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Simulating Brain Cancer on Chip

Thoughts on Social
Responsibility in ELT

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on Self-Harm

IP Rights and Enforcement
in the GCC





جامعة السلطان قابوس
Sultan Qaboos University

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A Step Forward

From about 1920 to 1945, radio developed into the first electronic mass medium, monopolizing “the airwaves” and defining, along with newspapers, magazines, and motion pictures, an entire generation of mass culture. About 1945, the appearance of television began to transform radio’s content and role. Broadcast radio remained the most widely available electronic mass medium in the world, though its importance in modern life did not match that of television, and in the early 21st century it faced yet more competitive pressure from digital satellite and Internet-based audio services.

Radio is an attractive medium among the various mass communication media because of its special characteristics. It continues to be as relevant and potent as it was in the early years despite the emergence of more glamorous media. Radio is the most portable of the broadcast media, being accessible at home, in the office, in the car, on the street or beach, virtually everywhere at any time.

Despite the presence of a plethora of media, there is room and scope for each medium. Experience has revealed that ‘new technologies add things on but they don’t replace’. Each medium reinvents itself in the context of changes in the communication environment. In the changed media scenario, radio is reorienting itself with more innovative programs and formats.

An interesting fact is that majority of car users prefer AM/FM radio as the main source of infotainment on their cars. Despite the technological advances that are making the car a digital hub on wheels, the consumer’s love affair with AM/FM radio remains. A new poll by the firm IPSOS confirms that while some consumers are demanding changes to the car’s infotainment system, consumers want AM and FM radio to remain the heart and soul of their car entertainment.

Similar to the scenario in any other country, radio is still one of the most significant mass media in Oman. Now, there is good news for radio listeners in Oman. Oman FM broadcasts “Within SQU”, a weekly radio program that sums of the activities of Sultan Qaboos University in teaching, research and community service fields. “Within SQU” is brought to the listeners by the Public Relations and Information Department at SQU in association with Oman FM every Wednesday after the 6PM news. So, tune to Oman FM for Within SQU and enjoy! The audio link to the program is available on SQU news portal Anwar as well.

Celebration of Reading

Oman Convention & Exhibition Centre will host Muscat International Book Fair from 22 February to 2 March 2020. Any book fair brings together publishers, distributors, retailers and book lovers together on a single platform. For authors, it is a platform to meet their readers and foster stronger relationships with people and publishers.

In this digital age, most of the book fairs across the world are still flourishing, in terms of the quality of visitors to the fair. Book fairs are now educational and cultural events. There are seminars, panel discussions, presentations, author meet-ups, etc. to keep the exhibitors and visitors engaged and to spread knowledge.

Amita J Sanghvi

The true valentine of a reader is their book. If books are what you love, you will have a huge wave of joy surge from within to know that the Muscat Book Fair is soon coming!

If you are in love with books, and love a book affair, be at the Muscat Book Fair that sees exhibitors coming in from several countries near and far, and a never ending list of books for you are right there, at the stalls to browse, buy, read and relish!

Having a few hours set out to be there with your children and bringing them to this fascinating world of imagination and seeing them engrossed in books, is any day a very good way to get them onto to their journey of learning and discovering the world of fancy, fantasy and facts.

Oman prides itself in having the biggest fair in the region at the sprawling and the most beautiful Oman Convention & Exhibition Centre that is a must visit for one and all. Not only is the exhibition very helpful in exploring books and cultures through

reading, what makes it special is Live performances of Music and Poetry and Societies of Oman- the Environment Society and the Writers Society also display their books and latest publications and journals, inviting the visitors to join the bandwagon.

It only gets better! You have trolleys and assistants helping you while you move around from one stall to another, lost in the world of words. It goes without saying that you will pile up your trolley and be a very happy bunny with your insatiable thirst for knowledge being met.

To discover the world through books, is a travel through culture and land of faraway times and lost worlds of antiquity; to dream and to discover, to confirm and to consider what you think, what you choose to explore, and what you find – all under one roof, is a treat indeed.

So, choose many Valentines, not just one, and these books will always enhance your worth: Love reading, Love BOOKS!

**Simulating
Brain Cancer
on Chip**



Cancer is one of the major causes of death and a threat that takes lives unsparingly along with taking its toll on the global economy. In the Gulf Cooperation Council (GCC) region, blood cancer, colorectal cancer, breast cancer, thyroid cancer, prostate cancer and lung cancer are the common types of cancer affecting the population. Studies have shown that cancer-related deaths are often characterized by their ability to metastasize, and develop a secondary tumor, which makes it deadly with more than 90% of deaths worldwide. During metastasis, epithelial cancer cells detach from the primary tumor and intravasate into the vascular system. Intravasation is the invasion of cancer cells through the basement membrane into a blood or lymphatic vessel. Once in circulation, cancer cells travel in the body and colonize in tissues away from the primary site. Studies have showed that 20-40% of metastatic lung, melanoma, colon, kidney and breast cancers occur in the brain. The blood-brain barrier (BBB) is a highly selective semipermeable border that separates the circulating blood from the brain in the central nervous system (CNS) and acts as a protection wall against the transfer of cancer cell to the brain tissue.

The terms metastatic brain tumor, brain metastasis or secondary brain tumor refer to cancer that begins elsewhere in the body and spreads to the brain. The BBB protects the brain from "foreign substances" in the blood and acts as an interface to control molecular and cellular exchange between blood stream and brain. The key components of BBB are brain capillary endothelial cells (inside the capillary vessel), astrocytes, pericytes and neuronal cells (in the brain tissue). Endothelial cells in BBB form tight junctions which play a vital role in pre-

venting the migration of cancer cells to brain tissue. Currently, investigations pertinent to the mechanism of transfer of cancer cells across the BBB in human or animals is extremely challenging. Models of the BBB developed in laboratories could provide useful information about the mechanism of migration of cancer cells in capillaries carrying blood to the brain tissue. Among different available BBB models, organs-on-chip can mimic cell-to-cell interactions as well as manipulate cancer cell metastasis through BBB. This is a multi-channel environment at small scale that simulates activities, mechanics and physiological response of real organs; a type of artificial organ.

The Department of Mechanical Engineering at Sultan Qaboos University, in collaboration with Laboratory for Stem Cell Research & Regenerative Medicine at University of Nizwa, is taking a leading role in developing a novel hydrogel based microfluidic BBB model for studies of cancer metastasis in brain. After several challenges encountered during this research, an experimental setup has been developed that is capable of visualizing cancer metastasis in the brain. The research team is using a microfluidic model replicating the brain-vascular interface. The model allows real time imaging and quantification of cancer cells crossing BBB. The system will allow separation of different types of cells while allowing their direct communication at the surface of barrier. Currently, the model is characterized to study cell migration and interaction between them. The model has been tested to investigate drug permeability through the barrier and target cancer cells. The model will allow testing several existing and new drugs to target critical tumor pathways as well as study on drug resistance at the BBB.

The development of such platforms for simulation of real environment of migration of cells in BBB can be useful for several commercial applications. Outcome of this research study can lead to several publications in high impact journals of international repute. Successful testing of the model may also lead to further progress in fabrication of models in laboratories for studies on brain cancer. The developed system can open-up possibilities of collaborating with various local, regional and international universities and research institutions conducting cutting edge research on cancer. The outcomes of this study will explore techniques for novel target therapies. Through successful completion of this project, Oman can become one of the leading countries in conducting challenging research on cancer. The research study will enrich research on treating cancer and bridge the gap between engineering and medicine. The innovative nature of the project can also help in developing new postgraduate programs in the future.

The research team consists of lead principal investigator Dr. Khurshid Alam (College of Engineering), Dr. Mamun Abdullah (College of Engineering), Dr. Anwarul Hasan (Qatar University), Mr. Saeid Vakilian (University of Nizwa), Dr. Fatemeh Jamshidi-adevani (University of Nizwa), Juhaina Al-Kindi (University of Nizwa), Dr. Sulaiman Al-Hashmi (University of Nizwa), Prof. Vadim Silberschmidt (Loughborough University UK), Dr. Jamal Umer (Loughborough University UK), Dr. Ikram Ali Burney (senior consultant oncology SQUH) and Dr. Mushtaq Khan (National University of Sciences and Technology Pakistan).



Thoughts on Social Responsibility in ELT

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Centre for Preparatory Studies

The concept of social responsibility has been given special importance and value in 21st-century business practice. In business, it is commonly appealed to as corporate social responsibility that is related to keeping up with change and involves economic responsibility, direct philanthropic giving, environmental sustainability

initiatives, and ethical business practices. However, the concept of social responsibility is not alienated from single human beings since it is also recognized as individuals' ability to affect change through a variety of socially responsible actions, such as volunteering, participating in community-based initiatives, etc. Therefore, instilling the

sense of social responsibility is one of the perspectives, principles, standards and the new vision of 21st-century education.

Similar to other countries, more effective readiness of youth for changing business and professional practices is an urgent need in the Sultanate of Oman, and the country is eager to be in the forefront in train-

ing socially responsible young Omanis who are able to meet the needs of the present without compromising the ability of future generations to meet theirs. Consequently, there have been adaptations and changes in the country's educational policies, community initiatives, classroom methodologies, teaching methods and instructional approaches to support students' learning and their development as socially responsible individuals who are able to pursue innovative ideas with the potential to benefit the community. For example, Nama Group and the Environment Society of Oman (ESO) had just recently initiated a Green Innovation ECO-Thon aimed at encouraging Omani youth to tackle environmental challenges in the Sultanate through working on innovative solutions comprising applications, software and projects focused on such issues as waste management, carbon capture and alternatives, and energy and water efficiency. In addition, many institutions of higher education in Oman have initiated a number of community-based projects that are aimed at influencing the development of social responsibility and sustainable behavior through teaching and learning.

Some illustrations of such projects include multiple opportunities students are provided with to learn more about Oman's environmental challenges, charity work, social entrepreneurship, just to name a few. For example, in one of the English for Business courses offered by the Centre for Preparatory Studies of Sultan Qaboos University, social responsibility, and social entrepreneurship approaches are integrated into the curriculum. In the context of the course, these concepts are applied to non-profit charity organizations that students develop while implementing solutions to social, cultural, or environmental issues

and discovering more efficient ways and methods of English language learning and practice. Doing business for a social cause also engages students in constructing logical written arguments supported by the source material, data analysis, information synthesis, and authentic knowledge application. The main principles that govern teaching and learning practice in implementing student project work include collaborative, constructive, contextual and self-directed learning as its integral parts. Here, collaboration, one of 21st century skills, implies encouragement of mutual respect and interaction, willingness to listen and adjust thinking to a commonly agreed goal and advance a shared understanding of issues related to becoming a responsible citizen through giving, sustainability, and volunteerism. The activities related to real-world social, cultural and environmental problems engage students in intellectual collaboration, critical analysis of the specific situations and solutions through the services offered by the charity, and consequently enhance their skills furnished in more engrossing, meaningful and challenging contexts for their application.

In the academic space of the project, self-directed learning is another opportunity to involve students in all aspects of developing and enhancing social responsibility, and social entrepreneurship skills. Here, self-directed learning refers to a process in which students are encouraged to take the initiative in determining their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning goals and objectives. Consequently, teaching strategies and methods that stimulate, develop and improve students' aptitudes and competencies, respond to

their needs and further increase their personal, academic and professional growth are used to further support social responsibility, and social entrepreneurship approaches in English for Business course's project work.

Another example is English for Science course that effectively meets the widely supported objective of educating students to be socially responsible. The topics of the projects students are engaged within this course to include social issues that relate to science, promote social responsibility and make students more socially conscious. For example, such topics, as ocean micro plastic pollution, high-energy consumption in buildings, ocean oil pollution, desertification, soil salinity, teach students to behave ethically and sensitively towards social, economic, and environmental issues in Oman. Students spend the full semester on their projects. They start with writing and presenting a research proposal, and then do their research and present their recommendations in a poster exhibition.

In spite of an extensive teaching and learning practice, little has been done to reflect and better understand the role of English language classrooms in developing social responsibility among students in Oman and its value for future educational policies and pedagogy. For example, the instructional techniques that are influential to social responsibility teaching and learning and in assisting the implementation of changes within the academic community have not been established yet. Therefore, more research is needed to develop evidence-based guidelines for using English language classroom as an effective learning environment for establishing an ethical framework of socio-cultural understanding that suggests societal and individual obligation and enthusiasm act for the benefit of the society.

Role of Social Media on Self-Harm

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Self-harm is a sign of emotional distress that adolescents and youths use to relieve stress, anxiety or pain as a distraction from their attention, or draw attention or peers, to appear as enjoyable people, or to seek experience and curiosity. Several factors play an important role in self-harm among adolescents and youths, the majority of them associated sometimes with eating disorders, personality disorder, post-traumatic stress disorder, neglect, sexual or physical abuse, poor adjustment, and poor communication skills.

Social networking sites have recently played an essential role in the spread of self-harming among adolescents and youths through the Internet, called the phenomenon of electronic self-bullying, or self-harming; indeed, many scientific studies indicated that 40 percent of published content on social media among adolescents are related to depression or death and that 13.3 percent had explicitly written about their desire to die. These group of people tends to disclose these thought in many social media platforms, whether it is linked to each other or not, to create a content about suicide and share it anonymously, so they appear happy and psychologically stable in their regular accounts, while they are spreading important negative indicators of their mental health condition in other fake accounts.

Posting messages of self-harm through various social media sites, especially when it comes to religious or spiritual rituals, helps the users to reduce their social isolation since the process of interaction between them in cyberspace enables them to express themselves easily and to communicate effectively. Also, it helps to avoid stigmatization associated with

their mental health condition and find solutions or alternatives to their problems.

Some websites and apps provided simplified instructions for their followers on how to harm themselves for enjoyment. In some cases, the website may manipulate its name through social media platforms, thus, browsing the word "Suicide," for example, maybe prohibited for the user, while the word "Suiciideee" may allow them to do that easily, and here can imagine how many websites will become available for adolescents and children, not in the context of self-harm, but the meaning of sexual problems and pornography, extortion, substances, and others

Social networking sites and smartphone applications stores set some particular policies for sharing images, videos, and posts that contain contents of self-harm such as cutting, scratching, burning, stop eating and others, but indeed, it does not help to mitigate this content as required due to the ability of some to circumvent these policies by creating fake sites and accounts frequently, or to use some programs designed to allow the user to see banned or dangerous materials.

Social media has contributed to the dissemination of many teenagers pictures in which they try to imitate socially and artistic celebrities, and engage in similar behavior in some social challenges or tests after watching it on social networking; these challenges can affect their bodies and contribute to many unnecessary accidents such as the challenge of the ice bucket, the

challenge the cinnamon, or the challenge of Kiki. Besides, there have also been several electronic games that have prompted users to think about self-harm or suicide, such as the game of "Mary," "Pokémon," and "Blue Whale." In Blue whale, for example, the user need 50 days to accomplish many tasks starting by waking up at 4.am in the morning to watch a horror movie, then sculpt the words F57 or draw a blue whale on the hand using a sharp tool, making wounds on the arm, and stand on the bridges, while the final challenge is to commit suicide by jumping from a high building or stabbing self with a knife.

So what can we do? Here are some tips for managing self-harm and attempted suicide in cyberspace:

- Increase the awareness of the members of society in all segments of the importance and dangers of excessive use of the Internet and electronic devices and social networking platforms.
 - Monitor internet service providers and urge them to take responsibility for what is published through their engines.
 - Establish a suicide helpline (hotline) to report cases of self-harm or suicide attempts and to report its content to relevant authorities.
 - Activate cybercrime laws that contribute to reducing this phenomenon and its social effects on the family and society.
 - Diagnosis, treatment, and early care for people with psychiatric or substance use disorders, chronic pain, and acute emotional disorders.
- Observe the pages or applications browsed by children after exiting them, and note any change in their behavior and feelings such as the desire for isolation, aggression, and loneliness.
 - Provide psychological support to this group of people or contact a family member or friends who can help them, and limit the access of these individuals to the various means of suicide, such as guns, firearms, medicines, and others.
 - Avoid maintaining the privacy and confidentiality of the information provided by the suicidal provider if they request that, the person's life is at risk, so talk to the people concerned urgently such as specialized medical care team or security personnel, to preserve the life of the person and prevent further complications. The appearance of signs of self-harm should be monitored and reported immediately, and should not be ignored if a child or adolescent is exposed to a form of it.



IP Rights and Enforcement in the GCC

David Price is a Professor in Intellectual Property Law and International Law at Charles Darwin University, Darwin, Australia. His major areas of academic research and teaching are the intersection of intellectual property law, public international law, and international trade law. He has published widely on intellectual property protection regimes in the Middle East and other developing regions, and the impact of bilateral and regional trade agreements on domestic intellectual property protection. During 1999-2001, he was principal of Sohar College for Applied Sciences (now Sohar University), Sultanate of Oman. In October 2019, Prof. Price gave a talk on "Contemporary Issues in IP rights and Enforcement in the GCC" at SQU, which was organized by the Innovation & Technology Transfer Centre and the College of Law. In this interview, Professor Price discussed the importance of IP rights and GCC IP initiatives.

Can you define Intellectual Property (IP) in brief and explain the importance of IP rights in the backdrop of changes in the global economic environment?

In very simple terms, intellectual property is the expression of the creative forces of an individual's intellect and inventiveness – the product of the 'sweat of the brow'.

Intellectual property can cover a vast range of subject matter that is constantly growing and ex-

panding as society and technological increase the means of effective communication, and business and trade expand the commercial exploitative opportunity of the range and types of subject matter. On occasion, advances, notably in the digital environment, test the capacity of the current intellectual property regimes to keep pace with those advances. Hence, intellectual property, particularly the "big three" of copyright, patents and trademarks, are subject to constant scrutiny and are thus constantly evolving.

Intellectual property rights are a major tool of world trade and therefore a major trade export item for those countries whose citizens create or generate products that constitute "intellectual property". Since 1995 and the establishment of the World Trade Organisation and the adoption of the WTO's Agreement on the Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement), the nature of intellectual property law has largely been shaped by global trade imperatives, in which the driving focus is on expansion, exploitative protection and enforcement of intellectual property rights. Intellectual property has become formalised as a major commodity in the world trade basket, and enforcement of intellectual rights has become a powerful weapon in world trade. The TRIPS Agreement has become the most significant multilateral agreement over the full range of intellectual property rights.

Can you explain the beginning of enactment of IP laws in Oman?

Development of Oman's intellectual property rights protection regime has been a fairly recent achievement, having really only been established as part of its membership of the WTO in 2000. But it has since developed one of the most sophisticated protection systems in the GCC, incorporating domestic laws to the participation in conventions and international treaties. Oman is a member of several international treaties, conventions and protocols including the Gulf Cooperation Council, The World Trade Organization, The World Intel-

lectual Property Organization, the Berne Convention, the Paris Convention, the Madrid Protocol and the Patent Cooperation Treaty.

In addition to the above international treaties and conventions listed above, Oman has enacted a number of domestic laws protecting IP rights. In 2008 it updated its laws covering copyright (Royal Decree No. 65), and what has become generally known as industrial property (Royal Decree No. 67 covering trademarks and patents in particular, but also industrial designs, geographical indications, integrate circuits and plant breeders rights). Oman also adopted the GCC Unified Patents Regulations in 2000, and the GCC Unified Trademark Law in 2017.

How would you comment on GCC IP Initiatives and GCC Patent Regulation Acts?

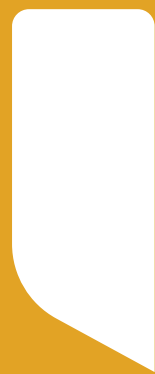
Consideration for a unified patent regulation at GCC level commenced in 1987 and was approved in 1992. The Regulation was amended and re-issued in April 2000. The GCC Supreme Council also established the GCC Patent Office in Riyadh. This Regulation allows a GCC member to obtain protection across all States by lodgment of a single patent application with the GCC Patent Office. However, the Regulation is essentially a registration statute, and includes little by way of enforcement provisions, notably infringements, precautionary measures and sanctions, leaving these matters to each State and their own domestic laws. Currently all GCC member States have adopted the

Patent Regulation, but each also has retained its own domestic patent law.

The GCC approved a regional trademark regulation in December 2006. In 2014, the regulation was revised and reissued as the GCC Unified Trademark Law. The primary objective of the Law is to replace much of provisions in the trademark laws of each of the GCC member States, thereby introducing a degree of consistency in regional trademark protection. However, the Law does not offer a unified filing system as does the GCC patent regulation and trademark applications still need to be filed separately in each State for protection.

In your view what are the enforcement challenges for intellectual property infringements and offences?

At judicial level, it is more about unfamiliarity with the status of the prevailing legislation. Local societal, cultural and commercial influences play a big role in the enforcement of IP legislations. There exists a certain conservatism that questions the desirability and necessity to comply with international and national IP obligations. Societal attitude that holds ownership of a good confers an unlimited right to use and disposal, including copying and resale is a challenge. The societies believe that protection of IP rights, particularly software and audiovisual goods, foreign-trademarked consumer goods and pharmaceuticals represents a protection of western commercial interests at the expense of local technology transfer for benefit of local markets and communities.



**We will build
Oman for
a brighter
tomorrow**