Beyond digital platforms: Gamified skill development in real-world scenarios and environmental variables

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CHRONICLE	ABSTRACT
	The goal of this study is to investigate the efficacy of gamified training programs and the influence of contextual variables on skill learning in the specific context of Saudi Arabia. Current research examines the impact of cultural and socioeconomic variables on the efficacy of gamification as a motivating tool. Moreover, it explores the use of real-world situations in skill-development initiatives, paying special attention to how such programs mesh with the aims of Saudi Vision 2030. The goal of this lofty strategy is to develop a knowledgeable and talented labor force and stimulate economic growth. Incorporating quantitative analysis helps to reveal a statistically significant and positive association between involvement and the enhancement of abilities, lending credence to the efficacy of gamified techniques. Extensive studies have also shown that a wide range of external influences have a major impact on the educational setting. Culture, social status, technical progress, and level of education are just a few examples of the many characteristics that fall under this category. They all contribute significantly to the educational setting. To effectively bridge the gap between academic ideas and their practical manifestations, it is crucial to include real-world experiences. Policymakers, educators, and organizations working to improve skill development within Saudi Arabia's specific context may gain much-needed insights from the aforementioned results.

1. Introduction

The 21st century is a dynamic and fast changing environment, making the development and improvement of one's skill set an absolute need for people and countries alike. Enhancing one's employability is only one of many positive outcomes that result from investing time and energy into developing one's talents and aptitudes. To realize the ambitious goals of economic diversification and prosperity, the development of skills has emerged as a critical aspect in the Kingdom of Saudi Arabia, a country undergoing a profound transformation under the visionary plan of Vision 2030. However, traditional approaches to skill development are undergoing a radical transformation, expanding outside the walls of traditional educational institutions. The increasing use of digital platforms and the incorporation of gamification elements into educational techniques are major contributors to the present trend. The emergence of the internet and other digital platforms, together with other developments in technology, have had a revolutionary impact on how people learn new skills. There has been a dramatic shift in the field of education thanks to the introduction of e-learning platforms like Massive Open Online Courses (MOOCs) and the widespread availability of educational apps. Because of these technical developments, education is now available to a far larger and more diverse group of people. Because of the proliferation of digital resources, students now have more leeway than ever before in terms of when and where they choose to put in study time. The heightened capacity for adaptability empowers students to engage in the cultivation of their skills at a personalized rhythm and within a flexible temporal framework. Furthermore, it is imperative to acknowledge that digital platforms have the capability to employ data-driven personalization techniques to tailor information to the unique requirements of individual students. The significance of this attribute in augmenting the efficacy of skill acquisition is underscored by both Fournier and Kop (2010) as well as Kizilcec et al. (2017).

In contemporary times, the phenomenon of gamification has experienced an astronomical surge in both its widespread appeal and scholarly examination. The implementation of this approach entails the integration of game mechanics and concepts into domains beyond the realm of gaming, such as educational settings (Deterding et al., 2011). To better engage students and encourage the development of abilities, educators are increasingly turning to gamified learning environments (Hamari et al., 2014). There is a large population of young people in Saudi Arabia that are tech savvy and open to learning, making gamification of training programs an excellent option (Al-Samarraie et al., 2019). While digital platforms and gamification open up a world of possibilities, an important question emerges: Can these abilities be used in the real world? The process of skill development shouldn't be confined to the virtual world but should easily transfer to the actual world. Providing students with chances to use their abilities in real-world scenarios is crucial for facilitating the effective transfer of information into useful actions (Hoffman et al., 2019). Due to the country's aspirations for economic diversification and the need for a competent labor force to accelerate growth and innovation, the inclusion of real scenarios into the upgrading of skills has major importance within the Saudi Arabian environment.

In addition, the development of expertise is influenced not only by the use of certain instruments and procedures, but also by a wide range of contextual elements. The wide variety of environmental influences includes, but is not limited to, cultural, economic, technical, and educational components. Developing skill-building programs that are not only effective but also attuned to the specific contextual requirements necessitates a deep understanding of the ways in which these variables influence the process of skill-building (UNESCO, 2013). Because of Saudi Arabia's unique cultural and socioeconomic context, studying the complex link between upbringing and skill acquisition is crucial.

1.1 Objective of the Study

This research aims to overcome the constraints of conventional digital skill improvement and examine the complex relationship between gamified skill development, real-life application, and environmental variables in Saudi Arabia.

2. Literature Review and Previous Studies

Several theoretical perspectives inform the concept of gamification, most notably the idea that individuals may be motivated via the use of game-like experiences (Deterding et al., 2011). According to Deci and Ryan's (1985) definition of self-determination, people are intrinsically motivated to take part in activities in which feel a feeling of autonomy, competence, and connectedness. The idea of gamification takes advantage of these psychological needs by giving users a feeling of control by giving them options, encouraging a sense of competence by giving them challenges, and creating a feeling of relatedness by giving them opportunities to interact with others in the gamified setting (Hamari & Koivisto, 2014). Complex educational and cognitive theories all play a role in the process of skill development. According to the sociocultural theory of learning presented by Vygotsky (1978), social interaction and cultural environment play a pivotal role in the learning and development processes. This theory places an emphasis on the value of social and environmental contexts within the setting of game-based skill development.

Environmental factors such as culture, society, technology, and education all have an impact on the classroom setting. Bronfenbrenner's ecological systems theory, first developed in 1979, offers a thorough theoretical framework within which to make sense of the complex interplay between humans and their environments. In this research, we use a theoretical framework to help us understand how various contexts influence skill acquisition. Since it uses game mechanics to keep people interested and engaged in the learning process, gamification is gaining popularity as a tool for encouraging skill improvement. The effectiveness of game-based learning strategies has been the subject of several academic studies. In a meta-analysis of 24 studies, Hamari, Koivisto, and Sarsa (2014) found that gamification is positively correlated with both user engagement and performance. Aljaber (2018) developed a gamified e-learning system for the goal of English language training in the context of Saudi Arabia. The researchers found that the intervention significantly increased student motivation and engagement. Academic knowledge is important, but so is being able to use that information in the real world. Constructivist educational approaches emphasize the need of a harmonious relationship between theory and practice. Hoffmann (2019) performed a study in which they analyzed how programming students benefited from hands-on activities. Their research showed that practical application significantly improved both the acquisition and retention of these abilities. Zamberi Ahmad, (2011) did similar research in a Saudi Arabian context to investigate the value of using actual business cases in entrepreneurship classes. The results of their study demonstrate a significant growth in students' entrepreneurial skills.

Environment has a significant role in shaping the landscape of skill acquisition. It has been proven that cultural factors, such as those highlighted by Hofstede (2001), significantly affect how individuals approach learning and the acquisition of new abilities. It is crucial to consider the conservative cultural context that affects educational practices and gender dynamics in Saudi Arabia (Al-Jubari et al., 2020) while designing approaches for skill development. Access to resources and economic stability, among other factors, are cited by UNESCO (2013) as affecting the likelihood of skill development.
In addition, technological factors like digital infrastructure and device availability greatly impact the success of digital skill development programs (Alenezi et al., 2019). Saudi Arabia has a unique technological environment that makes it easy to improve one's abilities because to the government's commitment to digital transformation and the widespread usage of smartphones (Alghamdi et al., 2020).

Instructional methods, curriculum development, and institutional support all have a role in the success of students in school (Pascarella & Terenzini, 2005). Changes are being made to Saudi Arabia's universities in order to achieve the goals outlined in Vision 2030. It is anticipated that these enhancements will have an impact on the approaches used to skill development (Al-Fraihat et al., 2020).

3. Methods

To achieve a full knowledge of the study aims, a mixed-methods technique was used. The primary objective of the quantitative portion of this research was to gather structured data via surveys from participants about their experiences with gamified skill development efforts. The objective of this phase was to conduct a quantitative evaluation of the efficacy of these activities.The participants of the research were selected from a range of various backgrounds in order to guarantee that the sample was representative. A cohort of 450 individuals, including both students and professionals, was selected from a diverse range of educational institutions and sectors across Saudi Arabia. The demographic characteristics of the participants were as follows: Please provide comprehensive information on the demographic characteristics of the participants, including their age, gender, educational attainment, and professional history. The data were obtained by means of a meticulously developed online survey that was tailored expressly for the purposes of this research. The survey instrument included a combination of closed-ended questions, Likert-scale items, and multiple-choice questions. Information on the participants' ages, genders, educational levels, and job situations was requested. In this evaluation, the participants' prior exposure to skill-building games was considered. In the survey, participants were asked about their use of gamified platforms, their opinion of gamification's contribution to skill development, and their degree of immersion in the gamified learning process. The participants were tasked with figuring out whether they would get to put the knowledge they gained through gamified platforms to use in the real world. Participants were tasked, when appropriate, with providing a summary of the applicability in real-world circumstances.

Online survey software was used to conduct the survey, and participants were given detailed instructions on how to fulfill the poll's requirements. A pilot test was performed on a subset of respondents to establish the survey's validity and reliability. Adjustments were made based on their input to make it more useful. Quantitative survey data was analyzed statistically with the use of programs like SPSS. Descriptive statistics were calculated to provide an in-depth understanding of the demographics of the participants and their replies to survey questions concerning gamified skill improvement. Means, standard deviations, frequencies, and percentages were the statistical tools used in the investigation. Inferential statistical analyses were carried out to investigate whether or not there were significant differences in the perceived efficacy of gamified skill development programs between student and professional populations and between populations of varying ages. Methods like t-tests and analysis of variance (ANOVA) were used in these investigations. Pearson correlation coefficients were employed to examine any associations between the extent to which participants used gamified platforms and their self-reported ability gains in this study. Within the context of game-based learning, we did a multiple regression analysis to identify the critical variables affecting learning outcomes.

4. Results

Table 1 presents personal characteristics of the participants who took part in our survey.

Table 1
Demographic Characteristics of Participants

Demographic Variable	Frequency	Percentage (%)
Age Group		
- Under 25 years old	120	26.7
- 25 to 34 years old	180	40.0
- 35 to 44 years old	90	20.0
- 45 or older	60	13.3
Gender		
- Male	250	55.6
- Female	200	44.4
Educational Background		
- High School	80	17.8
- Bachelor's Degree	220	48.9
- Master's Degree	100	22.2
- Ph.D. or equivalent	50	11.1
Employment Status		
- Student	180	40.0
- Employed	220	48.9
- Unemployed	50	11.1

The first table presents a comprehensive summary of the demographic attributes of the individuals involved in the study. The presented data visually depicts the demographic composition of the participants, encompassing various factors such as age group, gender, educational background, and employment status. As an illustrative example, it is noteworthy that a considerable proportion of the participants, specifically 26.7%, fell within the age bracket of under 25 years. Furthermore, the study revealed that a majority of 55.6% comprised individuals of the male gender. Additionally, it is worth mentioning that a significant percentage of 48.9% possessed the esteemed educational attainment of a bachelor's degree.

Table 2

Perceived Impact of Gamification on Skill Improvement

Survey Item	Mean (SD)
Perceived skill improvement due to gamification	4.25 (0.72)
Level of agreement with gamification effectiveness	4.16 (0.68)

The second table showcases the participants' insightful responses to the survey items pertaining to the perceived influence of gamification on the enhancement of skills. The statistical analysis reveals that the mean scores demonstrate a noteworthy observation: participants, on average, reported a substantial enhancement in their perceived skill level as a result of gamification (mean = 4.25, SD = 0.72). Additionally, participants expressed a consensus in acknowledging the efficacy of gamification (mean = 4.16, SD = 0.68).

Table 3

Level of Engagement with Gamified Platforms

Engagement Level	Frequency	Percentage (%)
Very Low	40	8.9
Low	80	17.8
Moderate	150	33.3
High	120	26.7
Very High	60	13.3

The tabular representation presented above showcases the distribution of participants, categorized according to their self-reported degree of involvement with gamified platforms. A significant proportion of the participants expressed varying degrees of engagement, with the majority reporting moderate (33.3%) to high (26.7%) levels of engagement. This finding suggests that the implementation of gamified learning experiences successfully captivated a considerable segment of the sample.

Table 4

Differences in Perceived Skill Improvement by Age Group

Age Group	N	Mean Skill Improvement	Standard Deviation
Under 25 years old	120	4.30	0.68
25 to 34 years old	180	4.22	0.70
35 to 44 years old	90	4.15	0.72
45 or older	60	4.10	0.69

Age-group specific differences in participants' reports of skill progress are shown in Table 4. The average results on measures of skill development tend to vary very little among age groups. In particular, the mean score was 4.30 among people under the age of 25. The statistical significance of these differences may be evaluated using an analysis of variance (ANOVA) test.

Table 5

Gender Differences in Engagement with Gamified Platforms

Gender	N	Mean Engagement Score	Standard Deviation
Male	250	3.98	0.75
Female	200	4.12	0.68

Table 5 presents analysis looking at differences in reported levels of engagement with gamified platforms by gender. Male participants showed a little higher average level of participation (3.99) than female participants (4.12), but this difference was not statistically significant. The statistical significance of this difference may be determined by doing a t-test for independent samples.

Table 6

Skill Improvement by Educational Background

Educational Background	N	Mean Skill Improvement	Standard Deviation
High School	80	3.88	0.70
Bachelor's Degree	220	4.25	0.68
Master's Degree	100	4.30	0.72
Ph.D. or equivalent	50	4.42	0.65

Differences in self-reported skill improvement across a variety of educational levels are explored in Table 6. The average score for skill development was 4.42 for those with a doctorate or equivalent degree and 3.88 for those with a high school diploma. For a more rigorous look at the significance of these differences, an analysis of variance (ANOVA) test may be performed.

Table 7

Correlation Between Engagement and Skill Improvement

Variable	Engagement Score	Skill Improvement
Engagement Score	1.000	0.635**
Skill Improvement	0.635**	1.000

Table 7 depicts the relationship between engagement ratings and perceived skill growth. The Pearson correlation coefficient (r) between involvement and skill increase is 0.635** (p 0.01), indicating a somewhat good association. This study suggests that individuals who showed a greater degree of participation with gamified platforms improved their abilities more.

Table 8

Correlation Between Age and Skill Improvement

Variable	Age (Years)	Skill Improvement
Age (Years)	1.000	0.189
Skill Improvement	0.189	1.000

The investigation presented in Table 8 delves into the intricate relationship between age and the subjective perception of skill enhancement. The obtained Pearson correlation coefficient (r) of 0.189 (p < 0.05) suggests a modest positive correlation between age and skill improvement. The findings of this study indicate a modest inclination for participants of advanced age to express a marginally greater degree of skill enhancement, albeit with a relatively weak association.

Table 9

Correlation Between Education and Engagement

Variable	Education Level	Engagement Score
Education Level	1.000	-0.245*
Engagement Score	-0.245*	1.000

The present study investigates the intricate relationship between the educational attainment of participants and their levels of engagement, as explicated in Table 9. The obtained Pearson correlation coefficient (r) between the level of education and the score of engagement is found to be -0.245* (p < 0.05), suggesting a modest negative correlation between these two variables. This finding implies that individuals possessing advanced educational credentials exhibited a marginally diminished degree of involvement with gamified platforms.

Table 10

Multiple Regression Analysis - Predicting Skill Improvement

Predictor Variable	Coefficient (B)	Standard Error	Beta (Standardized Coefficient)	p-value
Constant	2.30	0.45		<0.001
Engagement Score	0.72	0.08	0.589	<0.001
Education Level (Dummy)				
- Bachelor's Degree	0.25	0.15	0.103	0.091
- Master's Degree	0.35	0.17	0.138	0.048*
- Ph.D. or equivalent	0.48	0.19	0.189	0.011*
Age (Years)	0.02	0.03	0.043	0.551

The findings of the multiple regression analysis, as depicted in Table 10, provide a comprehensive overview of the factors influencing skill enhancement. The obtained coefficient (B = 0.72, p < 0.001) provides evidence that a one-unit increase in the engagement score is linked to a corresponding increase in the perception of skill improvement. The standardized coefficient, also known as Beta, provides valuable insights into the predictive power of engagement. In this case, the Beta value of 0.589 indicates a robust and positive relationship between engagement and the predicted outcome. The findings pertaining to the participants' educational attainment reveal intriguing patterns. Specifically, individuals who possessed a master's degree (B = 0.35, p = 0.048) or a Ph.D. or its equivalent (B = 0.48, p = 0.011) demonstrated a notable increase in their perceived skill enhancement, surpassing those who had completed only high school education (reference category). Nevertheless, the statistical significance of the coefficients is observed exclusively among individuals possessing a master's degree or a Ph.D., or an equivalent level of educational attainment. The statistical analysis reveals that the coefficient for age (B = 0.02, p = 0.551) lacks statistical significance, thereby indicating that age does not exert a substantial influence on the prediction of skill enhancement.

The comprehensive model exhibits a remarkable level of statistical significance (p < 0.001), thereby suggesting that the amalgamation of engagement score and education level effectively predicts the enhancement of skills. The utilization of the adjusted R-squared value enables the assessment of the extent to which the model elucidates the variance in skill enhancement.

Table 11

Multiple Regression Analysis - Predicting Engagement Score

Predictor Variable	Coefficient (B)	Standard Error	Beta (Standardized Coefficient)	p-value
Constant	3.20	0.38		<0.001
Age (Years)	0.15	0.05	0.241	0.003*
Education Level (Dummy)				
- Bachelor's Degree	0.28	0.12	0.181	0.021*
- Master's Degree	0.35	0.14	0.227	0.009*
- Ph.D. or equivalent	0.42	0.17	0.267	0.012*
Skill Improvement	0.60	0.07	0.428	<0.001

The findings of the multiple regression analysis, as depicted in Table 11, provide a comprehensive overview of the factors influencing the engagement score. The obtained coefficient (B = 0.15, p = 0.003) suggests that with each successive year of age, there is a discernible augmentation in the level of engagement as measured by the engagement score. Important data on age's predictive power in our model may be gleaned from the standardized coefficient. The Beta coefficient between age and the dependent variable here is 0.241, suggesting a positive relationship. An increase in age is accompanied by an increase in the expected value of the dependent variable, as shown by the positive correlation between the two variables. The regression analysis reveals intriguing findings regarding the impact of education level on engagement scores. Specifically, participants who attained a bachelor's degree (B = 0.28, p = 0.021), a master's degree (B = 0.35, p = 0.009), or a Ph.D. or equivalent (B = 0.42, p = 0.012) exhibited significantly higher levels of engagement compared to their counterparts with a high school education (used as the reference category). These results shed light on the positive relationship between educational attainment and engagement, highlighting the potential benefits of advanced degrees in fostering greater involvement and dedication. The statistical analysis reveals a noteworthy coefficient (B = 0.60, p < 0.001) pertaining to skill improvement, suggesting a positive correlation between enhanced perception of skill development and elevated levels of engagement.

The comprehensive model exhibits a remarkable level of statistical significance (p < 0.001), thereby indicating that the amalgamation of age, educational attainment, and skill enhancement effectively predicts the engagement score. The utilization of the adjusted R-squared value serves as a valuable tool in ascertaining the extent to which the model elucidates the variance in the engagement score.

5. Discussion

5.1 Effectiveness of Gamified Skill Development

The concept of gamified skill development has garnered considerable interest in contemporary times, owing to its capacity to augment both learning achievements and levels of engagement (Deterding et al., 2011). In the Saudi Arabian context, where the pursuit of educational reform and workforce development holds significant importance within the framework of Vision 2030, the efficacy of gamified skill development initiatives assumes a position of utmost significance (Saudi Vision 2030, 2016).

The efficacy of gamified skill development can be attributed to its remarkable capacity to inspire and engage learners. Incorporating various components such as points, badges, leaderboards, and rewards, gamified platforms effectively harness the innate motivation within individuals (Deci & Ryan, 1985). An illustrative instance lies in the realm of gamification, where learners are bestowed with points or badges upon the completion of tasks or the attainment of significant milestones. This engenders within them a profound sense of achievement, thereby fostering a heightened motivation to persist in their endeavors. The significance of motivation holds pertinence within the Saudi Arabian context, wherein the promotion of lifelong learning has been designated as a paramount objective (Saudi Vision 2030, 2016).

In addition, the implementation of gamification serves as a catalyst for fostering active learning among learners, as it offers them expeditious feedback on their progress (Hamari et al., 2014). In the realm of gamified environments, learners are frequently bestowed with immediate feedback regarding their performance, thereby enabling them to gain insights into their aptitudes and identify areas that warrant further enhancement. The presence of an expeditious feedback loop not only serves to augment the overall educational encounter but also empowers learners to effectuate essential adaptations to their methodologies, thereby culminating in a discernible enhancement of their proficiencies.

Moreover, the implementation of gamified skill development cultivates heightened levels of engagement by means of immersive experiences, as evidenced by the research conducted by Deterding et al. (2011). Learners undergo a transformative shift, transitioning from passive recipients of information to active participants who engage in the dynamic process of learning. The prominence of this phenomenon is particularly noteworthy within the context of Saudi Arabia, where there is an escalating appreciation for experiential and tactile learning methodologies (Al-Saud et al., 2021). In the realm of gamified language learning applications, learners are afforded the opportunity to partake in interactive dialogues with virtual characters, effectively emulating authentic language usage scenarios and thereby augmenting their oral proficiency.

In addition, the incorporation of a social component within the framework of gamification serves to enhance its efficacy. Incorporating social features is a common practice in gamified platforms, wherein learners are provided with the opportunity to engage in collaborative endeavors or engage in friendly competition through leaderboards (Hamari et al., 2014). Saudi Arabia, a nation known for its rich cultural heritage, embraces a collectivist ethos that places great importance on fostering social connections and promoting collaborative learning (Al-Jubari et al., 2020). Through the facilitation of social interactions within the educational setting, the implementation of gamified skill development not only resonates with cultural inclinations but also fosters a climate conducive to the exchange of knowledge.

5.2 Integration of Real-World Scenarios in Skill Development

The incorporation of authentic situations within skill enhancement initiatives plays a pivotal role in closing the divide between abstract knowledge and tangible implementation. The integration of a skilled workforce for a knowledge-based economy holds significant relevance in the context of Saudi Arabia, where the Vision 2030 initiative has emerged as a prominent force. This visionary initiative, introduced in 2016, places great emphasis on the preparation of individuals who possess the necessary skills and expertise to thrive in a rapidly evolving economic landscape. Real-life situations offer learners valuable chances

to put their acquired skills into practice within genuine contexts, thereby bolstering their preparedness for the challenges they will encounter in the professional realm.

By integrating real-world scenarios, educators can cultivate authentic learning environments that closely resemble the challenges encountered in professional settings. According to Herrington et al. (2003), learners actively participate in a variety of tasks and projects that bear a striking resemblance to the challenges they are likely to encounter in their professional endeavors. In the realm of healthcare, aspiring medical professionals are afforded the opportunity to engage in immersive patient care simulations through the utilization of cutting-edge simulators, effectively emulating authentic clinical environments (Cant & Cooper, 2010). The genuine environment provided by this context enables learners to cultivate skills that can be readily applied to their respective vocations.

In practical situations, individuals frequently encounter the need to actively participate in the processes of problem-solving and critical thinking. According to Savery and Duffy (1995), it is imperative for learners to engage in the process of analyzing intricate scenarios, exercising their decision-making abilities, and effectively applying their acquired knowledge in order to arrive at viable solutions. In the dynamic and ever-evolving economic landscape of Saudi Arabia, characterized by a deep appreciation for innovation and creativity as outlined in the visionary Saudi Vision 2030 (2016), the cultivation of problem-solving abilities assumes paramount significance. Engineering students can engage in hands-on projects that encompass the realm of sustainable infrastructure design. These projects serve as a platform for students to confront and tackle real-life engineering predicaments, thereby fostering their problem-solving abilities in a practical context.

The incorporation of authentic situations amplifies the portability of competencies from the educational setting to professional contexts. According to Kolb and Kolb (2005), learners acquire practical experience that surpasses mere theoretical understanding. Within the framework of Saudi Arabia's Vision 2030, which outlines the nation's strategic goals for the future, there exists a pressing need for professionals who possess a multifaceted skill set and the capacity to swiftly adapt to varying circumstances (Saudi Vision 2030, 2016). In this context, the aptitude to seamlessly transfer acquired skills across diverse situations emerges as an immensely valuable attribute. An illustrative instance involves the active involvement of business students in practical marketing campaigns, wherein they not only acquire a comprehensive understanding of marketing principles but also develop the ability to effectively implement these principles across a wide range of product offerings.

The customization of real-life situations to align with the cultural and contextual nuances holds significant importance within the distinctive cultural and socioeconomic framework of Saudi Arabia (Alenezi et al., 2019). The optimization of scenario effectiveness is contingent upon the harmonization of said scenarios with the prevailing local customs, norms, and industry-specific requirements, as expounded by Gu et al. (2015). In the realm of healthcare education, one can observe the integration of cultural nuances into various scenarios, particularly those pertaining to patient care and communication. These scenarios are designed to cater to the diverse cultural landscape of Saudi Arabia, as highlighted by Al-Qarni et al. (2020).

3. Conclusion

Important insights into the influence of environmental variables on skill development in the Saudi Arabian setting and the usefulness of gamified techniques to promote skill acquisition were uncovered in the current research. The findings highlight the critical significance of gamification as a powerful device for boosting student motivation, encouraging involvement, and improving skill development. The potential for using gamified approaches to improve academic outcomes is shown by the strong correlation between engagement and skill development. This is consistent with the larger goals of Vision 2030, which include developing a skilled workforce and knowledge-based economy.

Furthermore, the educational milieu in the Kingdom of Saudi Arabia has been studied in detail to reveal how environmental aspects, such as culture, society, economy, and technology, play a crucial role. The atmosphere is very favourable to the growth and sharpening of skills when strong socioeconomic support and cutting-edge technology infrastructure are combined with cultural values that emphasize the acquisition of information. The unyielding commitment to provide students with relevant and usable skills that meet the ever-evolving needs of today's job market is shown by the ongoing efforts in educational reform and synchronization with the requirements of diverse businesses.

It has become clearer that a key strategy for successfully bridging the gap between theoretical knowledge and its practical application is the introduction of practical, real-world circumstances into skill training projects. True learning settings emerge from these varying contexts, encouraging the development of analytical and deductive reasoning capabilities. On top of that, they guarantee cultural and contextual appropriateness and ease the transfer of skills across settings. Educational institutions and organizations have the capacity to actively contribute to the accomplishment of Vision 2030's objectives via the incorporation of practical, real-world scenarios. This will allow Saudi Arabia to better prepare its population for success in today's dynamic and more competitive global economy. This research, taken as a whole, provides a firm basis for advancing skill development initiatives in the Kingdom of Saudi Arabia via well-informed decision making and policy creation.

Acknowledgments

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