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Educational Reform in Oman: System and Structural Changes

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Abstract

This chapter gives a historical perspective of the Sultanate of Oman educational developments: system and structural wide changes. The significant and structural changes were on the basis of creating a basic and post-basic education. Structural changes within the Ministry included the establishment of the directorates throughout the different states. System wide changes included a complete overhaul of the curriculum leading to a more practice-based and attuned to the work place and pedagogical approaches. The Ministry gave each state in Oman a level of autonomy to its directorates. The greatest challenges facing the Ministry of Education and its reform is bringing the educational outcomes to a level that are benchmarked to international standards and Omani students able to draw on the twenty-first century and technological skills to operate in a globally connected world. The chapter finally concludes on the most pressing challenges to face them and increase student outcomes.

Keywords: educational reform, Oman, history of education, basic education post basic education, educational systems, educational structures

1. Historical background

Formal education in Oman could be said to have started in the 1930s, under the reign of Sultan Said bin Taimur who is the father of the current Sultan of Oman (Sultan Qaboos); one of the teachers of Sultan Said bin Taimur is known by Sheikh Ahmed bin Sulaiman bin Zahran al-Riyami. He taught the Holy Quran, Arabic and arithmetic, and is known as the “father” of education in Oman [1]. Education was predominantly imparted by the Islamic establishment where religion, Arabic language, and arithmetic were taught in mosques and private homes. One of the first schools in Oman was established in Muscat in 1871 (now the capital of Sultanate of Oman) known by the Al Zawawi School in Al-Khor Mosque next to Al Jalali Fort. The school was run by the Imam of the Mosque, who taught the Holy Quran, the fundamentals of religion, and Arabic language including reading, writing, grammar, and rhetoric. Other well-known schools which opened their doors to Omani students were the Alrahayal School established by Mahnon Ben Alrahayal in Sohar and the Bayada Balrstak mosque and Aldharh School in Bahla and the Alqalah School in Nizwa. Formal education started to take shape [1].

The earliest school was the Masjid Al-Khor in Muscat which opened in 1871 and closed its doors in 1988. There was also Beit Al-Wakeyel School, and the Sheikh Rashid Bin Aziz Alkasibi School was one of the oldest schools that opened in 1888 for government employees. Later in 1914 came the Bothiynah School which

carried the name after Mohamed Ali Bouzaiene, who came from Tunisia to Oman under the reign of Sultan Said bin Taimur. The school was open for girls and boys and attended in a rented house in Muscat. The school taught the Quran, Arabic language, history, geography, and arithmetic. The school also adopted a study plan that included six classes per day, and its student enrollment did not exceed 120 students; most of the students were accommodated in common and large rooms for males and females [1].

The semi-formal schooling started in the mid-1930s, with the first known by Nader Ben Faisal School which opened its doors in 1932; at the same time, many nonformal schools were opened which taught the Holy Quran, Arabic, and arithmetic. Beginning of the last century, the Al-Saidiyyah School in Muscat opened in 1940 as a semi-public school. The Al-Saidiyyah School included classrooms, administration, and teachers' rooms. It consisted of two stages: the first was a two-year primary school and the second was a six-year primary school. Al-Saidiyyah schools were very popular in which they accommodated for a large student body and had a curriculum attuned with the national educational goals. The school was staffed by teachers from Arab countries and some Omani teachers. The Al-Saidiyyah schools were limited to the study of the Quran and teaching matters of religion, as well as reading, writing, and arithmetic (collection, subtraction, multiplication, and division). The mathematics, science, history, geography, and Arabic language curriculum they used was available from Lebanon. The second and third Al-Saidiyyah schools were in the Muttrah region, administratively located in the Muscat province and Salalah (further point in the south of the country), respectively [2]. The school and its branches continued to grow substantially and developed in 1955, to be able to relocate to its own premises. The large part of schooling was driven by an Islamic educational framework fathered by the likes of Al-Sahabi Al-Jalil Mazin Bin-Ghodouba and Al-Jalandi Bin Masoud—these schools mainly taught the Koran with classical subjects as arithmetic, Arabic, and geography. There were also religious schools in Muscat such as Masjed Al-Khod and Madrasat Al-Zwawiah—both schools taught religion and Arabic [3].

The Al-Saidiyyah School in Muttrah moved to its own building in 1960; in the same year two other third and fourth primary schools were opened. Within 2 years, the primary level was completed until the sixth grade and the graduates obtained the primary certificate. Despite the school's modest and limited resources, they have been credited being citadels of cultural and intellectual movements in the Sultanate and enriching the Omani heritage and culture. The educational development in Oman was centered around population centers with critical masses and mostly around Muscat. Not later than the 1970s had Oman experienced substantive growth in the development of the educational sector with the discovery the oil and gas (which drives the modern day economy). The development was mostly located around the center of commerce of the Muscat region as well as Muttrah which has now the largest sea port in the region [4].

The growth in the educational sector started in 1970 at that time the number of students did not exceed 900 and in mere 5 years there were 207 schools with 55,752 students [5]. In 1986, there were 588 schools and 218,914 students enrolled; at the end of 2015, there were 56,211 teachers and 523,522 students. Till today, Oman had provided free education and encouraged every child to enroll in a school. As of 2017, there were 565,184 students in schools; there were also 1091 schools offering what is currently known as the basic education programs and post-basic education of grade 11 and 12 programs. The school staff serving these schools amounted to 60,165 [1, 6, 7]. Added to that, the private education sector has also grown tremendously with over 486 private schools in 2015, serving more than 97,465 students [7].

2. Challenges in the educational sector

The major educational challenges in Oman were several, among the first was the long distances between population densities. The country was geographically spread over thousands of miles apart with two population centers one in the North (Muscat—now capital) and the second in the South (Salalah region, respectively) and small villages spread across Oman's mountainous terrain. It was thus hard to provide the basic infrastructural services as roads and electricity; it was also hard to find the human resources to support teachers and administrators in distant villages. The challenges were concrete and tangible particularly in improving the quality of the teaching and learning process as well as the quality of student outcomes in an information-driven world [8].

Second, with Oman being linguistically, ethnically, and religiously diverse; preservation of tradition, culture and language and concomitantly to move forward in its educational mission in face of a fast changing world was a major challenge. Thus, in unifying the country as an Arab speaking and part of the Islamic world, the reform has stressed and celebrated its cultural heritage, its diverse cultural tradition, religion and languages. Third, on seeing the changes the world has gone through in the last decade, particularly in the integration of technology in education, and the way technology has changed the school, curriculum, or even the delivery of instruction, schools in many parts of Oman were left behind to deal with the technological changes. The reform thus, stressed on modernizing the school infrastructure and technological practices.

Oman's national strategy was to establish a modern society having a solid infrastructure for education and economy, being able to engage with the technological advances in an advanced and technologically driven world. The Ministry of Education also underlined and stressed on the scientific approach in teaching and in the acquisition of knowledge to move society forward, innovate, and reproduce itself scientifically. Thus, education was seen to have a perennial purpose in instilling the intellectual skills and knowledge acquisition of life skills for citizenship and life-long learning. The objective of these strategies was to build a holistic Omani character, able to deal with the current and future challenges, and engage in the making of important—objective and scientific approaches to deal with the modern and the technological age [8].

Fourth, a major challenge facing Omani graduates from secondary schools was their inability to deal with the complexity of everyday life. Thus, this included the ability to analyze and solve problems and being flexible, accommodative, and self-directed [9]. Also, alluding to the work of Wagner, Kegan, Lahey, Lemons, Garnier, Helsing, Howell, and Rasmussen [10], it was suggested the three Rs, rigor, relevance, and respect, were generally missing in Omani schools. Rigor means the ability to do and be able to perform due to their learning, relevance as it relates to what they learn for the future. Respect means the ability to deal with others and adequately respect one another in different context. This has also imputed a new way of thinking and seeing of the new curriculum and how teachers deal with knowledge, the curriculum, and how it is translated to students. It also allowed for the reconceptualization of what school outcomes fit with twenty-first century goals, as to reflect on programs that can prepare students and make them understand the world around them. The impetus also suggested that education is tied to social change, reaching beyond the limits attained by a process in which teachers and students transform their work into productive elements in society and also engage in the social or economic transformation of the nation.

Fifth, Oman like other Gulf states relies heavily on an expatriate work force. With low levels of Omani human capacity, fulfilling jobs in brick and mortar industries, Omanis on a general level have greater reliance on “external-foreign”—cheap

labor. A national strategy was put in place to train and sustain a large local unskilled labor force [11]. The goals set are still unreachable; challenges abound on the social level. Omanis vie for administrative nontechnical government jobs, and the large private sector shuns Omanis from its workforce. Even many employers feel that students once graduated from school or completed some level of tertiary education lacked “soft skills” and the ability to develop these skills, such as team work, public speaking, problem solving, critical thinking, and a strong work ethic in the public or private sectors [12].

Sixth, while Oman has a large cadre of teachers, many of these teachers according to the World Bank had little training in pedagogical practices. There was also limited practical and applied school training due to a lack of trained trainers. It was also emphasized that teachers were doing significant administrative duties, and added to that, there was increased working hours and a higher number of working days for administrators and teachers [8]. The recent literature specifically by Darling-Hammond [13] suggests that teacher quality is one of the most important factors for student achievement and draws on such factors as teacher training and further professional development. Oman’s large teaching-work force reported by the World Bank lack the practical and pedagogical skills needed to operate in modern institutions. Many teachers in the area of expertise have little opportunities to undergo the needed training. There was also a lack of focus on the process of teacher practice, to deal with classroom initiatives and classroom orientations. It was apparent there was a complete alienation between teacher practice, peer activities, and student learning; thus, in many schools in-service training should focus on teaching skills for quality learning [14].

In face of the ever-changing global world, leadership believed that a strategy be in place where technology management, integration, and usage appeared to be a challenge among Omanis as they still abound to compete in a global world. It also appeared that new educational goals prepared Omanis for life and work; the new ecosystem required greater integration of technology in their daily lives. Still, Oman’s adaptability was challenged in a rapidly changing technological world and a global world [2].

Lastly, challenges appeared in the preparedness of children entering early-years education. Preschool appeared to be missing and nonexistent especially for the majority of publicly funded schools. It is only recent that early education started taking shape as a precursor to primary education. Also, appetite for investment in private schools and international schools lacked the funding needed to accommodate for the majority of the population as they could not afford school fees [15]. Other important elements were the complete absence of special needs, early childhood education centers, and particularly the establishment of schools for special needs [8].

The challenges were considerable in the trajectory of Oman’s development of the educational system which took a great quantitative leap firstly in the development of the educational infrastructure and the second phase, a qualitative impetus, to fit the local and basic education needs of Omani society [9].

3. The educational reform

The first reform that took place in Oman was in 1976, during which a development plan emphasized a quantitative increase in infrastructure and teacher development. In 1978, the first white paper underlined the national and global changes, linking education to the development of Omani citizens. More significantly, it stressed on the Omani identity and the ability of the large populace to modernize,

think rationally and scientifically, be able to assimilate knowledge using modern tools, and acquire the needed thinking skills, as well as become self-effective learners [16]. During the development plan, emphasis was placed on the development of the educational services and the diversification of education by establishing two preparatory schools and professional-technical institutes specialized in technical education to accommodate the intermediate certificate holders. Among these institutes were the Nizwa Agricultural Institute, Teachers Institutes, and the Commercial Secondary School [17]. Initiatives were taken for school improvements in laboratories, resource rooms or workshop facilities, technology and other building amenities. At the same period, the establishment of the first school for people with special needs known by the Al Amal School for the deaf and mentally challenged. Since its inception, Al Amal School reached 309 students in the academic year 2005/2006. The need for such schools remains to be high to this date [18].

The second Five-Year Plan 1981–1985 was a period known by the educational renaissance which continued in two directions: the spread of education throughout of Oman and in parallel a qualitative leap in the improvement of the teaching and learning process. The strategy established was to spread education to the remotest areas of the Sultanate and on the other hand, a qualitative initiative that attempted to enrich the schools with the needed services and resources. The creation of the alternative primary schools known by the integrated schools continued to expand creating an integrated curriculum across subjects. The integrated school combined the two stages which supposedly had a purpose to increase the learning process. The preparatory schools were provided with the laboratory, library, and family education room for girls' school. At the same period, the teachers' institutes were established and known mostly as the "intermediate colleges"; the duration of the programs in these college was for 2 years and prepared teachers to practice teaching in schools [19].

In the academic year 1983/1984, the Ministry embarked on opening specialized schools, including the industrial school in Al Batin area which enrolled male students. In the following school year, the "rational school" was opened in Muscat to accommodate students with mental disabilities, rehabilitation, and providing services for students with special needs. In the academic year 1984/1985, the educational system in Oman introduced cycle 1 and cycle 2; added to that, a two-year secondary school comprising of grade 11 and 12. In the year 2001/2002, Omar bin Khatab, a privately funded institute for speech and the blind, opened its doors for students with special needs. The number of students in the academic year 1999/2000 was 11, while in 2006/2007, it reached 115; its growth reflects the greater needs for such institutes in Oman and in the Gulf. Part of the higher education development plans was a number of educational establishments to train in trade, technical, agricultural, and education which included the establishment of the Education, Institute of Justice, Institute of Health Sciences, Institute of Finance, Professional Training Institute, Institute of Public Administration, Oman College of Industrial Arts, and the Police and Internal Security Training Centers [20].

During the period between 1985 and 1990, the scaling of educational infrastructure became more apparent with the growth of the schooling system. In line with national strategic development was promoting principles of quantitative expansion of the education sector, especially in infrastructure projects and programs. During this phase, there was also a scaling up of the educational services and educational infrastructure projects, in parallel to qualitative improvement in the educational processes. Education was seen within the macro-economic scheme, thus linking educational costs to returns in terms of building human capacity. The plan was to support young Omanis to take a greater initiative in seeking the training and eventually provide the supply for the needed human resources to serve the public and

private-industrial sector with the increase in student enrollment and by encouraging every child to seek an education especially in the remotest areas of the country. It was thus necessary to find some suitable educational outposts in the rural areas of the Sultanate to serve students across Oman. Compounded with the rush to improve teacher quality, the Ministry extended and stressed on the development of education in the Sultanate in terms of quality and quantity, through teacher development and infrastructure of schools, respectively. It also took a challenge where it began to train Omani teachers to obtain the pedagogical skills in subject specialization.

In the academic year 1991/1992, the Ministry made substantial changes to expanding the system and moved to eradicate illiteracy among adults; also the beginning of afternoon schools started the adult education programs. At the same period, the Ministry of Education increased the number of teacher training colleges and other specialized colleges as the Institute of Educational Rehabilitation. The establishment of the teaching colleges allowed Omanis to obtain the pedagogical training having subject specializations to reach teaching qualifications for those whose first degrees were in subject specialization [4].

The period from 1991 to 1995 included infrastructure developments and aimed at continuing the achievement of educational outcomes by balancing between quantity and quality. More accountable measures were in place to balance between spending and the educational returns produced. In the period between 1996 and 2000, Oman set goals to modernize all aspects of Omani life with the desire to achieve self-sufficiency, economic diversification, and sustenance to keep abreast with the global and technological advancement [21].

In the same period between 1991 and 1995, the Ministry of Education had embarked on the establishment of the basic education system which was later implemented in 1998/1999 academic year, which aimed to develop the educational infrastructure to improve the quality and reduce its cost. The Ministry was also able to instill and prepare students to deal with twenty-first century skills, building on soft skills by encouraging the learner to deal with the necessary aspects to better develop the communication skills, self-learning, and the ability to think critically and thus adapt to the latest developments [22]. In the late 1990s and at the beginning of the new century, the implementation of the basic education system came to replace the primary, preparatory, and secondary school; it aimed to develop programs that were centered around twenty-first century skills. From 2001 to 2005, the same level of development and growth continued the previous stage [23]. Specifically, from 2006 to 2010, the period was characterized mostly by scaling the implementation of the basic and post-basic education system. In addition to expanding the application of the latter to all schools, the years 2006–2010 were dedicated to the development of post-basic education in addition to the development and application of the basic education in the lower classes. It became apparent that educational change focused on the content and linked the theoretical applications with practical applications. The approach was also to develop a research initiative allowing greater insight and curriculum revision. It also stressed on the post-basic education system, in line with international experience and benchmarking.

The period between 2010 to the present experienced substantive initiative in the improvement of teaching practices, creation of forums, and teaching collaboratives. Increasingly, schools were given the autonomy to run their own training programs, and this included the development of curriculum, collaborative initiatives that draw on their own capacity of local teacher trainees, and training programs. Many public schools were in line with national and strategic initiatives, an overall initiative stressed on self-sufficiency initiatives with a general aim to sustain Omani teachers and develop effective teacher training programs. A broad aspect of this project was the assessment of school and teachers' needs in the newly educational structure

established, keeping in mind that few studies or reports have emerged addressing the training programs and the kind of teacher training needed. Nor was there an assessment of the educational facilities, teaching styles, or learning styles within schools. Also, many schools started to share expertise with each other and initiated the collaborative communities between and within schools [24].

At the same period, the Ministry of Education was interested in assessing school supervisors as well as teachers. Assessment took a 360-degree approach in which it covered all aspects of the school system; concurrently, great strides were taken to improve the quality of teachers especially in providing continuous professional development, instilling research capacity and action research as a necessary element for teacher development to improve classroom practices and teaching quality. The Ministry also encouraged schools to improve practices by creating collaborative communities where teachers and staff would share expertise.

4. Basic and post-basic education

The reform established the basic and the post-basic education system in 2007/2008. The basic education system extended from grade 1 to 10. The structure was divided into two cycles; the first cycle consisted of four years (grades 1–4) and cycle two consisted of 6 years (grades 5–10). These two cycles are considered as the basic education; the post-basic education students enter into secondary education made of grades 11 and 12, or otherwise join vocational training institutions. The new post-basic education system organized on a “core plus electives” model for grades 11 and 12 was introduced in 2007. This gradually replaced the existing system of 6 years of primary, 3 years of preparatory, and 3 years of secondary schools, but the range from beginning to completion has remained the same. The basic and guiding principles of the basic education included the stress on structural and system wide changes in the schools as in (1) the development of a philosophy of education; (2) establishment of a set of objectives compatible with student needs; (3) restructuring of the school and educational system through delegation of responsibilities, policies, rules, and regulation; (4) reinforcement of teaching mathematics and science in the English Language; (5) population of students to enter the higher education system; (6) stress on life skills throughout the curriculum; (7) allow for project-based learning; (8) provide students the autonomy to choose from different courses; (9) development of life skills as needed; (10) creation of teaching strategies and methods that integrate technology; (11) effective professional development for all school staff; (12) continuous infrastructure development in technology; and (13) quality assurance and improvement initiatives.

The foreseen outcomes of the basic education system were to bring the work experience into the educational system. Its intent was to replace expatriate labor force with highly qualified Omani citizens which would have the advanced training before they enter the workplace and thus compete with the large expatriate one. This was also a way to entice and encourage Omanis to have a greater role in the labor market, and in particular emphasize and entice women to take part in the labor market [12]. The other and main focus was on the post-basic education reform which focused on grade 11 and 12. The Ministry of Education attempted to impute the educational process and reinforce the educational reform by stressing on reshaping the last two grades of 11 and 12 of secondary schools. It also attempted to reexamine the content and how it could be translated into practical terms to the lives of students. The stress on the last two grades after the basic education had students relate their education to the real world. The new initiative also stressed on the curriculum and teacher training to emphasize critical thinking, long-life learning,

citizenship of the world, and global issues, as well as humanity, cultural diversity, instances, and context which make them value the contextual richness. The post-basic framework drew on three important frames in the hope that it reflects on the outcomes that embody the latter dispositions and include the theoretical knowledge, research, community service, and overall excellence.

While the basic and post-basic education system of grade 11 and 12 began in 2007 and scaled to all public schools in Oman, it completed the transformation of all public schools. Couched within new educational philosophies, the Ministry dedicated a large part of its resources to train and retrain teachers and school staff on the curriculum and teacher training [25]. Today, the educational system is well under way and draws on those elements of continuous improvement, benchmarked along international standards allowing for involvement and awareness by the public.

5. Review of the educational system

The educational reform that took place in the 1970s, was not evaluated until 1994. The initiative involved a collaboration between the Ministry of Education and the Scottish Qualification Authority, and collaboration between their evaluation summed the educational conditions in Oman. The educational system was traditional, curricula were rather generalized, and education was content-centered as opposed to student centered. Schools and the Ministry lacked a clear vision and mission. Books were outdated, and the educational process was mainly driven by tests and centered around the dense curriculum [25]. Teachers also lacked the skills needed to transform schools into places of learning or made initiatives to face the challenges to advance the needs of the Sultanate of Oman. The initiative envisioned to produce high-quality graduates of general education geared toward skills in problem-solving, critical thinking, and analytical skills [26]. A later study came from the World Bank and the Ministry of Education with two main recommendations in their assessment: creating a culture of excellence and making and developing strong pedagogical skills among teachers [27].

The leadership had also invested interest in education and made great strides in the improvement of quality of education for the development of high-quality human resources imputed by the Oman's economic future in vision 2020 [1]. The Vision 2020 of Oman was a landmark document and provided a frame to move the Omani economy forward. The document also served as a framework of the country's educational system. The Vision 2020 aimed to achieve the status of a "Newly Industrialized Economy," lowering the disparities between Oman and Oil-rich countries in its surrounding. In vision 2020, Oman attempted to build a solid foundation for human resource development, to offset dependency on Oman's limited oil reserves. The blueprint document was both to move the educational strategy forward among Oman's other economic, social, and human resource developments.

Through the Vision 2020, several educational recommendations were made to the Ministry of Education; among those suggestions was to create a basic education road map that can prepare students to continue their education or join the work force. Mainly the five-year plan between 1996–2000 focused on the development of human capacity [23]. Educational training was one of the key pillars through the improvement of the curriculum that focused on two main aspects. Firstly, the content of the curriculum and secondly, teaching methods. In terms of the curriculum and subject matter, the attempt was to reduce the theoretical parts and connect the material to lives of students and the real world. In addition, teachers were required to align the curriculum to student abilities at each educational phase. Teachers were to reduce the reliance on rote learning and memorization and move

forward through constructivist approaches with focus on problem-solving, critical thinking skills, and cooperative work, with the assumptions that students were inclined to move away from rote learning and teacher practices centered on classrooms around student initiatives and learning [24]. In parallel to the changes in the system, the initiative was to write a new curriculum supported by teacher guides. The new material was gradually implemented in the schools starting 1998/1999 and continued to date.

The basic education was different from the general education in that it integrated between theory and applications, developing the individual character. The basic education curriculum aimed at providing the learners with the required life skills and preparing them for the work place through life skills, independence, and values embedded in the curricula. Given the challenges of English language proficiency [24] and likewise competencies in mathematics and science, a curricular review was eminent. More so the Ministry was intent on developing a curricula and methods for the two subjects of mathematics and science [25].

6. Facing the challenges

A major benchmark in Omani educational history was in 1997 right after the Vision 2020 publication; a clear agenda was put in place which outlined the strategic plan for the next two decades. Its main goals were to equip students with the technological, scientific, and advanced knowledge to move the country's educational system as well as its economic development along twenty-first century skills. The plan was to improve the educational system as a whole which included teacher qualifications, changing the way assessment was performed, closing the afternoon school system and lastly but not least, extending the school day and year.

Significant challenges were seen in how teachers undertook the classroom teaching. Many instructional practices have been pervasive and centered on the traditional rote methods, away from the more substantive and deep approaches to learning. In addition, the alignment of content, sequence, and teacher practices appeared to be unaligned to grade level. While faced with substantive barriers for the improvement of schools, the Ministry of Education has been unable to provide the required resources for the realization of the comprehensive initiatives to improve the quality of education of the required level. But initiatives for improvement has been widespread, this including the process of decentralization as a policy which provided administrative and financial autonomy, giving regional authorities jurisdiction in making administrative and budgetary decisions to state directorates. The Ministry of Education lacked the capacity to provide training programs for Omani teachers and management of human resources. Added to the fact that a great number of teachers were migrating from the rural areas to urban areas, leaving many rural schools understaffed [2], it was also not easy to also distribute teachers to all areas and to keep a balance of teachers in rural and urban areas.

System wide changes appeared in the integration of content subject matter, which included the integration bundle subjects as Islamic Studies, Arabic and Social Studies and in another, Mathematics and Science. Each field had the same teacher who teaches the bundle subjects which insured to some extent the integration of the material. Other new subjects were introduced in the curriculum as information technology and environmental life skills. While curriculum changes were done gradually, the adaptation was done in stages. To allow for school staff to deal with the major changes to the curriculum methodology for basic education, the new system was first introduced to 17 schools in the 1998/1999 academic year and 25 schools the next academic year, having been delivered to all schools in 2006/2007. In addition,

the teaching of mathematics and science in English and teaching of English needed a major overhaul, which suggested these subjects to be more attuned to life and communication skills, public speaking, problem solving, and critical thinking [24].

Another significant change in the system has been the extension of the school year. Oman had one of the lowest numbers of school days when compared to some of the industrialized countries whose students had scored in the upper first quartile in the world on the Trends in International Mathematics and Science Study (TIMSS). Further, many school graduates were challenged by English and had to repeat at least a year of English, mathematics, and information technology to be able to enroll into a regular university program. While several reasons have been attributed to the poor academic outcomes, it was believed that teaching days were lost due to examinations, special events, and other missed holidays. To keep in line with international norms, as an example, Japan (240 days) or Singapore (200 days), extending the school year meant that students would be more at task and would have better performance results. The Ministry decided to extend the school year to 180 days to bring it more into line with hours of schooling in other countries. The school-day increased to 8 periods per day and each period to 40 min per day, which resulted in an overall 60% increase in hours compared to the old system [2].

English was stressed and started to be taught from grade one of the first cycle. The Ministry also implemented a procedure for curriculum and new teaching approaches, for instance, the teaching of the mother tongue by integrating with other subjects as Islamic studies, geography, and history. It also attempted to adopt international curriculum in the first cycle to keep in par with international benchmarked curriculum. The Ministry of Education also started a comprehensive quality approach to the educational system including the education board (region) and schools. Such approaches included the data-driven performance measure which increased efficacy of decisions along administrative operations. Administratively, three major offices have been established and included the Directorate General of Human Resources Development and Curriculum Evaluation Department and the Directorate General of Planning and Quality Assurance Office all working to support one another in the process of deliberation and evaluation of programs and systems [3].

Other initiatives were made in the improvement of teaching quality, whereby a reconceptualization of the pedagogical approaches was made in the way teachers were asked to give feedback to students and change the way the assessments were applied in the teaching and learning process [28]. The reconceptualization of the pedagogical approaches shifted in the way school instruction could be a predictor of school success. Suggestions were also made in regard to how the assessments were taking place in class. Teachers drew on new concepts of continuous assessment where students could be given continuous feedback in ways to overcome the challenges and provide teachers an understanding of where students could face difficulties in their lessons or concepts. Also, the Ministry of Education and the World Bank suggested that these assessments need also to identify male students to face most of the difficulties because many of them tended to discontinue and dropout from school.

In parallel to system and structural wide improvements made in schools and the Ministry, teacher practice was an important and significant element to the overall improvement of schooling. The preparation institutes were established which gave qualification programs and the start of vocational, industrial, and agricultural schools. The creation of the National Center for Vocational Orientation allowed a different qualification and tracks; it made it permissible for parents to enroll their children and tell parents about available educational and training opportunities. The attempt was to establish a linkage of the general education, university education, and the job market. Within the Ministry of Education, the Department of Schools Performance Development was established for school administrators to

help them set strategies to reach their targets, apply their plans, and raise capacity among school staff. The department instated regulatory guidelines and policies, thus creating an accountable system for the schools. Another role taken by the latter department has been to train teachers in all facets of basic education. The training assured that basic education program effectively trained in the philosophy, methodology, and curriculum material of the basic education. At the center of the training was the Teacher Training Center in Muscat and later instituted in all the Ministry of Education Directories moved to all out regions in Oman [27].

Teachers Institutes were the only organizations training teachers which later in 1970s became Colleges of Education and integrated in a larger university system, eventually offering a bachelor's degree. The Ministry of Education in fact established the Directory General for Evaluation and Development, and as part of the higher education development, Sultan Qaboos University was established in 1986 with five colleges were established. This included Education and Islamic studies, Agriculture, Sciences, Medicine, Engineering, and Humanities. In addition, there were a number of educational establishments to train in trade, technical, agricultural, and education teacher training, in addition to the Institute of Justice, Institute of Health Sciences, Institute of Finance, Professional Training Institute, Institute of Public Administration, Oman College of Industrial Arts, and Police and Internal Security Training Centers [20]. As with the Sultan Qaboos University, the Ministry of Education made an initiative by drawing upon practices of educational systems as that of the United Kingdom, United States of America, Canada, Australia, and Malaysia, taking into account Omani values and traditions. The intention was to build a citizen whose strong faith in God, loyalty to the nation, is disposed with intellectual, spiritual, emotional, and social qualities amicable with Oman's culture and tradition.

Another step forward was the initiation of the National Forum on the Development of Secondary Education of grade 11–12 held in 2002; it linked closer higher education with the secondary education, and it was apparent with a global world moving to an age of connectedness. Thus, as social systems change all the artifacts around, human functioning and interconnectedness must also change. It is thus within those changes that Oman positioned itself in a global context [29].

7. The Ministry of Education restructuring

The Ministry of Education in Oman had administrative and legal jurisdiction of all public schools from grade 1 to grade 12. The Ministry had gone through several restructuring initiatives, the most significant has been the impetus to decentralize the educational system and give autonomy to the directories in the different regions in Oman. The reform was also significant because it drew upon policies which allowed autonomy to the different directories (Ministry of Education Centers) around the country working within a total quality framework and implementing a new curriculum, student assessment, and pedagogical implementation. The directories which spread all over Oman were responsible for evaluating and assessing the educational planning, collecting data from students, teacher training, and the development of the educational sector as well as coordinating with other ministries to address student needs. The central offices in the different regions of Oman were mainly responsible for the implementation of policies established by the Ministry of Education. The different directories within the Ministry of Education also encouraged schools to take up new initiatives and proposals for the improvement of the educational system. The most striking change was to provide teacher autonomy to cover the curriculum with any content they may provide and see fit for the educational purpose of their classes.

In the past decade (2000 to the present), the Ministry of Education has reoriented its approach in dealing with educational problems and issues through data-driven approach and reliance on empirical evidence and data driven information. Three important initiatives were implemented: (1) provide support to school administrators with important training to develop the educational skills, knowledge, and capacities; (2) the elimination of the two track system (Arts track versus Science track), which came as a result of the study carried out in 1993, to provide equal and equitable opportunities for all; and (3) the implementation of the e-government learning system network, to reach all areas in the Sultanate. The e-government process was appealed as a major tool in the development of public services and in the contribution of the knowledge-based economy, for instance, the development of the educational portal and scaling it to all schools, planned and implemented by 2016 to cover all schools in Oman. The management system, however, has been used only for administrative purposes. More recently, it has extended to reach parents and students, which included data of teachers and administrative staff as well as student's achievement. It had the capabilities to have parents check on their children's work and progress. In addition, the Internet Protocol (IP) was introduced to facilitate the communication between the units of the Ministry and regional educational offices. The intent of the Ministry was to initiate the process to allow the technology to be used by teachers, students, and stakeholders [7].

Future endeavors ensued the development of the creation of interactive electronic curricula of English language from grade one to grade 12 as well as mathematics and science being electronically mediated in Arabic and English. The flagship project was to build a digital model equipped with the latest educational and technological equipment. The Ministry intention was also in its awareness of the technology teachers and school administrators as well as students and parents. The technological endeavor and importance of engaging stakeholders in the educational process are mostly overcoming the digital gap to raise the technological know-how [30].

The Ministry of Education has also stressed on the importance of the private sector and other stakeholders on the improvement and development of the educational program. The Ministry of Education signed a number of partnership agreements with Oman International Bank which financed the printing of textbooks, conferences, and resource centers in schools as the Dawhat Al-Adab General Education School. The partnership between Oman International Bank and the Ministry of Education spearheaded an initiative as part of the social responsibility initiatives that went beyond the concept of commercial sponsorship. It aimed at creating a culture of citizenship where students could experience their responsibilities and prerogatives, thus creating individuals with moral, cultural, and national aspirations that could provide the best of their abilities inside an institution or in the public. Other important players have been the Omantel and Oman Mobile, two telecommunication giants; both companies have made great efforts to provide excellent services to support activities and improve the educational process. Omantel provided the infrastructure resources to establish the Educational Portal project designated for the public schools in Oman, and it also provided a bundle of low price Short Message Service (SMS) to enable parents to keep in touch with schools and be updated continuously with their children's academic performance. In consortium with the latter, the ministry also implanted a number of initiatives in science and mathematics and their interrelation with economy and sustainable social development. Not the least, the ministry also stressed on the significance of data-research-driven policy and that such research is grounded from the field rather from some theoretical and western model. It also appeared that the Ministry made

substantial effort to draw on the different stakeholders whether the ministries, the public sector, or non-profit organizations. The ministry also stressed on parent involvement and businesses to provide support and involvement in the school [7].

Another important restructuring initiative focused on the assessment and evaluation in the belief that students and teachers, even administrative-staff, have substantive responsibilities including curriculum development and evaluation.

8. Philosophical position

The philosophical position of the Ministry of Education was published 1978, in a white paper which tied the educational curriculum to human development, citizenship, and society. Education was seen as couched in strong cultural traditions and Islamic values were thought to build on the Omani character, a character open to society as a whole, able to deal with the technological advances to modernize society. It also stressed on the individual to develop holistically, including physically, intellectually, and spiritually. With overemphasis on the Omani identity extending from its Islamic roots and Arab background, education was also thought to modernize society, especially the technological advancement of society. Four main frames that this philosophy drew upon are (1) teaching couched within a strong cultural tradition and Islamic values; (2) education being able to live within a social and natural world; (3) teaching the individual to learn; and (4) teaching the individual to learn about his identity and citizenship.

The two-cycle structure from grade 1 to grade 10 was believed to improve mathematics, science, English, and computers which were introduced early in the first cycle. The approach was also to allow students within the system and reduce attrition or school leavers. The new structure also helped to rewrite the curriculum and to align the way it was taught. The approach was to rethink the “old” focus on content and curriculum and teaching method centered around student activities in the classroom [31]. The approach was to make the curriculum more engaging to student lives where classroom instruction teachers relied less on rote learning and memorization in their teaching and more effort was given to student-centered activities. No doubt, this has come with new teaching method, using concrete material improved strategies for student assessment and evaluation. Thus, the new curriculum stressed on five main objectives:

1. Developing critical thinking skills
2. Developing problem solving skills
3. Developing collaborative and cooperative work
4. Building positive attitudes of pupils toward their subjects and schooling
5. Encouraging independence

The main challenge was to keep pace with the technological change and new educational methods required to prepare Omani children for life and work with new conditions created by the present modern global economy. These required a high degree of adaptability and a strong background in science and mathematics curricula being designed to achieve the knowledge, skills, and attitudes that Omanis will need.

8.1 Teaching and learning

The basic education approach reduced the theoretical and abstract concepts in the curriculum, and through relevance to the material, whether in mathematics and science, there was stress on applications and problem-solving. There was also greater stress on higher-ordered thinking, compatible with ways that assessed individual levels as well as innovative use of technologies. School teachers were drawn to scientific thinking approaches in dealing with knowledge, away from the stress on the subject matter and theoretical component.

Teacher methodologies were also key to the new challenges, while the classroom teaching was assessed to be old and outdated to the knowledge available, classroom environments, and teaching approaches. The new teaching methods shifted from teacher-centered to student-centered where students were given greater responsibility for their own learning. The shift was to move away from a lecture but to organize and simulate activities having relevance to real-life applications. Teachers were encouraged to inform the students of the objectives, what is to be learned and what has been learned. Continuously, teachers discussed with students what they have discovered in the classroom as a group. Further, the structure of the classroom was reorganized to accommodate for group work and collaborative learning.

8.2 Classroom assessment

At the juncture of the reform a philosophical turn took place in the conceptualization of how assessment was being used in schools. Philosophically, the assessment was not simply to draw out the mistakes and weaknesses, but also to improve the educational practice and develop the whole educational process, as in providing appropriate classroom environment in which students can successfully demonstrate their abilities across a wide range of skills. To achieve this, the ministry prepared the document underpinning the principles of assessment and evaluation and how to put them in practice through planning, teaching, recording, and reporting. Thus, teachers in the classroom take the responsibility for student assessment, whether in observation performance-based assessment, projects, paper-and-pencils, tests and quizzes, interview and student presentations, and portfolios. Thus, in assessments which are multifaceted, there might be no one way to assess the teachers who were given the opportunity to select their curriculum and to align with their teaching styles.

Assessment started being applied in the teaching learning cycle which stressed on the teaching of students. To measure success, teacher class practices shifted from assessing how much the curriculum has covered to whether students learned and whether the learning was meaningful [18]. This approach also allowed for teachers to know their students and draw on devising curriculum and learning exercise suitable for student ability level, specifically, the new assessment methods: (a) evaluation through the collection of information and student interest in the subject; (b) planning based on student interest; and (c) teaching based on student interest [32].

Teachers were required to use continuous assessment methods with their pupils and work every day by using assessment instruments such as checklists and recording sheets of student development. Assessments were no more used to see where students are but to see if they could face the challenges and what improvements they could make. Focus of assessment shifted from being seen as end of the course element, but as being part of the educational process where students and teachers can draw on such elements in form of instructional strategies as student oral works, projects, reports, quizzes, short tests, examinations, homework, practical performance, and portfolios. Assessments did not stop there; the ministry wanted

a 360-degree approach that involved also teachers, administrators, and school staff. In terms of teacher assessment, its use was thought to understand what actions teachers were taking in the classroom. The ministry assigned a four-tier system in which assessors are known as supervisors in the school. The school had established three layers: the first supervisory level was at the school, the second at the state level, and lastly Ministry of Education. The goal of the school assessment was mainly to see whether the national objectives have been achieved and created three layers of checks and balances. The assessment philosophy drew on basically whether students have used knowledge and critical thinking skills that allowed them to move forward in learning [33].

Certainly, teachers were more likely to be effective in their approaches as in doing more critical thinking and problem-solving. Teachers paradigmatically shifted from rote to higher ordered thinking. Teachers were trained to provide more opportunities for classroom activities to take place with students leading the classroom or through active learning opportunities. With that came the change in the assessments inside the class and outside; rather than stress on the final summative assessments, there was greater weightage put on class assignments and continuous assessments with applications to real world problems that integrate technology in the learning and assessments [24].

The assessments were also conceptualized not only to address the learning outcome through the delivered curriculum but were individualized to fulfill the needs of students to address the challenges and strength of each student.

9. Final remarks and conclusion

With the speed of the reform, there has been a great impetus to assess whether the changes brought to the educational system was significant to the extent that it provided the needed changes conceptualized by the leadership in Oman. It was important also to address the feedback from stakeholders, the changes, and whether they have materialized into successful outcomes. In 2004, the ministry started to evaluate the new program, and this was done through the different directorships in the different regions. Important challenges were pointed out. First since 1970, great and tremendous infrastructure development was materialized [8]. However, like many Gulf Arab countries (for example Nasser [34]) on International scores as the Trends in International Mathematics and Science Study, Oman had scores below many countries and boys scoring well below girls. School graduates lacked critical skills, particularly in English and other subjects. Thus, for Oman's education system needing to improve, standards needed to be raised.

The establishment of the basic and post-basic education was a significant signpost in the Omani educational reform particularly in structural and system wide changes [35]. The establishment of year 11 and year 12 was a bundle aligned with the curriculum and the workplace, drawing on broader and integrated curriculum with linking learning outcomes to the workplace.

Teachers were trained at writing objectives and aligning to content and learning outcomes. Teachers continued to write objectives in the scope and sequence of the curriculum material. They were required to develop their educational curriculum and activities that suit the environment of the school and change the teaching approach, with greater autonomy given to schools and community of learning [36].

The main challenge facing Oman was a need to keep pace with technological change and new educational methods required to prepare Omani children for life and work in the new conditions created by the present modern global economy. Charged with an appetite for change and high degree of adaptability, Oman thought

to advance in those critical subject areas as in science and mathematics in order to apply such knowledge and skills to the technology that Oman needs. New and redeveloped science and mathematics curricula and the scientific approaches in school learning were being designed to achieve the knowledge, skills, and attitudes that young Omanis may need to learn and adapt to the very different future they will face. New methods of teaching, using concrete artifacts, improved strategies for student assessment, and evaluation will all be aspects of the curriculum reform. Underlying the educational reform pillars and frame was an integrated development which included physical, intellectual, social, and individual attributes. Thus, the philosophy stressed on the collective formation in line, and compatible with individual needs.

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