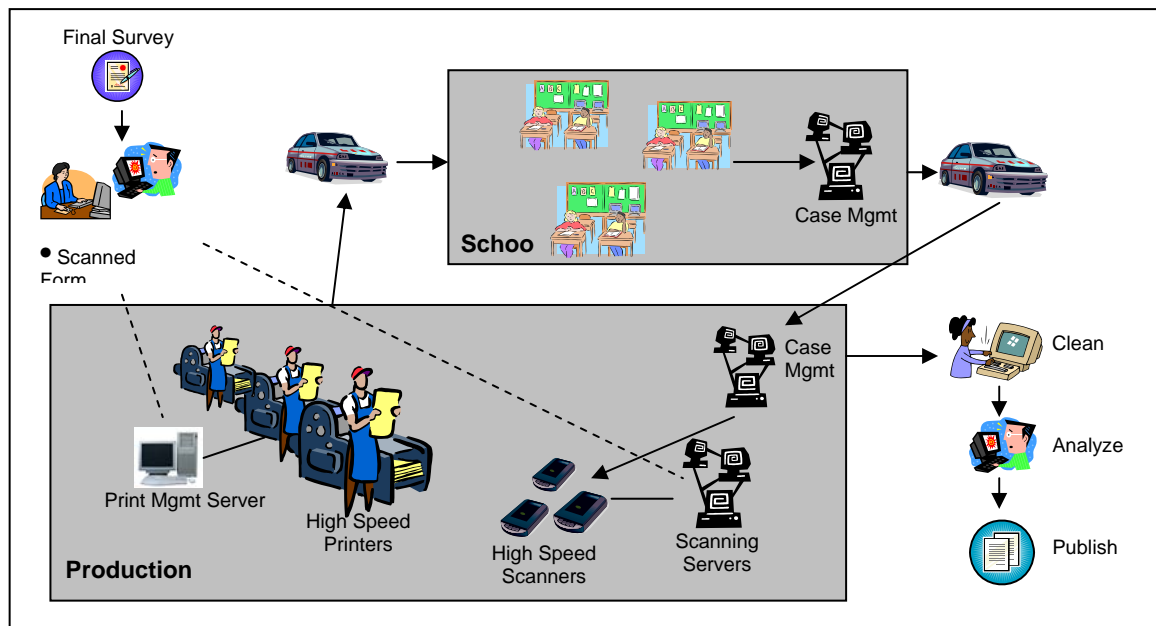
Data Analysis Systems

After the data has been collected, the responses are analyzed and software programs (using statistical software such as SAS or SPSS) to reconcile the cases; e.g., reconcile cases where two cases belong to the same respondent, or cases where the respondent is missing important information that makes him/her unidentifiable. When the cases are reconciled, software is developed to clean the data and to produce basic statistics.

After the data has been cleaned, data analysts develop statistical data about the various constructs that will give a clearer picture of the educational system and its strengths and weaknesses. This national data helps policy makers adjust existing policies or develop new policies to maximize the education effectiveness.

In addition, statistical data is also aggregated at the school level and at other higher levels; e.g., schools that belong to a certain level, or schools for a given gender. This aggregation allows the school to see its place compared to like schools. Schools can then develop effective programs or ask for targeted help to improve its results.

Data Dissemination

Currently, the statistical data is made available in two main ways. A school report card gets produced and printed for every school. The school report card shows basic statistics and compares to similar statistics from other schools. Data shown on the school report card contain basic data about the school facilities, the learning experience of students, level of parent satisfaction with the schools, results of the student assessment tests, etc.

The survey and test result data is also stored in a data warehouse and made available to groups of users via a portal based on the user needs and privileges.

Conclusion

The Qatari leadership realizes that improving education is the best way to allow the country to compete in a highly competitive and advanced world, and that a strong education is the best way to allow the country to keep up with a fast-moving world. Qatar took bold steps toward introducing fundamental changes in the system and achieving their goal. Qatar also used a scientific way to measure the effectiveness of the reform and the policy changes they made.

While the reform faces some challenges because it is also as much about changing culture and attitudes, it has made significant improvements and is being given all the support from the top leadership in the country.

It is the belief of the author that such a model should be adopted in other countries in the region. While other countries in the region are much larger than Qatar, the model should be adopted and certain details of the implementation may vary to fit the needs and constraints of various countries.

The United Arab Emirates has very recently announced that it is adopting the curriculum standards developed in Qatar.