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Many of these go undetected because their magnitude is small or they occur in areas which are not closely monitored. Although earthquakes cannot be stopped or predicted as of yet, they can be mitigated by pre-emptive action involving the efforts of authorities, scientists and citizens. The majority of scientists agree that the best way to reduce earthquake effects is to properly assess seismic hazards and provide results to decision-makers, regulators, and rescue and relief agencies; so that seismic building codes can be developed to build structures, resisting earthquakes and emergency and rescue plans can be put in place.

The Omani government realized long ago the importance of scientific research in general, and the need to assess the seismic risk in all parts of the sultanate in addition to the Arabian Peninsula and its surroundings. The government has demonstrated a keenness to provide all means of support to provide information on earthquakes to assist construction engineers and planners in studying their forces and their impact on important installations and projects accurately.

Since its establishment in 2001, the Earthquake Monitoring Centre at SQU has conducted many studies related to the seismic activities and seismic hazard assessment and earthquake mitigation in different parts of Oman, providing advice to many governmental and private authorities to take measures to reduce the effects of earthquakes on a number of major projects. To ensure earthquake hazard mitigation, it is essential that new buildings are constructed to withstand their effects. Existing buildings can be retrofitted to withstand earthquakes. Creating awareness among the public on earthquake risks and acting during an earthquake are vital. This can be a particular challenge in areas, which are not frequently seismically active, where there may be no memory of large earthquakes.
A group of researchers from Sultan Qaboos University investigated the impact of the monsoon season on the dispersion of carbon monoxide (CO), carbon dioxide (CO$_2$), and nitrogen oxides (NOx) emitted from vehicles in Salalah City. During monsoon season, traffic jams have become an important issue in Salalah, Oman, due to a rapid increase in visitors to Salalah at that time of the year. Therefore, the aim of the researchers was to evaluate the region’s concentrations of CO, CO$_2$, and NOx during monsoon season and compare them with non-monsoon season levels. Seasonal comparisons revealed that concentration levels of CO, CO$_2$, and NOx during the monsoon season were greater than the levels associated with the modeling days during the non-monsoon season. This study was carried out by Dr. Yassine Charabi, Prof. Sabah Abdul-Wahab, Dr. Ghazi Al-Rawas, Dr. Malik Al-Wardy from Sultan Qaboos University, along with Eng. Sulaiman Fadlallah from Auckland University of Technology, New Zealand.

The impact of the monsoon season on Salalah is reflected through its moderate climate and shiny green landscapes. According to the National Center for Statistics and Information (NCSI), it has been recorded that the number of visitors during the monsoon season for the year 2014 was approximately 431,105 compared to 351,195 recorded in 2012. Because of this increase in the number of visitors, the number of vehicles within Salalah has also increased tremendously, causing severe traffic jams in the region. The increase in the number of vehicles and the winds blowing from the southeastern direction toward the region were significant factors affecting the dispersion of vehicle pollutants within Salalah’s domain during monsoon season.

Prof. Sabah Abdul-Wahab said that locals and visitors to Salalah must be aware of the seriousness of the increase in the number of vehicles during monsoon season, since this phenomenon significantly intensifies the concentrations of vehicle emissions. “This might cause in the long run serious side effects due to the environmental exposure to high concentrations of CO, CO$_2$, and NOx. The best way to reduce traffic congestion is to boost mass transit services in the region. Such a boost might encourage tourists to visit Salalah’s sites by public transportation instead of driving their own vehicles. This action would contribute to minimizing the traffic jams which occur during the monsoon season and proportionally decrease the concentrations CO, CO$_2$, and NOx”, she said.
Sea Turtle Ecotourism in Oman

An analytical study on the status and prospects of sea turtles in Oman indicates that the ecotourism potential of marine turtle presence in the country is not fully exploited though the presence of several large turtle population creates unique opportunities for the development of healthy ecotourism. The study also indicates that turtles are still facing threats from coastal development and increasing anthropogenic pressures on Masirah Island and in Ras Al Hadd. The SWOT analysis work was carried out by Mariam Al Busaidi, a student in the Department of Natural Resources Economics at Sultan Qaboos University under the supervision of Dr. Shekar Bose, Dr. Michel Claereboudt, faculty members at SQU, and Dr. Manjula Tiwari from Southwest Fisheries Science Center, USA. The findings of this research was published in Sage Journals “Tourism and Hospitality Research” on 10 January 2018.
Among the four species of marine turtles that nest in Oman, the loggerhead (Caretta caretta) the green turtle (Chelonia mydas), the hawksbill (Eretmochelys imbricata), and the olive ridley (Lepidochelys olivacea), three species nest in rookeries of global conservation value. The green turtle nest in Ras Al Hadd (Ras Al Jinz area), the loggerhead turtle on Masirah Island, and the hawksbill turtle on the Dimaniyat Islands. A fifth species, the leatherback (Dermochelys coriacea) migrates through Omani waters, but is not known to nest along the Omani coastline.

Green turtle nesting in the Ras Al Hadd (Ras Al Jinz area) takes place almost all year round with a distinct peak between May and October. Hawksbill nesting on the Dimaniyat Islands beaches have a shorter nesting period, from May to July whereas olive ridleys on Masirah Island nest mostly between February and April–May. On Masirah Island, the much larger population of loggerheads nests from April to August.

The research indicates that the main strength of turtle tourism in Oman lies on the availability of globally recognized populations of several species of turtles and a favorable commitment by the authorities to take actions for the protection and the conservation of this resource. The unique environment, the many unspoiled landscapes, the political stability of the country, and the hospitality of the local population contribute to creating a positive perception of Oman among travelers.

The weaknesses in the development of marine turtle tourism are mainly related to the economic side: lack of economic studies, incomplete infrastructure, poorly planned ecotourism activities, and the proportion of expatriates in the tourism sector workforce, which may be related to a lack of trained personnel in the hospitality and the ecotourism sectors. Despite considerable effort, perhaps sometimes poorly focused, the tourism sector remains marginal in terms of GDP. Another weak point is the insufficient enforcement of existing regulation for environmental protection from fisheries and coastal development and construction.

The climate of Oman (in the winter December-February) is ideal to target European tourists in search of a relatively close, sunny destination with a safe, diverse, and ecologically rich environment. According to the researchers, the diversity in species of turtles may also be exploited to widen the duration of the tourism season although biologically, all four species of turtles nest during the summer in the Sultanate.

Threats come from two main sources: global and local. The global sources are mainly due to the increasing threats by climate change and pollution throughout the turtles whole migratory routes. The local threats are the rapid development of the country (and its population) and the increasing pressure of fishing, constructions, and industrialization of the coastline combined with poor enforcement of some regulations.
Empowering Adolescence for a Healthy Living

Adolescence is a period where there is a developmental transition to a young adult, in relation to physical, psychological, sociocultural, cognitive and ethical. One of the most common reasons for this increasing interest in adolescent health can be the identification of this period as the period of change. Considering adolescents is of critical importance to the future of the Nation, it is very important to mold them by enhancing their self-esteem and self-confidence.

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Adolescence is the period of time where they experiment new activities and such behaviors may be relevant to the health. Behaviors, which begin during adolescence often, continue into adulthood. Health of an adolescent is determined by both behavioral and cognitive factors. As per Sigmund Freud’s psychosexual stages of development, an adolescent is in identity crisis where he/she is unable to identify self as a child or adult. Many researchers have thus identified that, health of an adolescent is multidimensional and the best way to maintain a positive health promotion behavior is through empowering them. E-Health technology can be a better option to engage adolescence in health promotion behaviors. A systemic review of Literature by Lucia Maria Lotrean et al. concludes that, increase Information Technology (IT) supported life of an adolescent is placing them in higher risk situations. The only way to control the negative impact is through developing, implementing, evaluating and disseminating appropriate health education programs.

Adolescents move quite fast towards independence, but what they lack is the social and psychological maturity to handle this growth spurt. Melboun et al., have well stated that, though adolescents have challenging lifestyle but they lack majorly in health seeking and disease prevention behavior.

The influence of peer during this stage of development takes complete control of their intellectual understanding as well as the behavioral projection. According to Campbell and Macphail peer education provides opportunity for them to assess their opinions about behavioral options. Peer education creates a negotiated collective identity and includes shared peer group norms, which will help them to guide healthy behaviors. The literature supports that using peer educators is an appropriate approach for empowering adolescent populations.

It remains a constant source of enquiry for a parent on how to manage the health continuum of an adolescent child to ensure they are giving a shape to a healthy adult who may be the future leader, an innovator, a scientist, a good parent etc. The best approach will be allowing the adolescence to make their own decisions and feel responsible for the outcomes. However, parents can always live through this by setting up acceptable and mutual limits and control. This is called a state of “Balanced Freedom-Dependence”. Few
tips that may help parents to be more like a friend to these dynamic adolescents include, talking through a problem or issue; being more receptive than disciplining; spending more time together and listening to them; and supportive to find solution of their problems.

We need to conduct many ‘Adolescence Awareness Campaigns’ concentrating in providing support, experience, resources and opportunities to be a competent young adult. Health promotion and prevention strategies should be implemented with a collaborative effort across multiple societal in-situations is necessary. Coordination and cooperation across systems can strengthen efforts to address categorical health issues. Such joint efforts can also help to promote a more comprehensive approach to address adolescent health- an approach that views adolescents as whole persons who need many supports and opportunities for healthy development, such as “Holistic Adolescent Development Approach”. In those areas nurses play a major role in health promotion and disease prevention and of course, Inter-professional approach will enhance healthy adolescent development.

Positive health promotion in adolescent should always aim at targeting four key areas: Individual factors, emotional trait of an individual; self-motivation to overcome challenges; and other environmental factors. These areas can be strengthened through encouraging and motivating self-esteem, strengthening the social support; and improving life skills. Life skills play a vital role in the individual decision making towards positive attainment of health. Critical thinking, creative thinking, decision-making and problem solving are such skills, which would enable an adolescent to stay focused towards health promoting behavior. It would give them a feel good sense to be responsible for own life.

Health professionals usually engage with adolescents at schools, colleges, and health centers. Parents and the primary care takers need to take up the responsibility for appropriately identifying the challenges and issues faced by adolescent children and address them appropriately. Parents must also aim at improving the confidence level of adolescent which could be achieved only through allowing them to be practical, give them opportunity to try out new things, encouraging and praising them at all their efforts.

Overall, it should be understood that health of an adolescent should be always considered in a broader sense rather than focusing on one single issue and one single health problem.
Need for Stronger School-University Partnerships

Dr. Fawzia Al Seyabi reviews a number of school-university partnership approaches from different parts of the world.

Educational partnership between schools and higher education institutions has become an important tool towards enhancing students’ achievement levels in both contexts and increasing students’ college readiness level. It has also been identified as one key element of educational reform. In a paper published in the International Educational Studies journal (Vol. 10, No. 3; 2017), Dr. Fawzia Al Seyabi from the College of Education, Sultan Qaboos University, reviewed a number of models of school-university partnership from different parts of the world. The paper presents the results of a study that investigated—among other things—the views of 749 school students and 68 school teachers on the topic of school-university partnership. The paper provides a summary of participants’ suggestions on how best to create better progression between EFL syllabuses in both contexts: post-basic schools and foundation programs in Omani universities, with particular reference to the teaching/learning of EFL reading and writing.

Worldwide, schools and universities together play a very important role in building the human being. Schools have the premise of helping students gain the skills and competencies that would be handful for whatever college and/or career path they get to choose. Similarly, universities have the premise of preparing their graduates to become professionally and socially responsible citizens who are capable of being engaged in both contemporary and future concerns of their societies. Studies from various parts of the world have pointed to the existence of a “great
divide” between secondary schools and higher education. To help address this gap, educational partnership between schools and higher education institutions has become a necessity towards enhancing students’ achievement levels at both contexts and increasing students’ college readiness level. It has also been identified as one key element of educational reform.

The Omani Context

Since its renaissance in 1970, Oman has made giant strides in the field of education. From three schools built in 1970 to accommodate 909 students (all males), the number of schools scattered in all educational governorates in Oman has now reached 1077 and is in the increase. The Omani government believes that diversification of the economy depends on human resource development through higher education. With almost 45% of the population below the age of 25, there is both an increasing student demand and an increasing national commitment for access to higher education. Since the establishment of the first, and so far the only, national university – Sultan Qaboos University – in 1986, higher education in Oman has come a long way.

There are now not less than 54 higher education institutions covering different fields and specializations. There is a rapid provision of access to universities and other forms of higher education institutions such as the Colleges of Applied Sciences, the Colleges of Technology and the Institutes of Health Sciences. The private sector of higher education has also undergone steady growth in the last few decades. There are now 28 private higher education institutions in Oman. Parallel developments were also taking place in the general education school system. However, a number of studies conducted in the Omani context – similar to other contexts – have reported that the students accepted into higher education institutions are not “college ready” and that their high scores from schools do not truly indicate a high level of abilities and skills. Students seem to be having problems with their transition from school to higher education institutions. Studies that examine this issue and explore how bridges can be built between the two educational systems are highly needed in the Omani educational context.

Dr. Fauzia Al Seyabi’s research sheds light on the importance of establishing partnerships between schools and universities in order to help bridge the gap and build the “divide” that often exists between the two educational contexts. The study presents a number of school-university partnership approaches from different parts of the world and shows how this partnership can address different aspects such as curriculum, collaborative research, study skills and teacher mentoring and professional development.

Students and teachers participating in the study made various suggestions on how links could be established between schools and universities in their Omani context. Students’ suggestions focused on three main themes, which were the need for orientation programs, exchange visits and collaboration at the administrative level in issues relevant to curriculum. Teachers too were more concerned with curriculum, most of their suggestions centered on creating change in the reading and writing curriculum and alignment between the school English curriculum and that of foundation programs in universities.

Most of the suggestions that teachers and students made are not part of the current practice. The present paper argues that adopting some or all of these suggestions might have significant implications towards building sustainable channels of communication between the two educational contexts and smoothing the transition of Omani post-basic school students into colleges and universities. Dr. Al Seyabi says that whatever approach institutions choose to adopt, it is very important that it acknowledges the reality, or indeed the multiple realities that surround it so that challenges can be identified and addressed to help this partnership succeed. More importantly, an effective and successful partnership is expected to be a sustainable effort, one that does not involve a specific need on the part of the school or the higher education institution but rather one that aims to yield long term or systemic change.
Douglas H. Clements is Professor, Kennedy Endowed Chair in Early Childhood Learning, and Executive Director of the Kennedy Institute for Educational Success and the Marsico Institute for Early Learning and Literacy, at the University of Denver, USA. Dr. Clements received his PhD from the University at Buffalo, State University of New York. Previously a preschool and kindergarten teacher, he has conducted funded research and published over 500 articles and books in the areas of the learning and teaching of early mathematics and computer applications in mathematics education. Dr. Clements was a member of President Bush’s National Math Advisory Panel, the National Research Council’s Committee on Early Mathematics the Common Core State Standards committee and a coauthor of their reports. His research interests include creating, using and evaluating research-based curricula, taking successful curricula to scale using technologies, and learning trajectories in standards, assessment, curriculum and professional development. Dr. Clements recently visited Sultan Qaboos University, Oman, and delivered a keynote address at the “International Conference on Trends in Innovative Mathematics Curricula: Highlights on Early Mathematics Education” organized by the Oman Mathematics Committee. In this interview, Dr. Clements, speaks about the strategies for early mathematics education, based on his extensive research experience in this area.
Why is teaching Mathematics so different From teaching other subjects?

Dr. Clements: Early mathematics is surprisingly important. We ignore the early years at our peril. That is, we know that children’s early knowledge of math strongly predicts their later success in math. More surprising is that preschool mathematics knowledge predicts achievement even into high school. Most surprising is that it also predicts later reading achievement, as well as early reading skills. One reason teaching mathematics is different than teaching other subjects is that in most subjects, children have to learn skills first, such as word recognition. But in early mathematics, they can be immediately engaged at the “cutting edge” of their intellect. For these and other reasons, mathematical thinking is cognitively foundational. Given the importance of mathematics to academic success in all subjects, all children need a robust knowledge of mathematics in their earliest years.

Why do many students avoid Mathematics despite the much value placed on this subject of study?

Dr. Clements: Even though mathematical processes are cognitive, they are influenced by emotions and beliefs. For example, if people are anxious about mathematics, they may perform poorly, not necessarily because they have limited ability or skills, but because nervous thoughts “push” themselves into their minds, limiting the amount of working memory available to work on mathematics. In many cultures, such as the U.S., many people have unfortunate, negative emotions and beliefs about mathematics.

One deeply embedded belief is that achievement in mathematics depends mostly on aptitude or ability. In contrast, people from some countries believe that achievement comes from effort. The belief in aptitude—you’re either a “math person” or you’re not—hurts many children and, further, it is just not true. Children who believe—or are helped to understand—that they can learn if they try, work on tasks longer and achieve better throughout their school careers than children who believe you either “have it” or you do not. This view often leads to failure and learned helplessness. On the other hand, those who have mastery-oriented goals—who try to learn and see the point of school to develop knowledge and skills, achieve more than children whose goals are directed toward high grades or outperforming others. They even see failure as an opportunity to learn.

Could you explain the concept “Teaching Early Mathematics for Understanding with Trajectories and Technologies”, which was the topic of your talk at SQU?

Dr. Clements: Teachers who learn to use curricula based on learning trajectories are not only better teachers of mathematics, they continue to use that curriculum for years after its introduction and their teaching improves each year. Teachers need help to do this. However, we have the tools to provide that help. We know a lot about how children think about and learn math. And we know a lot about how to use learning trajectories to synthesize this knowledge into effective interventions for children. Our books detail the learning trajectories that can help underlie scientific approaches to standards, assessment, curricula, and professional development. Our new web site, learningtrajectories.org, provides similar information with videos that make the learning trajectories come alive. Our research on our Building Blocks curriculum and TRIAD scale up model show effect sizes that are large and significant. High-quality instruction has meaningful effects on children’s mathematics knowledge. All children can learn mathematical thinking.

How would you summarize your years-long research on early childhood learning?

Dr. Clements: Young children can learn amazingly broad, complex, and sophisticated mathematics. For example, preschoolers can learn to invent solutions to solve simple arithmetic problems. Also, almost all preschoolers engage in substantial amounts of pre-mathematical activity in their free play. They explore patterns, shapes, and spatial relations; compare magnitudes; and count objects. Importantly, this is true regardless of the children’s income level or gender. They simply need opportunities to engage in interesting mathematics. Teachers can and should provide rich environments, questions, and interactions to engage children in such experiences.