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An E-Coaching Methodology for Higher Education in Saudi Arabia

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***Abstract*—** It is widely accepted that university students must acquire new knowledge, skills, awareness, and understanding to increase opportunities for professional and personal growth. The study reveals a significant increase in users engaging in e-coaching activities and a growing need for it during the COVID-19 pandemic. The paper proposes an e-coaching methodology for higher education in Saudi Arabia to address the need for effective coaching in the current online learning environment.

***Keywords*—**Role of e-coaching, e-coaching in higher education, Saudi higher education environment, e-coaching methodology, importance of e-coaching.

I. Introduction

THE internet and its related technologies have transformed communication and access to information, enabling cooperation and communication between people regardless of their geographical location. According to Statista (2022), there are more than five billion internet users worldwide which equates to 63.1% of the global population [17]. Hence, organizations and universities are focusing their attention on how to benefit customers/students through the internet and related technologies. Moreover, to remain competitive in today's workforce, it is necessary for people to continue to develop their academic and social skills. However, traditional technologies and applications only offer limited access to information. To address this issue, technology such as e-coaching can ensure students receive the assistance they need in a timely manner which will result in them achieving good grades and improving their learning skills. Therefore, there is a need to develop cutting-edge applications that will support organizations and their structures, hence breaking the difficulties into controllable stages [1]-[3]. Ground-breaking technologies such as e-coaching can quickly track the public's acceptance of continual change in this increasingly complicated environment. E-coaching is largely associated with speed, accessibility and convenience.

The aim of this paper is to propose an e-coaching methodology for the higher education environment in Saudi Arabia, as educational excellence is fundamental to the growth and development of all countries. Higher education is the basis of a progressive workforce. Therefore, revolutionizing educational programs and investigating the factors that impact students are important for educational institutions and teachers. Moreover, several studies indicate that students learn best when engaged in learning experiences rather than passively receiving information [3], [6].

II. Research Methodology in the Context of Saudi Arabia

Higher education institutions aim to equip students with the education and training they need to secure their future careers and also to meet labor market needs. Therefore, a foundation year at university is designed to prepare students for entry into the first year of their chosen undergraduate degree and is deemed crucial. It is believed to be the most important stage in the life of university students, where they are able to acquire and polish their skills and choose their academic major. As the first year is highly crucial and demands full devotion and attention from the high-ranking authorities of the universities for preparation, progress, and restoration, so they can they can enhance their learning at the university and able to find a job in their perspective fields [4], [5].

The foundation year, comprising the first two semesters for King Abdulaziz University students in the Kingdom of Saudi Arabia, was introduced in 2008. The institution recognizes the benefits for pupils when they enroll in this transition phase from secondary school to university. The aim of this stage is to introduce pupils to the university setting, enhance their self-confidence, and strengthen their abilities in biosciences, computer sciences, and communication skills. It helps elevate their thinking and enables them to acquire knowledge and skills [4], [6].

In light of the development of educational resources both throughout the realm in general and specifically at King Abdulaziz University in the Kingdom of Saudi Arabia, it is necessary to design a new foundation year for university students, which encompasses new goals to empower pupils to determine the most suitable College Enrolment Allocation (CEA) approach, involving technical and research opportunities, and acquiring research and development abilities. CEA is the procedure where students choose their future college of choice after passing the foundation year [4], [6]. So, taking into consideration the pupils' requirements and the grades they have attained during their foundation year, the higher education institution ranks students and assigns them to various colleges. Hence, there is fairness and equity in the placement of students in colleges which ensures they are assigned to colleges that match their academic aptitude. Students are also required to acquire the basic skills needed in

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the new technological era, as per the vision of Saudi Arabia 2030 [5], [6].

III. Education environment in Saudi Arabia

The Kingdom of Saudi Arabia was established in 1932. At this time, it was an impoverished nation with a very small educational program comprising 12 schools with 700 pupils in attendance. However, with the discovery of massive quantities of crude oil reserves in 1938, the Kingdom's circumstances changed significantly. By 1950, there were a total of 365 schools with 42,000 pupils enrolled. In 1954, the Ministry of Education was established; however, at that time, the education system was only accessible to male members of society and there were no educational institutions for females. In 1957, it was recognized that there was a need to open a university for Saudi students instead of sending them overseas to acquire a tertiary qualification. Therefore, King Saud University was opened in Riyadh, the capital of Saudi Arabia [7]-[9]. In 1959, King Saud sought support from the Kingdom's religious scholars to commence an education program for girls, leading to the opening of the first school for girls in Riyadh in 1960 [3]-[15]. Thus, both boys and girls were offered educational opportunities in schools which separated students by gender.

Today, education from the elementary to secondary level is free for both Saudi and non-Saudi students. However, higher education is only available for Saudi citizens, and students are paid stipends for enrolling in higher education programs. Even though students are remunerated for enrolling in schools and educational institutions, the literacy rate remained low in Saudi Arabia, particularly in the case of women. The estimated literacy level in 2003 was 78.8%: 84.7% for men and 70.8% for women [16].

After the launch of King Saud University in 1957, six other higher education institutions were established in Saudi Arabia over the following two decades as listed in Table I. As there were now a total of seven universities in Saudi Arabia, it was necessary to establish the Ministry of Higher Education.

TABLE I
Universities in Saudi Arabia offering a foundation year

University name	Foundation year
Islamic University	1961
Um Al-Qura University	1967
Imam Muhammad Bin Saud Islamic University	1974
King Faisal University	1975
King Fahd University for Petroleum and Minerals	1963
King Abdul-Aziz University	1967

The Ministry of Education is responsible for managing all higher education affairs such as:

- Proposing the establishment of higher education institutions and empowering them to launch special programs to meet the nation's needs.
- Establishing and managing universities and colleges in the Kingdom
- Improving communication and coordination between higher education institutions and governmental ministries and agencies in relation to higher education.
- Representing the government overseas in relation to all education and cultural matters.

The Ministry of Higher Education is a central authority that manages higher education matters in accordance with the adopted policy, overseeing the progress of higher education in all sectors, coordinating institutions especially in the field of science, supporting research, and framing rules and regulations to ensure compliance by all higher education institutions [7], [9]. Higher education in Saudi has undergone significant change and expansion over the last 10 years and now includes:

- 80 Primary Teachers' Colleges for Women
- 37 Colleges and Institutes for Health
- 12 Technical Colleges
- 23 Government-run Higher Education Institutions
- 18 Primary Teachers' Colleges for Men
- 33 Private Higher Education Institutes and Colleges

IV. The Need for e-Coaching in Saudi Arabia

In the first six months of 2020, people across the globe encountered an unforeseen opponent in form of a contagion, COVID-19. To try and stem the spread of the pandemic, the majority of the global population were required to alter their social and daily practices, ranging from personal routines to organizational and out-of-doors or communal customs. The majority of nations enforced significant changes to comply with the rules and regulations to safeguard societies from suffering from the pandemic.

Universities played a key role in managing the pandemic. At the beginning of the pandemic, online distance learning (ODL) was not widely utilized. However, the COVID-19 pandemic forced educational institutions to adopt online methods of teaching and learning which were necessary to ensure the continuity in order to strengthen the educational institute brand and to support students in their learnings. Hence, during the pandemic, the majority of tertiary students had no other option than to use the pioneering online information and communication technologies (ICTs) to continue their educational activities in a safe way and in compliance with social distancing. It is irrefutable that IT applications enriched by internet technologies played a key role in the swift progression of e-learning. However, the immediate implementation of these virtual technologies during the pandemic may have had several adverse impacts on students' lives, as there were many problems that could have hindered and discouraged students who were learning online [12], [13].

During the COVID-19 lockdown, the Saudi Ministry directed all universities to send their students home and notify them that all teaching and learning activities would be conducted virtually until further notice. Hence, to ensure the safety of all participants, ODL, also known as e-learning, was implemented. Virtual education is the best way for both learners and teachers to engage in an educational exchange during a prolonged movement control order. Universities and other public and private higher education institutes had to reflect on how they could continue to provide quality education services with minimum contact, and virtual learning was the only

feasible way [11], [13]. However, many key factors needed to be taken into consideration, such as internet speed, coverage, and time limitations encountered by both teachers and learners.

Furthermore, pupils had to adapt to the new normal as the pandemic impacted social activities and health. The education system comprises many aspects such as teachers, learners, the syllabus, academic resources and services that need to be managed carefully to guarantee the best educational results. Furthermore, the procedure of knowledge building requires model integration. According to several researchers [10], [11], [13] a few of these models are intellectual structuralist in their approach, which depends on communications and stimuli from a close environment. An intellectual structuralist approach enables computer-supported collaborative learning (CSCL) settings to be tools for encouraging learning by proposing discrete knowledge and successively regrouping knowledge during the social interaction process. Intellectual structuralism focuses on the inter-subjectivity and co-building of knowledge instead of the discrete element of knowledge-building. Hence, the aim of this research is also to embrace and develop notions of an integrated inspired model for feasible and strong virtual learning [10], [12].

Adjusting to virtual learning is challenging, particularly in response to the unexpected outbreak of a pandemic like COVID-19 [13]. Research [13] has found that both educational staff and learners encountered many problems in navigating ODL and using ICT platforms, such as unfamiliarity with IT platforms; restricted internet access; less experience in tackling virtual learning platforms (with reference to learner participation), interactivity and involvement; lack of practice to evaluate virtual learning outcomes, and less expertise in framing online course content or adapting courses from classroom to online styles. Other issues are pertinent to the educational institute culture, such as inadequate student involvement during virtual sessions, and communally disheartened learners. The following sections of this research highlight the virtual learning technologies that have evolved during the recent pandemic.

Education has shifted into a new stage with the implementation of distance learning and the influence of technology on communication. Technology has transformed the way humans interact via the online world which offers benefits like enabling people to get to know each other or to connect without meeting in person. It also means that schoolrooms have the potential to become vibrant online environments as a result of the lack of limitations in the online world which can be easily altered and adjusted to meet the requirements of the learners. Individuals from anywhere in the world can join the online space, creating diverse schoolrooms comprising learners from one nation or several nations [10]-[12]. With the outbreak of the pandemic, people became physically distant but digitally close in many settings.

During the pandemic, Oraif, and Elyas informed that social media involvement had risen by 61% compared to the average rates [10]. In relation to education, the digital world has the potential to change the schoolroom with its convenience, extensive digital settings, and the capacity to enable learners to network with contemporaries and teachers from other parts of the world. Hence, digital education or distance learning can be defined as open. The new distant learning has its own culture, philosophies and mechanisms. However, not everyone, including both educators and students, is familiar with it. Therefore, this "abrupt transition from regular customary classes to virtual classes has presented learners and instructors with major challenges" [11]. Hence, it has given rise to many problems such as issues with many virtual teaching platforms, inadequate expertise in the use of these online platforms, and compromised internet connectivity. Therefore, the e-coaching learner involvement is a key aspect to consider when developing a course, particularly with the objective of improving learning outcomes. Understanding the learners' engagement level is useful for educators when they teach different learners or are planning the classroom setting. The result of this study found that there is a need to investigate engrossment at the macro level [11]. For instance, the National Survey of Student Engagement (NSSE) conducted at Indiana University examined whether the organization's program and practices have a favorable impact on the students' activities, results, and involvement [10].

College graduates have many skills they can use when they join the workforce. A few of the skills which are highly in demand are text code, text design specifications, and the ability to solve challenging problems. Graduates should possess five skills to succeed in the workforce, namely communication, teamwork, technical skills, reasoning, and research coordination. Keep in mind that only one of these five skills emphasizes technical problems in software engineering, these problems could be solved through e-coaching [10], [13], [14].

In Saudi Arabia, most first-year university students face many challenges such as homesickness as many are from regional areas and this adversely impacts their learning. Another key challenge is learning how to effectively learn in the tertiary environment as part of their transition to college or university life. Poor physical and mental health also has an impact on student learning. Many students who are feeling homesick or anxious are reluctant to go to the university's counselling services. These and many more challenges can be addressed through e-coaching.

V. An E-Coaching Methodology for Higher Education in Saudi Arabia Environment

The practice of e-coaching in management education is becoming more common. The existing research has examined the prevalence of training practices in management education, however scant research has investigated the influence of faculty-student coaching (FSC) on the outcomes of learning. Customarily, the primary focus in management education has been on imparting knowledge, however, there is a lack of evidence that validates the position that e-coaching as a learning approach is helpful in imparting knowledge. Hence, we investigate why business institutions continue to employ FSC. The continual use of FSC seems to be centered on the supposition that it works. We hypothesize that this is due to the unstable nature of management education. We suggest that

when observed via the lens of academic entrepreneurship, the development of FSC, regardless of the absence of a documented evidence base, can be better grasped.

There are many aspects that may impact the implementation of coaching within business and educational institutions. The discussion is focused on the United States and the United Kingdom environment, as a lot of available research has emerged from these areas. However, it is suggested that encouraging equality among all education staff and students could improve the students' learnings and satisfaction of staff.

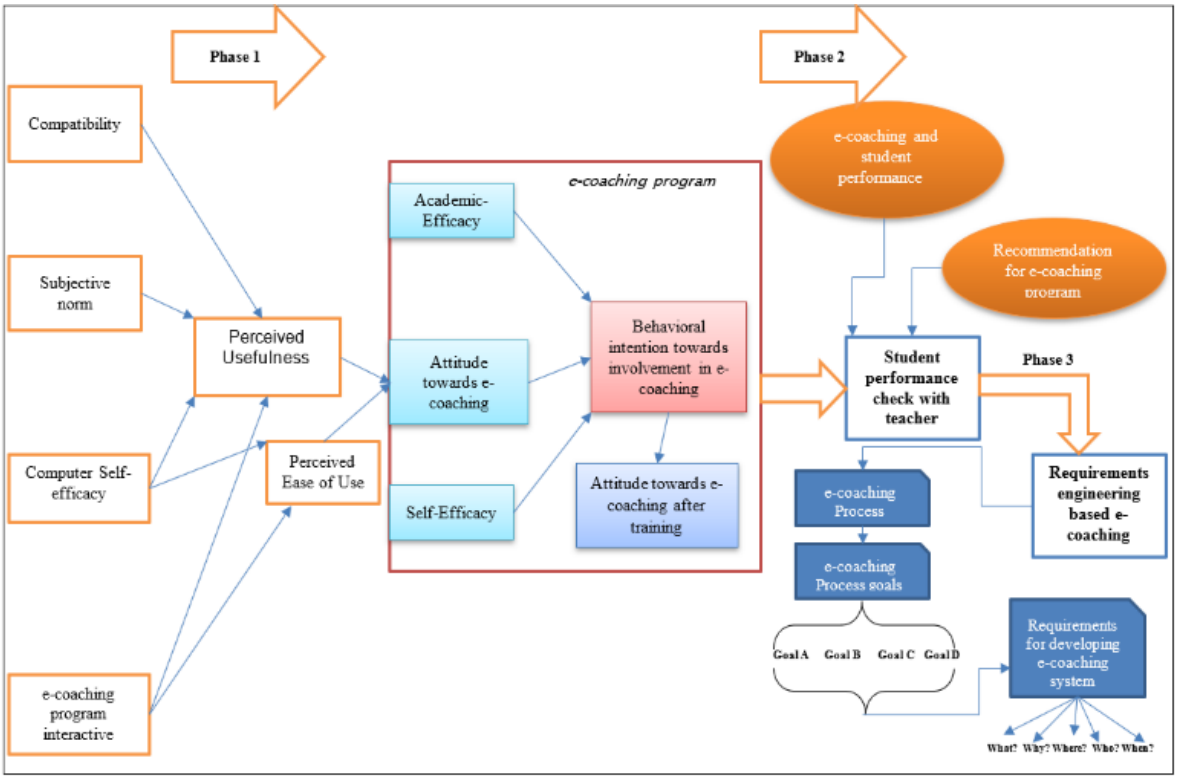

Fig. 1 Overview of the e-coaching methodology

Research and development in relation to e-coaching is investigating many key issues and challenges, which motivates us to undertake this proposed research. These issues and challenges are related to many aspects of learning and the development of a suitable e-coaching system for managing students' performance. This research is divided into three phases and an overview of the research methodology is presented in Fig. 1.

Phase 1 of this research is quantitative research and is completed in two levels. In level 1, the following six factors are extracted from the literature: "compatibility", "subjective norm", "computer self-efficacy", "e-coaching program interactive", "perceived usefulness" and "perceived ease of use". Each factor in level 1 is further divided into sub-factors, as shown in Fig. 2. In this level, we check and evaluate the student's attitudes toward e-coaching.

Coaching is regarded as a method of equipping pupils with the knowledge and skills they require for their personal development and to become more effective. The reason for this is that often, trainees are not technical specialists in the trainee's occupational area of specialization [1]-[3]. It is imperative that trainers are adequately skilled, knowledgeable and qualified in the trainee's area of specialization. Therefore, phase 2 of this research is to collect data using focus groups. Focus groups were initially used in communication studies to discover the impacts of movies and TV programs and are a commonly used technique in evaluating health awareness messages and assessing the public's knowledge about disease and healthy habits. They are also widely used to survey the public's familiarity with illness and health services and are an effective approach to study the behaviors and requirements of teams. Fig. 3 presents the factors considered during the focus group interviews and the factor loadings.

In phase 3 of this study, we use a business process modeling approach to collect education requirements, which could help the developers to develop a suitable system which meets the need of any educational institute and supports the e-coaching program with the main learning system of the institute. In this phase, we take one of the educational processes in Saudi Arabia and show how to model the process and obtain system requirements from the process.

VI. Conclusion

This paper discusses the interpretation and development of the research methodology and emphasizes active learning, and other scholarly engagements such as tutorials, and online journals. However, it does not focus on individual courses,

rather it evaluates the learner's overall views. Based on this, we designed a scale to measure class attendance and activities, as the instructor will have an instant impact on the students' conduct and their attitude in class. Therefore, the above-mentioned research methodology recommends that pupils should spend less time in online learning scenarios and more time in face-to-face learning environments. Concerning the existing circumstances in Saudi, a requirement to survey learners' engagement in a virtual class is deemed as urgent as it is a recent phenomenon that will result in an immediate shift in education compared to the education settings before the outbreak of the pandemic.

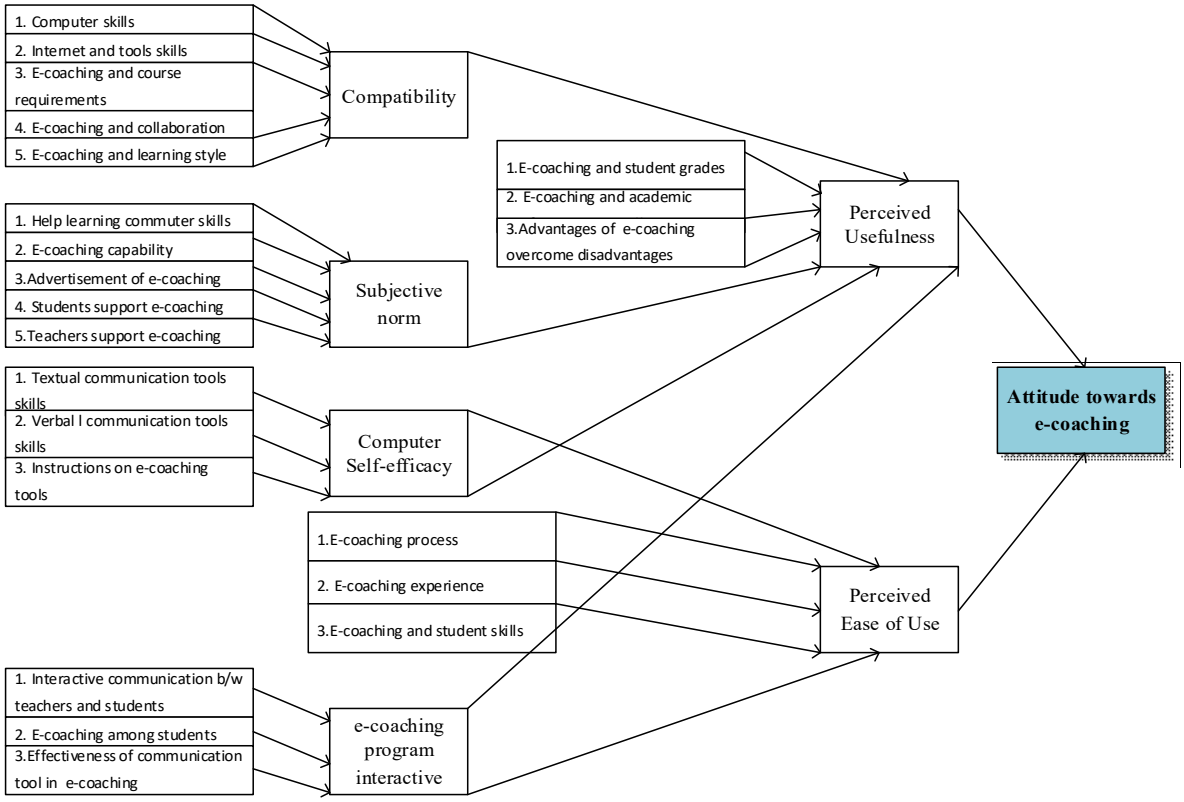

Fig. 2 Quantitative study phase 1

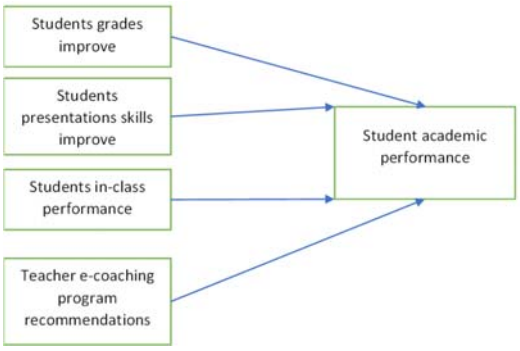

Fig. 3 Focused study phase 2

Take an example of undergraduate students, several undergraduate computer science programs aim to prepare graduates for a role in the software development industry in Saudi Arabia. However, industry often feels that students joining the workforce directly after graduating from university lack the comprehensive software development skills required by software development organizations. While many research studies, [13], [14], acknowledge the expense of training software developers to cope with the pace of a project or to meaningfully participate as a new team member, there is little evidence on the types of needs that graduates have when they join their first software development team. This research methodology highlights what may happen at the start of the evolution phase from a college graduate becoming an accomplished software engineer and this could be achieved through e-coaching [13], [15].

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