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GLOBAL ONLINE LEARNING ALLIANCE

NATIONAL SERIES ON SKILLS TRANSFORMATION – SAUDI ARABIA, 15 JUNE 2022

HIGHER EDUCATION: SKILLS, E-LEARNING, INNOVATION & VOCATIONAL

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FORMAT AND PARTICIPANTS



SECTION 1.

Format and participants

1.1 Introduction

The purpose of this private video meeting of Saudi university and education officials, organised in partnership with *Coursera*, was to discuss skills and digital transformation in higher education. In regular meetings of the Global Online Learning Alliance (GOLA), officials have spoken of the need to develop and transform the skills of young people to better prepare them for jobs of the future. Saudi participants were encouraged to discuss the actions and policies of their institutions, and to make recommendations where appropriate.

The higher and vocational education sectors in Saudi Arabia have seen huge investment in recent years as the country wishes to meet the strategic objective of the Vision 2030 National Transformation Program. With a new higher education governance system there is now much greater financial and academic independence to meet the aim of improving the core skills of students through innovation and the stimulation of creativity. At the heart of this transformation is the leveraging of digital technologies and developing greater flexibility in teaching and learning. The unique format of this meeting was designed around four roundtable groups of Saudi officials – each with a Coursera moderator who provided a closing synthesis.

The roundtable groups were split into four main discussion areas:

A. **Skills**: Digital and Information Literacy. The University and Soft Skills

B. **E-Learning**: Policies and Guidance for Online Degrees and Platforms

C. **Vocational Education**: Technical Skills for Employability and Industry Collaboration

D. **Innovation**: Quality Scientific Research and Development

Section 1.2 provides an executive summary of the discussions; section 1.3 gives the meeting format and main discussion points addressed in each of the roundtable groups; section 1.4 gives details of all participants listed by group and in section 2, a dissemination of the issues addressed, and



recommendations made.

We would like to thank all participants for taking time out of their busy schedules to participate in this meeting and offer their invaluable and erudite contributions. The dedicated roundtable groups allowed everyone to converse in private, have good time to express their own thoughts and to discuss recommendations for skills transformation, online learning, research and teaching in Saudi Arabia.

Some overarching issues for higher and vocational education in Saudi Arabia addressed in this meeting include:

Digital skills development, problem-solving and critical thinking

Online learning in higher education: trust, equity and sustainable innovation

Developing skills of Saudi graduates to better prepare for jobs of the future

Improving Saudi research and development to better link academia with industry

The use of new technologies and platforms to promote lifelong learning

Saudi higher education in the international context – raising quality and the effectiveness of scientific research and innovation

In section 1.3 we provide more detail of the specific questions within each roundtable group

1.2 Executive Summary

This executive summary is based on the major points raised by the opening speaker and all officials participating in the roundtable groups.

<u>Vision 2030 and National Policy</u> Saudi Arabia has a collective commitment to achieve the objective of human capability programs of Vision 2030 to best prepare Saudis to be globally competitive citizens. Vision 2030 is now well-established at the core of Saudi society and within the higher education institutions, which have been implementing well-developed programs aligned with the vision. Ultimately the realisation of Vision 2030 is to have a population of globally competitive Saudi citizens in which the full spectrum of skills development is embedded into education. It is time for academia to prepare a market ready workforce with relevant skills, as Vision 2030 aims at enhancing digital transformation in education.

Saudi Arabia is heavily investing in innovation and offering incentives such as tax breaks to corporations that move their regional headquarters to the Kingdom. Foreign companies must have regional HQs in the Kingdom to access government contracts. The Supreme Committee for Research, Development, and Innovation (RDI) has announced the National Aspirations and Priorities for RDI over the next two decades, prioritising: health and wellness; sustainable environment and supply of essential needs; energy and industrial leadership; and economies of the future. Saudi has the workforce, talent and willingness, so it is constant guidance with the setting of key performance indicators (KPIs) that will shape the achievements of Vision 2030.

Skills and Digital Transformation

Improving digital literacy is an important feature of institutional policy. Several Saudi universities have launched or are in the process of launching platforms with Massive Open Online Courses (MOOCs). An iterative process of implementation should start with needs analysis, curriculum and content design, and the proper planning of competency development. A feature in Saudi universities, to give a broader experience to students, is the growth of clubs, some specialised by subject and others being more social and cultural.

The Saudi Technical and Vocational Training Corporation (TVTC) has already embedded applications within their vocational courses that enhance digital skills. Developing entrepreneurial skills is another part of the Saudi human capabilities program through encouraging competitiveness, start-up projects and generating ideas through practical activities.

E-Learning

The feedback from all university officials, given the experience of two years of the pandemic, is that students have proven themselves very capable in transferring to digital learning. E-learning has evolved from being a supportive tool to a resource that has a daily role in the lives of students, academics and faculty staff. The Covid pandemic has accelerated the use of online learning technologies. The NELC is mandated to develop regulations and quality standards in the field of e-learning. One of the key initiatives of NELC is the *FutureX* platform. This is a platform of innovation that enables partner institutions to offer world class online learning experiences to stakeholders.

One of the key concerns that arose during the pandemic with the global expansion of online learning was the issue of student engagement and how to ensure that teaching in the online learning environment can improve student interaction. There has to be an overall acceptance of the difference between in-class and online teaching and learning. Mostly, the platforms need to have much more pedagogical development with applications and enhancements that leverage the technology. The Kingdom has had success in making the online e-learning experience more enjoyable. For example, the Madrasiti platform is an innovative solution in providing high-quality e-learning, a study by the **Online Learning Consortium (OLC) highlighted** how the platform recorded a clear increase in levels of student satisfaction.

Industry and Technical Education

The Kingdom has initiated significant economic reforms to end its dependency on oil, thus emphasising the role of technical skills development. To improve employability and for students to be better prepared for future jobs, investment is required in technical education and developing transformative skills. Critical to the success of TVET is a close and transformative working relationship with industry and the private labour markets.

The economy needs people who are job ready and so a well-oiled vocational system with industrysupported accreditation remains an important means of tackling youth unemployment. The post-pandemic world is seeing employers further leverage technology in the process of identifying and hiring skilled young people. Computer skills, creative thinking and communication will become even more prominent.

Research and Innovation

The Kingdom's vision is to increase scientific research, ensuring that the higher education system meets the demands of the digital

knowledge-based economy. In scientific research we are witnessing an increase in research citations and an acceleration in international research collaborations. The key challenge now is how to get the maximum return and output from these collaborations. Currently, Saudi Arabia ranks 66th in the Global Innovation Index (2021), performing better in innovation inputs than outputs. Saudi Arabia performs above the regional average yet performs below the highincome industrialised country average.

The Supreme Committee for Research, Development, and Innovation aims to have at least 5 Saudi universities ranked among the top 200 universities in world rankings by 2030. The Ministry of Education, through the Agency for Research and Innovation, is able to make a difference by promoting a culture of research and innovation amongst both faculties and students. Saudi Arabia is to protect young innovators with its first IP protection strategy, reducing bureaucracy and the registration time from up to 36 months down to under twelve.

Research Commercialisation

Several officials in the meeting gave emphasis to the fundamental challenge of turning a research paper into an economic achievement. The new framework of the Supreme Committee for Research, Development, and Innovation is a recent step in establishing an evidencebased framework to ensure open innovation and research. Why do many university officials comment that the major dilemma in research circles is how to commercialise research efforts? Business looks less into the actual research but more the innovations, especially those with the potential to disrupt. For Saudi researchers, the problem lies not in their inventions but rather the implementation.

There was a call for greater guidance from the Ministry of Education, aligning with Vision 2030, of which research disciplines and what industry sectors Saudi universities should be leveraging to increase commercialisation. The Ministry of Education has mandated that all universities have units responsible for the commercialisation of innovation and research. The mindset for successful commercialisation is to be a problem-solver, and one who is prepared to fail. Supporting this mindset is the necessary collaboration between institutions and the private sector.

1.3 Format of Virtual Meeting & Group Discussions

In section 1.4 we list the participants of this video meeting by the roundtable groups. The most immediate lesson of online video conferencing is to ensure that every participant has a voice. Small groups are essential. So, after opening statements the event was broken into small groups each with a moderator to take notes and support the conversation.

Prior to the break-out rooms there was an opening statement from Dr Hajar Binasfour, Deputy Director, for Customer Success, Saudi Arabia National eLearning Center (NELC).

The following was the video conference format:

Part 1: Opening Statement: Dr Hajar Binasfour, Deputy Director, for Customer Success, Saudi Arabia National eLearning Center (NELC). *10 minutes*

Part 2: Four main roundtable groups, each with a moderator record discussions and take note of the key points raised. *65 minutes*

Part 3: Closing synthesis by the four Coursera chairs. *15 minutes*

The total time of the video conference was 90 minutes.

In each roundtable group the floor was open for all participants to freely express their ideas and make policy recommendations. The discussion points in each roundtable were prepared in advance as follows:



Group A: Skills – Digital & Information Literacy. The University and Soft Skills

In 2021, the Kingdom launched a series of technology initiatives worth over \$1.2 billion to improve the digital skills of 100,000 Saudi youngsters by 2030. Saudi Arabia has a high global market potential in the ICT sector with a growing need for soft skills, language, and communication skills as well as the requisite technical skills. Equally, other key sectors of the economy would benefit from more innovation and creativity as industries seek to employ more modern technologies and processes. Employers put particular emphasis on communication skills, teamwork, critical thinking, the ability to apply numeracy & IT skills, and thus overall workpreparedness.

Skills: The jobs market urgently needs communications, problem-solving, teamwork and organisational skills. What programs has your institution recently established to give students a wider range of soft skills in response to the fastchanging jobs market?

Digital Literacy: What institutional policy recommendations would you make to improve and prioritise the digital skills development amongst Saudi students?

Entrepreneurship: To better embed creativity and innovation to develop entrepreneurial talent, what more can be done now to ensure that students build initiative and enterprise skills to produce innovative outcomes? Are Saudi students ready for the concept of entrepreneurial "failure"?

The University: Is it the role of the university to satisfy the jobs market by introducing soft skills development programs on campus or should the priority be just the intellectual development of society?

Vision 2030: The Kingdom's National Transformation Program aims to support digital transformation. What programs has your institution launched is planning to launch in support of the Vision 2030 digital and skills transformation strategy?

Group B: E-Learning – Policies and Guidance for Online Degrees & Platforms

E-learning is a sector of Saudi Arabian education that is witnessing significant growth, particularly in higher education. The KSA has not been left behind in the global integration of informational and instructional technologies in education. Vocational training institutes have also been at the forefront of efforts to join forces with e-providers and universities to create holistic approaches towards practical and virtual learning. The growth of e-learning has meant meeting the challenge of students adapting to online learning environments which require more indigenous Saudi content. The National eLearning Centre (NELC) aims to ensure the recognition and quality of online learning, ensure equitable access and improve efficiency to lead digital transformation in education

Pedagogy: What improvements would you recommend to teaching and learning in the online environment to ensure better student engagement and interaction?

Investment: Is your institution investing in flexible content delivery platforms and the information infrastructure to improve student access? If so what programs are needed to improve student digital and information literacy?

Assessment: A common sentiment amongst educators is that we are yet to see the ideal scenario for online assessment. Given the experience of the last couple of years, is your institution now looking at designing a new assessment and evaluation strategy for online learning?

Local Content: A considerable amount of online learning content contains elements of the US system. What recommendations would you make for accelerating indigenous Saudi content and the development of local content by Saudi academic institutions?

Best Practices: What particular concerns need to be addressed regarding privacy and security to safeguard learners online? Please recommend institutional policies for data and privacy protection.

Group C: Vocational – Technical Skills for Employability and Industry Collaboration

Technical and vocational education and training plays a critical role in developing essential labour market skills. The importance of skilled labour has increased in Saudi Arabia's private sector as the country's Vision 2030 focuses on moving the economy from oil to investment. The government has initiated significant economic and financial reforms to end its dependency on oil and turn to the utilisation of investment sources, thus emphasising the role of the private sector and technical and vocational training. To improve employability and for students to be better prepared for future jobs, investment is required in technical education and developing transformative skills. **Digital TVET**: How can digital transformation increase capacity and deliver institutional excellence in Saudi's technical and vocational education?

Employability: Given the need for emerging skills in areas such as artificial intelligence, how can Saudi institutions be more responsive to new economic trends, adapt to socio-technological changes and thus develop the granularity of courses?

Industry Collaboration: Please give examples of successful strategic partnerships between your institution and industry that deliver technical programs to meet the aims of Vision 2030

Quality: Any questions about the value of technical education can be met with robust quality assurance. What are the key elements of training programs to ensure quality outcomes appropriate for the Saudi labour market?

Clustering: Many industrialised countries benefit from focussed research aligned with economic clusters (e.g. automotive in Germany, Pharma in UK, Agribusiness in the Netherlands). How are Saudi institutions developing technical skills to support the advantageous industry clusters such as petrochemicals, energy, the agri-food industries, and mining for example?

Group D: Innovation – Quality Scientific Research and Development

About 27 percent of the outcome of scientific research in the Arab region belonged to researchers in Saudi universities. Over the past decade, the Kingdom has overhauled its research institutes, created top-tier universities and invested in substantial overseas education scholarships. The country has managed to attract top expertise from around the world to its institutes, and Saudi researchers are heavily involved in research collaborations with their international peers. The Kingdom's vision is to increase scientific research and ensure the higher education system meets the demands of the 4th industrial revolution.

Innovation Investment: To exploit funding opportunities and international partnerships, what more can be done by Saudi universities to have a clear and unified mechanism for marketing scientific research results to investors and the global business community?

Saudi Researchers: What programs has your institution implemented to develop a new

generation of Saudi researchers to enable them conduct high-level R & D with the participation of students, lecturers and research assistants to meet and excel international standards?

Research Distribution: Saudi has strong R & D in disciplines such as medical science and industrial fields, yet the government has identified the need for a wider distribution of capacities. What programs are should be implemented to increase enrolment for research in areas that will give the scientific base more breadth?

Intellectual Property: With an existing network of innovation and commercialisation offices in universities, why are the annual number of patent registrations relatively low? Do existing IP regulations need reforming to improve the economic returns from scientific research?

Vision 2030: The Kingdom aims to shift towards an innovation-based economy. What applied research programs is your institution prioritising to serve the development of key sectors in the Saudi economy?

Roundtable Discussions

As stated above, the meeting was split into four roundtable groups. Given the nature of the topics and the often overlapping issues, the dissemination of the discussions (sections 2.2 to 2.5) is based on the issues addressed across the groups rather than a simple delineation by roundtable. Many issues are in the context of Saudi Vision 2030, so we open with this and then onto the main areas that best define the conversations as follows:

Vision 2030 and National Policy Skills and Digital Transformation E-Learning Industry and Technical Education Research and Innovation Research Commercialisation

This report also includes Appendix A to accompany opening speaker Dr Hajar Binasfour

1.4 Participants

We would like to thank all those for participating and providing such outstanding contributions. The opportunity for them to openly converse in small groups provides us with a discerning judgement on the key issues and immediate policy recommendations. It is an honour for the organisers to host such a distinguished gathering of officials. Participants are listed from the opening statements and then by group A to D.

Opening Statements

Dr Hajar Binasfour, Deputy Director, f<mark>or Customer Success, Na</mark>tional eLearning Center (NELC). Opening Speaker

Lokesh Rajendran, Consultant - Director General's Office, National eLearning Center (NELC). Observer

Group A: Skills - Digital & Information Literacy. The University and Soft Skills

Dr Sumayah Abu Dawood, Assistant Professor in Learning Technologies, King Saud University

Dr Tahani Aldosemani, Associate Professor of Educational Technology & Senior Consultant, Education and Training Evaluation Commission, Prince Sattam bin Abdulaziz University

Dr Reem Alebaikan, Associate Professor of Computer Education, Consultant at the Center for Excellence in Learning and Teaching, King Saud University

Dr Bader AlHakami, Deputy Director of Centre for Teaching & Learning Development, King Abdulaziz University

Dr Ahmed Al Khateeb, Associate Professor of Applied Linguistics and Language Learning, King Faisal University

Eng Bandar AlOmran, Bachelor Programs Degree Coordinator, General Directorate of Curriculum, Technical and Vocational Training Corporation TVTC

Group Moderator: Louay Dayoub, Sales Development Representative, Coursera

Group B: E-Learning - Policies and Guidance for Online Degrees & Platforms

Dr Hamdan Alamri, Professor of Learning Design and Technology - College of Education, King Saud University

Dr Abdullah Alghamdi, General Supervisor in General Department of e-Learning, Saudi Ministry of Education

Dr Khalid Alshahrani, General Manager, National Observatory of Training Quality, Education & Training Evaluation Commission – ETEC

Dr Tariq Alshalan, Assistant Professor, Faculty Member of Instructional Design and Technology, King Saud University

Eng Ali Al-Sheri, Development Supervisor in eLearning & Training Center, Technical and Vocational Training Corporation TVTC

Dr Abdulrahman Alzahrani, Associate Professor of Educational Technology - Department: Educational Technology, University of Jeddah

LTC Essam Burhan, Combat Medic Educator, Ministry of National Guard

Group Moderator: Pedro Moura, Director of Partnerships, Coursera

Group C: Vocational – Technical Skills for Employability and Industry Collaboration

Dr Abdulrahman F Al-Motery, General Manager of Institutional Accreditation, Education & Training Evaluation Commission - ETEC

Abdo Azibi, Head of the Equivalency, Assessment and Curricula Certification, Technical and Vocational Training Corporation TVTC

Dr Hajar Binasfour, Deputy Director General for Customer Success, National eLearning Center (NELC)

Fahad Ali Daghriri, Chief Information Officer, General Department of IT, Technical and Vocational Training Corporation TVTC

Group Chair: Zaher Srour, Partnerships Director, Coursera

Group D: Innovation – Quality Scientific Research and Development

Dr Talal Abozandah, General Supervisor of E-learning and Distance Education, Saudi Ministry of Education

Dr Mohamed Al-Adsani, Professor, College of Education, Special Education, Imam Abdulrahman Bin Faisal University

Dr Saud Alfaadhel, Director of KACST Academy, King Abdulaziz City for Science and Technology (KACST)

Dr Sameera Algarni, Instructional Design and Technology Consultant, Education & Training Evaluation Commission - ETEC

Dr Hussain AlJahdali, Acting Dean of Institute of Research and Studies, Assistant Professor of Complex Computing, Saudi Electronic University

Dr Weam M Banjar, Researcher, Global Center for Mass Gathering, Riyadh Elm University and Saudi Ministry of Health

Dr Mohammad Nurunnabi, Chair in Accounting & Aide to the President at Prince Sultan University; Think Tank Leaders Global SME Policy Network (GSPN) and Global Education Policy Network (GEPN), Prince Sultan University

Group Moderator: Sam Legroun, Partnerships Director, Coursera

DISCUSSIONS

SECTION

Discussion

2.1 Opening Statements

The opening statement was provided by Dr Hajar Binasfour, Deputy Director, for Customer Success, Saudi Arabia National eLearning Center (NELC).

Dr Hajar Binasfour

This opening statement is in conjunction with the presentation Appendix A

Dr Binasfour stressed the critical importance and timely discussion of skills, e-learning and innovation in higher education. Saudi Arabia has a collective commitment to achieve the objective of human capability programs of Vision 2030 to best prepare Saudis to be globally competitive citizens. The National e-learning Centre (NELC) was established as an independent entity by the Kingdom of Saudi Arabia Council of Ministers. The aim of the NELC is to enhance trust in e-learning, provide lifelong equal access to e-learning and also ensure sustainable innovation in e-learning.

In order to achieve trusted online learning, the NELC is mandated to develop regulations and quality standards in the field of e-learning. This includes the control of e-learning quality programs and the granting of licences to entities across all sectors from early childhood education to lifelong learning. The NELC sees itself as more of an enabler and integrator rather than just regulators. The core values are trust, integration and innovation. One of the key initiatives of NELC is the FutureX platform. This is a platform of innovation that enables partner institutions to offer world class online learning experiences to stakeholders. Initiatives offered through FutureX are just the tip of the iceberg of being innovative in offering e-learning programs that meet the market needs.

The NELC is proud to have many of institutions that are participating in this meeting, including the Saudi universities who are already on board within the FutureX platform, including Coursera, which is one of the key strategic partners. The Kingdom is transitioning to a more diverse economy. It is time to guarantee the country's future workforce in future skills and 21st Century Skills readiness. It is time for academia to prepare a market ready



workforce with relevant skills, as Vision 2030 aims at enhancing digital transformation in education. E-learning is no longer to be perceived as a support system, or delivery mode of education and training. E-learning is an enabler and accelerator for human capability development through offering flexibility in the delivering of relevant content, while being agile in meeting the skills development aligned with continuous professional development (CPD) goals. This is the time for transition and transformation. The NELC is confident that a series of roundtables such as this meeting will conclude with some great recommendations that make us lead by example, globally.

2.2 Vision 2030 and National Policy

Sustainability lies at the heart of Vision 2030, with investment in renewables, economic diversification, carbon capture and environmental preservation & protection all part of a holistic approach. In colleges of technology there has been a strong effort to concentrate on environmental awareness programs and the impact on working practices. So for example, in engineering there is greater consideration given to the design of equipment and the working practices to reduce pollution and other forms of environmental damage.

Vision 2030 is now well-established at the core of Saudi society and within the higher education institutions, which have been implementing welldeveloped programs aligned with the vision for the last five years. Universities now have several programs, many of which incorporate the use of new technologies and the development of digital competencies amongst young Saudis. King Saud University has a Vision 2030 Student club aimed at spreading the knowledge of the Kingdom's vision.

Universities have been playing a critical role in supporting the Kingdom's Vision 2030 digital skills and transformation strategy with the implementation of a variety of programs and a commitment to sustainability. Prince Sattam bin Abdulaziz University developed a framework for the soft skills needed for jobs of the future, which has been embedded throughout all institutional programs. What is innovative in this program is how the university assesses the learning outcomes of the soft skills development through a fully automated learning management system. Accompanied with the university building augmented reality labs, multimedia and digital hubs these initiatives all combine to support Vision 2030.

Given the needs of the jobs market requiring more soft skills such as teamwork, communications and problem-solving, institutions are looking at how they can support students through establishing skills-based programs. Saudi Arabia has developed a framework for human capability development that includes not just skills but takes a more holistic approach that focusses on values, attitudes, basic skills and skills for future-preparedness. Each of these has its own capability components, so for example, basic skills will include numeracy and digital literacy. Within each of these components are the functional skills that cover all the required skills for citizens based on three pillars: developing a resilient and strong educational base; providing for future local and global labour market needs; and providing lifelong learning opportunities for Saudi citizens. Ultimately the realisation of Vision 2030 is to have a population of globally competitive Saudi citizens in which the full spectrum of skills development is embedded into education. The implementation of this national framework is within the higher education institutions, vocational training and applied through the curriculum in K12 education.

Alongside the huge investments in higher education, digital transformation and the objectives of Vision 2030, there still remains scope for reform in the



technical and vocation education sector. There are thousands of technical courses and countless training programs across the Kingdom and institutional reform would provide opportunity for greater quality assurance. With quality comes focus whereby the pure vocational training of someone for a job is not academia and is more the responsibility of the ministry of labour than education. Institutional reform will better define the differences between university and TVET education such that the system is better aligned and responsive to the modern labour market. An important element for the policy makers in this regard is having the proper data. Evidencebased well-informed policy requires improved data from the educational institutions in the Kingdom.

Based on Vision 2030 and the needs of the labour market the expansion of the Technical and Vocational Training Corporation (TVTC) training programs (more the 250 majors) in the units of colleges; institutes of strategic partnerships and international technical colleges; training programs in private training facilities; and supportive social programs. These partnerships cross industry sectors with companies now active in the creation of curricula content and designing courses directly relevant to the jobs market. The gaps between training programs and the competencies required in the modern world of work are being continuously reduced.

Like the TVTC, the NELC is aligned with the national vision of an ambitious nation, a thriving economy and vibrant society. As introduced by Dr Binasfour in her opening statement, this vision is made up of six overarching objectives of: enhancing government effectiveness; enabling social responsibility; economic diversification; full employment; the strengthening of Islamic and national identity; and fulfilment of a healthy life. Institutes that have close partnerships with both Saudi and international business provide both short and long courses designed for the labour market and developing entrepreneurship.

2.3 Skills and Digital Transformation

Improving digital literacy is an important feature of institutional policy and implementation to better prepare students for the modern jobs market. Several Saudi universities have launched or are in the process of launching platforms with Massive Open Online Courses (MOOCs) which are often self-paced and include soft skills development aligned with the national human capabilities program. Regarding, institutional digital skills development then the recommended approach is to have a comprehensive framework that develops the vision and then the necessary planning to link policy with national strategic objectives. In all such frameworks the allocation of funding is critical and here implementation authorities have an opportunity to partner with the private sector while setting standards. Such policies must be cognisant of digital ethics, online safety and equitable access. An iterative process of implementation should start with needs analysis, curriculum and content design, and the proper planning of competency development according to student levels and access to technology.

At King Saud University they have implemented their communication skills course as a mandatory requirement in all the programs offered. Communication skills are an essential ingredient, and the university is looking at programs that are needed to fill gaps in the market. For example, sign language for deaf persons – the statistics in Saudi show there are only 750 people certified as sign language interpreters. This does not match the size needed by the growing number of deaf people in the Saudi market, hence is a big gap in the jobs market that can be filled through proper program development. Another gap in the market is the greater need for Chinese language skills and accordingly the university has developed a diploma covering the reading, writing, listening and communication skills in Chinese. More will follow, from the importance of the psychology of working with technology through to cybersecurity - all to better enable the workforce.

The Technical and Vocational Training

Corporation (TVTC) of Saudi Arabia has also added communications, analytical, computer, project management, marketing and technical skills to their programs. As part of overall student affairs, another feature in Saudi universities, to give a broader experience to students, is the growth of clubs, some specialised by subject and others being more social and cultural. In all cases the objective is to encourage students to develop their collaborative skills to support groups within the university and external communities in the wider society.

Two distinctive courses that aid students' soft skills, communications, marketing and job-seeking skills are now compulsory at King Abdulaziz University – students are obliged to complete these courses to graduate. The experience of the pandemic also meant learning new ways in how to incorporate the development of soft skills through the utilisation of different applications and learning technologies. There is still much to do, especially given the fastchanging digital world whereby young people will be required to apply digital tools in response to the market needs as well as developing entrepreneurial skills that bring in creativity and problem-solving competencies. With this development of soft skills in the Kingdom, we are now seeing students graduate with two transcripts – one for their main degree grade and another for their soft and collaborative skills.

Digital literacy involves four major pillars: staying up to date with existing technologies; learning to properly communicate in the online environment; managing ideas online; and leveraging technology to manage people and teams. The Saudi Technical and Vocational Training Corporation (TVTC) has already embedded applications within their vocational courses that enhance digital skills and making sure the first pillar of being up to date is fulfilled. They also have special programs for communications and being a vocational institution wish to ensure there is close alignment with industry partners.

Developing entrepreneurial skills is another part of the Saudi human capabilities program through encouraging competitiveness, start-up projects and generating ideas through activities such as hackathons. In Saudi high schools there are already competitions for students to present their business ideas and projects, many of whom end up competing internationally and some produce final end products and services for the market. This is an example of what could be implemented more in universities who have the institutional relationships and reputation to support students with pathways to funding and companies. Hence, we are now seeing the expansion of entrepreneurship centres in universities to encourage students and educate them on how to join global projects through utilising digital tools.

Alongside listening to the students and the faculties, it is important to listen to the market and understand what stakeholders need such that the right policies are implemented. Accordingly, universities require both academic and institutional freedom to make such judgements and implement fresh policies. Not all policies should be mandated just by government, the experience and knowledge-base of universities is an important and necessary contribution to any policy framework development. Students need to be fully aware of the crucial skills of creativity, collaboration and critical thinking. Equally the student requires the self-awareness to appreciate that they are the agent of change who adds value, and that the digital technology is a tool.

On the question of the role of the university – whether satisfy the jobs market by introducing soft skills development or to prioritise the intellectual development of society – officials agreed that it should be both. For certain professions, technical skills are a prerequisite and are often better performed in conjunction with progressive soft skills. These are shared responsibilities of the university and society which requires a synergy such that the institution is equipping students with the competencies to facilitate the transition from education to work. It is important to train student awareness of the most needed jobs in society and not just leave it to the private sector. For many years in Saudi, the universities have worked independently from the market, and this is now changing with the commitment that the university is responsible for providing the market with its workforce and to provide labour that is competent.

The NELC is part of the ecosystem of quality assurance for skills transformation, supported by several key initiatives like the FutureX, the national e-learning platform; the National Program for Open Educational Resources; and the National Indicator for E-learning and Training. FutureX helps find the right skills through the platform that provides academic and professional e-learning and training programs to meet future demands. Microsites are designed to integrate with stakeholders and decision makers in the colleges and universities so they can identify the most relevant programs to focus on, as well as having sight of what counterpart institutions are doing. The NELC then seeks to raise the quality of e-learning programs with standards criteria.

2.4 E-Learning

The feedback from all university officials, given the experience of two years of the pandemic, is that students have proven themselves very capable in transferring to digital learning. They have a good level of digital communications skills because it is already part of their lives, though it is important to be aware of those learners who may at first be drawn to social media and gaming. We see the bad things, the cyber-security threats, especially when home schooling, the misinformation through social media and a variety of concerns over mental health. How does a student figure out which news is false, fake or propaganda and which is fact? King Saud University has found that students have been mostly using the productivity tools within the e-learning platforms, including the submission of papers and working on projects online. Further review is required to assess the use of specialised digital tools that may include content creation or technical competencies aligned with the course curriculum.

E-learning has evolved from being a supportive tool to a resource that has a daily role in the lives of students, academics and faculty staff. The Covid pandemic has accelerated the use of online learning technologies in bringing more flexibility to the learning process and supporting self-paced learning amongst students. Given this impact then policies and guidelines are ever more essential to ensure that educators properly implement and utilise e-learning technologies. One of the key concerns that arose during the pandemic with the global expansion of online learning was the issue of student engagement and how to ensure that teaching in the online learning environment can improve student interaction.

Experience from the pandemic has been how confidence plays an important role in student engagement and accordingly that confidence stems from learning competencies. At King Saud University they learnt this early on and made a point of building competence at the beginning of the semester with improved engagement that then reflects on the plans for learning for the whole semester. Student interest in the subject matter is critical; engagement flows naturally from an interest in the course materials. But lecturers have commonly experienced students who come to an online class but stay silent, not wishing to participate. The effort is made to engage with them but if they have low expectations of the course then it often proves difficult to get them to fully engage. In that sense the online learning environment bears stark similarity to the face-to-face lecture hall.



The Saudi Ministry of Education recognises the challenge of interaction and engagement in the virtual learning environment. For the teacher, these challenges start with the subtle signals from verbal and non-verbal communication. Teachers and lecturers learn to recognise body language and the slightest expressions of their students in the classroom and accordingly how much they are engaged in the subject. This is much harder for the teacher to during an online class. While the lecturer is speaking it is much harder for them to pick up the signs of how much any one particular student is

paying attention. Equally, the students cannot see the full body language of the lecturer - the teacher in motion giving expression to the content. The danger here is that the lesson can soon become boring. There has to be an overall acceptance of the difference between in-class and online teaching and learning. If the ability to read body language or micro-expressions is diminished, then e-learning platforms need to offer other benefits. Mostly, the platforms need to have much more pedagogical development with applications and enhancements that leverage the technology. These may be live competitions, surveys, instant feedback using AI or the ability to form specialised learning groups. More work needs to be done in developing e-learning pedagogy.

Across all levels of education in the Kingdom we have seen huge investment in e-learning platforms, accelerated by the pandemic, which has shifted the thinking of educators in how to ensure that the technology is best implemented such that it improves the educational process. As stated by opening speaker, Dr Hajar Binasfour, the *FutureX* platform is an important innovation, enabling partner institutions to offer a high quality online learning experience. It is newly implemented, but we are seeing the uptake in schools that then feeds into the higher education system. Now King Saud University is investing in artificial intelligence (AI) tools to integrate them into the learning process. Student engagement remains a major issue. Just moving content into an online format without proper instructional design is not enough to produce the required interactivity and engagement. There are different pedagogical and academic dimensions to take into consideration before getting to the questions of student engagement and online collaboration. This should involve developing unique learning content, innovative forms of assessment and having a strategy for instructional design that reflects the academic philosophy of the university. Hence, the investment in resources needs to be matched with investment in training and best practices. Investment in e-learning is heading in the right direction yet it remains essential to ensure that the means of student engagement actually benefits the learning process.

The experience of the Technical and Vocational Training Corporation (TVTC) has been the large investment required in developing the infrastructure and training of teachers in technology itself. The TVTC has now been working for 15 years on this investment in e-learning, training teachers and planning the best ways to engage students with the technology. We see students responding well to certain types of engagement like mobile learning and gamification. Looking forward there will be different applications of extended reality (AR and VR) as the speed and zero latency of connectivity improves with 5G. Ultimately the aim is to have a better experience for the students, while retaining quality. That quality is the responsibility of policy and oversight through robust assurance. The Kingdom has had success in making the online e-learning experience more enjoyable. For example, the Madrasiti platform is an innovative solution in providing high-quality e-learning, a study by the Online Learning Consortium (OLC) highlighted how the platform recorded a clear increase in levels of student satisfaction. This kind of thoughtful implementation recently led UNESCO to choosing the Kingdom among the top four global models in the field of e-learning.

Assessment and evaluation of students in the online learning environment has been cited as one of the leading challenges for educators and policymakers, especially so since the onset of the pandemic. Concerns over cheating or plagiarism have meant that the vast majority of countries made sure that examinations still took place on campus. Saudi is no exception and questions over the reliability of online assessment determine that institutions stick to physical examinations as they did so for certain grades at the height of the pandemic.

Even the Electronic University still brings student to campus for exams. This is not to say that educators have not thought about online assessment, cognisant of the potential of future technological developments such as improved proctoring and then artificial intelligence (AI). In other countries the experience of embarking on multi-modal online learning platforms has been that assessment is not so effective. Designing robust online assessment for many courses does require considerable investment – notably human intellectual endeavour. Professors and faculty staff would need to commit many months of time to produce online evaluation to their own satisfaction let alone that of a regulatory body.

The digital transformation is being implemented by organisations like the Technical and Vocational Training Corporation (TVTC) in the context of closing gaps between labour market needs and the courses that students graduate with. Close attention is paid to educational technologies through the national centre of partnership strategies whether it be major global e-learning platforms or ensuring the expertise of SMEs can contribute to the design of innovative edtech. The TVTC now has a network of over 250,000 students using e-learning technologies to achieve the necessary skills and competencies for societal digital transformation.

University staff are now needing more enhanced skills with the need for more digital content design, and we see Saudi institutions where the colleges have labs where students and teachers can work on building content themselves. This is important to the Kingdom. Arabic and local content is highly valued, especially in an online world dominated by English content. Developing unique learning content has the double benefit of enhancing digital skills while creating locally relevant themes and character.

The National Development Fund and the Saudi Industrial Development Fund are now investing heavily in e-learning. So the NELC, using the *FutureX* platform, is able to create pathways for these institutions to meet their objectives and developing local industry through innovation. Sustainable returns for the industrial sector require the increased participation of Saudi talent and greater localisation of advanced technology for which e-learning can now play a vital role. These pathways for other Saudi institutions allow learners to benefit through

FutureX, contributing a step forward in industrial development.

2.5 Industry and Technical Education

The importance of technical and vocational education and training has increased in Saudi Arabia's private sector as the country's Vision 2030 focuses on moving the economy from oil to investment. The Kingdom has initiated significant economic reforms to end its dependency on oil, thus emphasising the role of technical skills development. To improve employability and for students to be better prepared for future jobs, investment is required in technical education and developing transformative skills. Digitalisation is transforming how people can engage with learning as the use of technologies evolves into greater customisation and scalable educational solutions.

Critical to the success of TVET is a close and transformative working relationship with industry and the private labour markets. Given the considerable technological changes in business there is a need for closer proximity between industry and university placements. Programs of workplace learning along with internships are enabling for graduates, but in terms of relevance to industry with a curriculum that encourages lifelong learning

requires structural changes to the accreditation of tertiary courses. The economy needs people who are job ready and so a well-oiled vocational system with industry-supported accreditation remains an important means of tackling high youth unemployment.

It was commented that it is not just a matter of the discrepancy between what is taught in tertiary education and what is required of by industry, but also it is the speed of change in this discrepancy.

This has heightened in the last couple of decades as the digital age advances and major global industries need more highly skilled engineers and technicians at a pace faster than institutions are able to adapt the curricula to produce the talent. This points to the Saudi higher education sector needing to be agile, quick to adapt to socio-technological changes through industry collaboration and developing the granularity of courses. Digital transformation, automation and artificial intelligence, will transform the nature of work in the future, considerably so in Saudi Arabia and the Gulf. The

post-pandemic world is seeing employers further leverage technology in the process of identifying and hiring skilled young people. Computer skills, creative thinking and communication will become even more prominent. With the demand for digital talent increasing globally and post-pandemic job candidates preferring the flexibility of working remotely, recruiters today are strongly emphasising time management, teamwork and communication skills. In the future technical skills will become equally if not more important. Employers in Saudi Arabia are now leveraging technology to help drive growth and better anticipate uncertainty.

The recently published Coursera 2022 Global Skills Report identifies how the Middle East and North Africa is home to a number of global skill leaders, but with skills varying between countries. In Saudi Arabia there is a pattern of performing well in business but lagging in more recent trends such as data science. Saudi Arabia is heavily investing in innovation and offering incentives such as tax breaks to corporations that move their regional headquarters to the Kingdom. A group of 24 international firms recently announced they would sign on to the program. Foreign companies must have regional HQs in the Kingdom to access government contracts. Reliable data from across the Kingdom is critical for the likes of the Ministry of Education and Ministry of



Labour to make informed decisions. Here e-learning and robust learning management systems at the high school level are equally critical in providing the student data to help the universities adapt, know what is in high demand and what types of skills are receding in the digital economy. Furthermore, any government agency responsible for quality assurance, like the Education and Training Evaluation Commission (ETEC), relies on assured data. More still needs to be done to support the integration of data and the sharing knowledge between government ministries, local municipalities and the Kingdom's institutions responsible for feeding into the skills development and digital transformation vision. This is not to say there may be cultural challenges, such as people being more willing to admit failure and from that the lessons learnt that can be shared institutionally.

2.6 Research and Innovation

The Kingdom's vision is to increase scientific research, ensuring that the higher education system meets the demands of the digital knowledge-based economy. Over the past decade, the Kingdom has overhauled its research institutes, created top-tier universities and invested in substantial overseas education scholarships. To exploit the burgeoning international partnerships and inward investment, it is critical for Saudi universities to have a unified mechanism for marketing scientific research results to the global investment community. There has been a push for these universities to climb up the rankings of the world's leading universities. The private sector plays a key role, yet it is a two-way process that requires quality scientific research with disruptive innovations.

The Supreme Committee for Research, Development, and Innovation (RDI) has announced the National Aspirations and Priorities for RDI over the next two decades, prioritising: health and wellness; sustainable environment and supply of essential needs; energy and industrial leadership; and economies of the future. These will enhance the Kingdom's global competitiveness and leadership, in line with the directions of Saudi Vision 2030, and strengthen the Kingdom's position as the largest economy in the region. The ambition is for the Kingdom to be a global leader in RDI with an annual investment equivalent to 2.5% of GDP.

The Kingdoms seeks to attract national and international talent. Cooperation and co-investment with major research centres, international companies, non-profits, private companies and start-ups are to be prioritized. Amongst the national aspirations, one of the priorities of economies of the future is to promote innovation in digital technologies. In scientific research we are witnessing an increase in research citations and an acceleration in international research collaborations. The key challenge now is how to get the maximum return and output from these collaborations. Currently, Saudi Arabia ranks 66th in the Global Innovation Index (2021), performing better in innovation inputs than outputs. Saudi Arabia performs above the regional average in three pillars, namely: human capital and research; infrastructure; and market sophistication. Yet performs below the high-income industrialised country average. In the meeting, it was commented that for the Kingdom to have more impactful research in the global community there needs to a true knowledge-sharing collaboration between the private sector and the universities. The mismatch often reveals itself to be a global one and for Saudi professors and educators it becomes a matter of looking for better partners both locally and internationally.

In developing a new generation of Saudi researchers who are enabled to conduct high-level R & D, the Kingdom has implemented several macro-level programs, like the commitment to the "Action Packages" of the Global Health Security Agenda. This focus on the development of human capital and public health research will strengthen technical capacity and demonstrate improvements in health security assessments. Action Packages, from biosecurity to immunisation to sustainable financing and workforce development, promote strong collaborative programs between working groups led by technical experts. Saudi Arabia will exchange programs with several global universities sharing internships that focus on research and training. This training includes how to collect data, how to extract and author research papers and the best ways to publish.

A critical issue for scientific research in Saudi universities is the question of how many registered patents and innovations have become realised as commercially successful products. Intellectual Property (IP) law and strategy requires strong application along with ease of access, whether that be a single entity for registration and oversight of intellectual property rights or an IP policy roadmap to help with the protection and commercialisation of innovations generated within Saudi universities. IP units in universities can take responsibility for the patenting and IP processes when faculties are innovating. Such units play an important role in managing the legal issues and the production of patent applications.

The Supreme Committee for Research, Development, and Innovation aims to have at least 5 Saudi universities ranked among the top 200 universities in world rankings by 2030. The Ministry of Education in the Kingdom will play an important role in supporting scientific research and innovation as it is directly responsible for supporting scientific research and innovation in order to support the national economy. The Ministry of Education, through the Agency for Research and Innovation, is able to make a difference by promoting a culture of research and innovation amongst both faculties and students. Saudi Arabia has led global efforts in university publications of Coronavirus research, ranking first in the Arab world, 14th globally, and 12th among G20 countries. A research team from Imam Abdulrahman bin Faisal University funded by the institutional funding program at the Ministry of Education developed a Coronavirus vaccine and started the clinical trial phase.

The lack of a reliable system for processing trademark and patent applications is, for any country be obstacle to growing exports and protecting researchers and inventors. Now Saudi Arabia is to protect young innovators with its first IP protection strategy, reducing bureaucracy and the registration time from up to 36 months down to under twelve. This is critical in both attracting foreign direct investment (FDI) and succeeding in the globally competitive marketplace. Inward investors need to be sure that there is robust intellectual property rights enforcement

2.7 Research Commercialisation

Several officials in the meeting gave emphasis to the fundamental challenge of turning a research paper into an economic achievement. One key recommendation in regard to the government authority responsible for regulation is an independent and evidence-based framework that avoids conflict of interest that may stifle open innovation and research. The new framework of the Supreme Committee for Research, Development, and Innovation is a very recent step to ensure this does not happen, while remaining true to the aspirations of Vision 2030.

At the heart of research is its scientific base. Given the huge long-term investment in the Kingdom's universities over the last two decades, we are seeing the academic integrity of that scientific based becoming well-established. Laboratories, the digital and information instruction and human capabilities have been well-funded, there is little question that the Kingdom has the talents to conduct successful research. So why do many university officials comment that the major dilemma in research circles is how to commercialise research efforts? Is it a problem with mindset rather than the communication and collaboration between the private sector and universities? Business looks less into the actual research but more the innovations, especially those with the potential to disrupt. For Saudi researchers, the problem lies not in their

inventions but rather the implementation, where to go to make it a reality and have the right tools available to them. Fab Labs are an example of how to turn innovation into practical collaboration with industry.

Moving forward, there was a call for greater guidance from the Ministry of Education, aligning with Vision 2030, of which research disciplines and what industry sectors Saudi universities should be leveraging to increase commercialisation. Across disciplines from computer science to medicine to physics there is no shortage if research talent in the Kingdom, recently accelerated by greater empowerment of women in the labour market. Saudi has the workforce, talent and willingness, so it is the attention to granular detail and constant guidance with the setting of key performance indicators (KPIs) that will shape the achievements of Vision 2030. The government has identified the need for the wider distribution scientific research papers and an increase in the enrolment in those research areas that strengthen the scientific base.

With a robust regulatory framework that reduces red tape, it is also necessary to create the working environment for Saudi innovators to adapt to the needs of enterprise and the commercialisation of their research and development. The Ministry of Education has mandated that all universities have units responsible for the commercialisation of innovation and research. The university's role is to encourage academic freedom and integrity that stimulates Saudi researchers into thinking of which innovations can be both practical and disruptive. The mindset for successful commercialisation is to be a problem-solver, and one who is prepared to fail. Supporting this mindset is the necessary collaboration between institutions and the private sector, while ensuring the necessary capacity building for faculties, especially with digital transformation.

An 11% rise in patent applications in the last year indicates a surge in innovation, with trademark registrations also increasing by 26%, as entrepreneurs focus on protecting their ideas. The Saudi Authority for Intellectual Property (SAIP) seeks to make sure patent registrations are completed in a year, encouraging innovators to keep the venture incubators within the Kingdom. Furthermore, innovators will be able to communicate with SAIP via intellectual property consulting clinics and a network of support centres across the Kingdom are there to provide technical know-how for innovators.

- End

For further details or copies of this report, please contact john.glassey@brains.global

APPENDICES

APPENDIX A



Higher Education Skills, E-Learning, Innovation & Vocational

Opening Statement Dr. Hajar Binasfour





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Why it is time we INNOVATE and LEAD?

effective implementation through Vision Realization Programs. **Ambitious Nation** Thriving Economy **Vibrant Society** Enhance government Grow & diversifu Strengthen Islamic effectiveness & national identity the economy Enable social Offer a fulfilling Increase Level 1 responsibility employment & healthy life **Overarching Objectives** Level 2 **Branch**" Objectives" 0 Level 3 **Strategic Objectives** Doyof Al Rahman Health Sector National Industry Quality of Life **Housing Program Financial Sector Public Investment Privatization Program** Human Capability **Fiscal Sustainability** National Transformation Development & Program Program **Development Program** Program Program **Fund Program** Development Program Transformation Logistics Program Program

The Vision was cascaded into **strategic objectives** to enable



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