JOURNAL ON COMMUNICATIONS

ISSN:1000-436X

Scopus®

REGISTERED

www.jocs.review

Unlocking Higher-Order Thinking and Communication Skills: Saudi Graduates' Engagement in the Labour Market through Graduate and Employer Lenses

Samia Mokhtar Shahpo[1], Samah Z. Ahmad[1], Alaaeldin Ahmed Mohamed Hamid[2] and Abdelrahim Fathy Ismail[2]

[1]College of Sciences and Humanities, Imam Abdulrahman Bin Faisal University, Jubail, Saudi Arabia.

[2]College of Education, King Faisal University, Al Ahsa, Saudi Arabia.

Correspondence: Abdelrahim Fathy Ismail, E-mail: afismail@kfu.edu.sa

Abstract

The study examines the higher-order thinking skills critical for Saudi graduates' employability from the perspectives of both graduates and employers. Using a mixed-methods approach with surveys and interviews at Imam Abdulrahman bin Faisal University, Saudi Arabia, the study identifies three primary categories of thinking skills creative thinking, critical thinking, and future-oriented thinking along with their fourteen associated sub-skills that function as essential tools for effective communication and performance in the labour market. The research finds a strong consensus on the importance of these skills across different academic tracks and highlights a significant skills gap perceived by employers, negatively impacting employability and labour market competitiveness. The study underscores the need for educational reforms aligned with Saudi Vision 2030 to enhance graduates' skill mastery through updated curricula and targeted training programs, aiming to better prepare them for evolving labour market demands and global competitiveness. Beyond its empirical findings, this study highlights a broader human and societal dimension: the aspirations of Saudi graduates striving to find meaningful places within a rapidly transforming labour market. Their voices, together with those of employers, reflect a shared desire for an educational system that not only imparts knowledge but also nurtures the thinking and communication capacities needed for real-world success.

Keywords: Thinking skills, community communication, labour market, university graduates, employers.

Introduction

Education today is increasingly regarded not merely as the acquisition of knowledge but as a critical pathway for securing prestigious and competitive employment both locally and globally, thereby enabling graduates to achieve a quality life. Learners are concerned with whether their education equips them to face a rapidly shifting job market (Timiyo & Sriram, 2021). Policymakers likewise face the challenge of preparing students to thrive in dynamic societies and evolving work environments (Ditsele, 2017). The concept of "employability" captures a graduate's ability to obtain and retain employment commensurate with their education, relying not only on academic knowledge but also on essential skills and confidence (Wickramasinghe & Perera, 2010). Investigating employability is vital, especially in light of skill gaps, transition difficulties into jobs, and disparities such as gender differences within the workforce. Obeidat and Saada (2010) underscore the necessity of higher education systems that cultivate a broad skill set enabling graduates to meet labour market demands, noting the persistent gap between employer expectations and graduate competencies. The rapid

advancement of technology has further reshaped labour market demands, resulting in skill mismatches that lead to costly financial losses and remedial training (Vera et al., 2021). They advocate for updating higher education curricula to emphasize both thinking and technical skills to align with these new realities, as innovation and the acquisition of novel skills become critical.

Various organizations seek to identify professional skills relevant today, with higher education institutions playing a pivotal role in this evolution (Garcia Esteban & Jahnke, 2020; Malkawi, 2020). Kurbanov et al. (2020) highlight the growing importance of IT roles and critical thinking, while acknowledging challenges like labour shortages, workforce migration, and gender bias, emphasizing the promotion of lifelong learning. Authentic learning frameworks, such as those developed by Adriana (2018), demonstrate that graduates often struggle due to outdated curricula and insufficient practical skills, despite students valuing communication, self-management, teamwork, and critical thinking. Saudi Arabia's Vision 2030, aligned with the Human Capability Development Program (2021-2025), prioritizes the cultivation of future-oriented skills to meet labour market requirements (2021). Studies confirm alignment efforts with labour needs but also reveal ongoing challenges in integrating skill-focused curricula (Al-Radhi, 2021; Al-Shahri & Al-Saadoun, 2019; Mohamed, 2020; Al-3awada& Al-Otaibi, 2021). Rapid labour market changes outpace educational adaptability, necessitating greater emphasis on soft skills beyond academic prowess (Atiyba, 2021; Al-Khudhari & Al-Mani, 2021; Azmi, 2019; Al-Murawwi, 2019).

Given these developments, identifying the future-oriented skills essential for workforce readiness and evaluating graduates' mastery of these competencies have become imperative. As a notable institution, Imam Abdulrahman Bin Faisal University holds commendable global rankings, contributing to its launch of the Graduate Attributes Project (2020), designed to ensure congruence between graduate attributes, learning outcomes, and evolving labour market demands in line with Vision 2030 and international standards (Deanship of University Development, 2020).

Global entities, including the ILO and WHO, advocate for frameworks supporting lifelong personal and professional skill development that align with evolving technological and societal demands (ILO, 2021; Joynes & Fenyiwa, 2019). The Middle East faces significant youth unemployment (25.7%), making it essential to bridge skill gaps to ensure education aligns with labour market needs (International Labour Organization, 2021). Scholars argue universities must extend beyond academic teaching to foster technical, life, and thinking skills that enable societal and workforce integration (Ahmed, 2017; Hanfi, 2015; Behnsawy, 2018). In Saudi Arabia, educational expansion without corresponding curriculum reform contributes to workforce mismatch, stressing the urgency for reforms that enhance multifaceted competencies such as language, technical, advanced thinking, and life skills (Mohamed, 2020). Higher-order thinking skills (HOTS) are recognized as crucial for successful labour market engagement. Bridging the gap between technical competence and cognitive abilities like problem-solving, analysis, and decision-making is essential (Qiu et al., 2020; Fedzi & Noor, 2021; Chalkiadaki, 2018). The Fourth Industrial Revolution intensifies demand for creative, critical, and scientific thinking alongside informed decision-making (Mohamed, 2021). The COVID-19 pandemic

further exposed challenges in assessing graduates' skills, highlighting the need for novel evaluation approaches (Andrew & Emma, 2022). Against this backdrop, the present study seeks to identify the HOTS demanded by the Saudi labour market, their level, and the consequences of the gap between the graduates' HOTS and those required in the Saudi labour market. To achieve these objectives and provide a comprehensive understanding of HOTS demanded by the Saudi labour market, the study sought to answer the following research questions. These questions guided data collection and analysis by capturing both the perspectives of graduates and employers within the Eastern Province of Saudi Arabia:

1. What are the most demanded HOTS in the Saudi labour market from the perspective of employers and graduates of Imam Abdulrahman bin Faisal University?
2. What is the level of HOTS required in the Saudi labour market from the perspective of employers and graduates of Imam Abdulrahman bin Faisal University?
3. What are the consequences of the gap between the graduates' HOTS and those required in the Saudi labour market, from the perspective of employers and graduates of Imam Abdulrahman bin Faisal University?

Literature Review

HOTS represent some of the most complex forms of human cognitive behavior, distinguishing humans due to the brain's intricate structure. Various scholars have defined thinking and HOTS in ways that emphasize mental processes involving information preparation, interaction with experiences, analysis, evaluation, and reorganization aimed at understanding or decision-making (Abu Hattab, 1990; Qatami, 2001; Mostafa, 2005). Yousef (2016) specifically defines HOTS as advanced cognitive abilities where learners acquire, store, and reorganize knowledge to achieve specific goals, including analysis, synthesis, and evaluation, which align with Bloom's taxonomy's highest cognitive levels.

The rapid knowledge and technological revolutions, coupled with globalization, have transformed social and economic systems, impacting educational policies and requiring students to develop new skills for successful societal engagement (Chalkiadaki, 2018). These changes have led to the emergence of "twenty-first-century skills," encompassing cognitive abilities to adapt, solve problems, and interact positively in local and global contexts (Mlham, 2017; Joynes & Fenyiwa, 2019). Within these frameworks, HOTS are consistently recognized as essential across educational stages and beyond (Joynes & Fenyiwa, 2019; Hasyim et al., 2019; Qiu & Omojokun, 2020; Andrew & Emma, 2022), especially given recent global crises highlighting the education system's weakness in fostering adaptability, problem-solving, critical analysis, and sound decision-making abilities (Andrew & Emma, 2022).

Saudi Arabia's Human Capacity Development Program (2021–2025), aligned with Vision 2030, emphasizes developing HOTS, such as creative thinking, critical analysis, problem-solving, and adaptability, to meet evolving local and global labour market demands. Multiple classifications of HOTS exist, often rooted in Bloom's taxonomy distinguishing lower-order thinking (remembering, understanding, applying) from higher-order thinking (analyzing, evaluating, creating) (Qiu & Omojokun, 2020). Joynes et al. (2019) identify key twenty-first-

century skill categories including self-development skills (independent thinking, adaptability, planning) and problem-solving/critical thinking skills (analysis, evidence evaluation, logical reasoning).

Other models, such as those by Scott (2015), Fadzi and Noor (2021), and Chalkiadaki (2018), highlight complementary higher-order thinking components like creativity, cognitive flexibility, metacognition, and decision-making, all crucial for future employment. OECD (2017), along with Andrew and Emma (2022), reinforce the urgency of these skills post-COVID-19, emphasizing complex cognitive skills including technological problem-solving, predictive reasoning, mathematical thinking, and metacognitive planning.

The International Labour Organization (2021) presents a comprehensive framework for key future-oriented skills under the impact of COVID-19, listing analysis, critical and creative thinking, strategic planning, decision-making, self-reflection, and organization as foundational. In the Saudi context, Mohamed (2020) stresses developing critical and creative thinking and self-management skills among graduates to meet Vision 2030 goals, while Al-Wutban (2018) underscores critical thinking, problem-solving, innovation, flexibility, and metacognitive skills as essential components of the higher-order skill set.

Based on these frameworks, the literature agrees that university graduates must master three main categories of HOTS to thrive in the future labour market: creative thinking, critical thinking, and future-oriented thinking skills.

Creative Thinking Skills are among the most sought-after life and work skills in the twenty-first century, with demand exceeding supply and development (Ritter et al., 2020). Creativity is defined as "the ability to generate new and original ideas resulting from the interaction between the individual and their environment" (Abu Jado and Noufal, 2007). Various scholars describe creative thinking as a process that involves recognizing changes and gaps, generating hypotheses, producing diverse responses, and unpredictable outcomes (Al-Tamimi, 2016; Hassan, 2013). Ritter et al. (2020) regard creative thinking as a critical 21st-century skill that requires development through cognitive processes like working memory and classification. Creative thinking includes five sub-skills: fluency (generating many ideas), flexibility (adapting and viewing problems from multiple perspectives), originality (producing unique ideas), problem sensitivity (identifying problems others may not see), and elabouration (adding detail to ideas) (Abu Jado and Nawfal, 2007; Al-Tamimi, 2016). Given its crucial role in solving real-world problems, educational systems prioritize fostering these skills to prepare students for complex challenges (Al-Halak, 2010). For example, Neolaka and Corebima (2018) found creative thinking contributed 32% to learning outcomes but noted students struggled with long-term information retention, often focusing only on exam performance.

Critical Thinking Skills involve "making judgments based on considerations and standards" (Ibrahim, 2018), distinct from decision-making or problem-solving (Jrouan, 2007). It is reflective, analytical thinking requiring higher-order skills like analysis and evaluation (Diani, 2017). Major studies consistently identify core critical thinking skills such as analysis, evaluation, discrimination between facts and opinions, decision-making, and hypothesis testing as essential (e.g., Liu & Roohr, 2014; Ibrahim, 2018). In higher education and workplaces,

critical thinking is vital in preparing graduates for lifelong learning and sound decision-making (Shaw et al., 2020; Hoskins & Crick, 2010; Petra & Ab Aziz, 2021). Saudi Arabia emphasizes critical thinking as a compulsory skill across education stages aligned with Vision 2030 and the Prince Mohammed bin Salman Human Capacity Development Program (Ministry of Education, 2021). However, some research highlights students' weak critical thinking levels, indicating a need for improved evaluation and training (Al-Sharif, 2017; Ibrahim et al., 2018; Abdaoui & Grine, 2020).

Future-oriented Thinking Skills remain central to individuals and societies facing rapid change and challenges. Future-oriented thinking helps individuals anticipate, plan, and adapt to evolving conditions with optimism and skill (Aql & Abu Musa, 2019). Definitions by several scholars describe future-oriented thinking as processes involving hypothesizing, synthesizing past and present information to predict and shape future outcomes (Nahaba, 2021; Al-Dosari, 2020; Mousa, 2017). Future-oriented thinking skills are classified into planning, problem-solving, imagining, and forecasting (Nahaba, 2021) or more detailed categories including scenario building and positive future-oriented thinking (Abdul-Hussein, 2020). Studies assessing students' future-oriented thinking skills show mixed results; for example, Nahaba and Aboud (2021) reported high planning and problem-solving skills but moderate imagination and forecasting skills among Iraqi students. Other studies (Hafez & Al-Jubouri, 2019; Al-Huwiti, 2018; Al-Darbaka, 2018) similarly reveal varying proficiency levels influenced by experience, gender, and educational stage. A thorough review of related studies (Blanca-Anaya et al, 2019; Fisher, 2009; Ibrahim, 2018; Jrouan, 2007; Ku & Au, 2021; Liu & Roohr, 2014; Neolaka and Corebima, 2018; Ritter, et al. 2020; Shavelson et al, 2019) yielded a list of key HOTS graduates need for twenty-first-century demands and evolving labour markets. These HOTS are summarized in Table (1).

Table (1) Summary of Key HOTS That Saudi Graduates Need

Main Skill	Sub-skills
Creative Thinking	Fluency, Flexibility, Originality, Problem Sensitivity, Elabouration
Critical Thinking	Analysis, Evaluation, Discrimination, Decision-Making, Argumentation, Inference
Future-oriented Thinking	Forecasting, Imagining, Future Problem-Solving, Planning

Methodology

Research Design

This study employed a sequential mixed-methods design integrating both quantitative and qualitative approaches to examine HOTS among Saudi graduates and their relevance to labour market demands. The mixed-methods framework ensured both breadth and depth of understanding—quantitative data offered generalizability, while qualitative insights explored context and meaning. The study used a descriptive-exploratory model supported by the Delphi technique to identify, validate, and forecast the future skills required for employability in alignment with Saudi Vision 2030.

Research Population and Sampling

The research population comprised all level-seven and level-eight graduating students at Imam Abdulrahman bin Faisal University across various academic disciplines—medical, engineering, and humanities—alongside employers representing corresponding professional sectors. Stratified random sampling ensured proportional representation of different academic tracks. The total quantitative sample included 105 participants: 67 graduates (64%) and 38 employers (36%) who completed the electronic survey. For the qualitative phase, 40 employers and experts were interviewed across the three sectors. Demographically, 32% of survey respondents were from engineering, 48% from humanities, and 25% from medical disciplines, reflecting a 54% representation from scientific fields and 46% from literary specializations. Employer participants represented diverse sectors—20% from medical, 25% from engineering, and 55% from educational fields—providing a balanced cross-section of industry perspectives.

Research Instruments

Two primary instruments were utilized:

1. Electronic Questionnaire:

   A structured questionnaire was developed based on an extensive literature review and expert input. It measured the perceived importance and relevance of 14 higher-order thinking sub-skills grouped under three core categories: creative thinking, critical thinking, and future-oriented thinking. Respondents rated each skill on a three-point Likert scale (important, moderately important, not important) specific to their professional context and academic track. The instrument's content validity was confirmed through iterative expert consultations during the Delphi rounds, and internal consistency reliability was established using Cronbach's alpha, which showed acceptable reliability coefficients for all dimensions exceeding 0.80.

2. Semi-Structured Interviews:

   Individual and group interviews were conducted with employers and academic experts, either face-to-face or online. Questions explored perceived relevance of HOTS, skill gaps among graduates, implications for employability, and recommendations for curriculum enhancement. Interviews lasted between 30 and 60 minutes, were transcribed verbatim, and subjected to thematic analysis to extract recurring patterns and emergent themes.

Research Approach and the Delphi Technique

The study relied on the Delphi technique (Mustafa, 2005; Thawqan et al., 2017) to forecast the HOTS most critical to future workforce competencies. The process included three iterative rounds:

1. In the first round, experts reviewed the preliminary list of HOTS derived from literature and provided feedback, additions, and deletions.
2. In the second round, experts and employers rated the refined list of skills by importance within their respective professional fields, generating consensus-based priority rankings.
3. In the third round, discussions focused on aligning these prioritized skills with national labour market trends, leading to the final validated list of core and sub-skills forming the basis for the survey and analysis.

This method ensured objectivity, expert consensus, and foresight in identifying competencies that align with evolving market dynamics.

Data Collection Procedures

Data collection followed several systematic steps:

1. A comprehensive literature review and stakeholder consultation produced an initial taxonomy of HOTS relevant to graduate employability.
2. Using the Delphi technique, experts validated the competency framework.
3. The finalized survey was distributed electronically via institutional channels, ensuring accessibility and confidentiality.
4. Qualitative interviews were held concurrently to complement and contextualize quantitative findings.
5. Data triangulation combined quantitative metrics with qualitative narratives to enhance validity and reliability.

Data Analysis

Quantitative data were analysed using descriptive statistics (means, frequencies, and percentages) to rank the perceived importance of each skill category and sub-skill. Cross-tabulations were used to compare graduate and employer responses across academic disciplines and sectors. Qualitative data underwent thematic analysis with open and axial coding to extract key patterns relating to skill gaps, employability challenges, and suggested interventions. Integration of both datasets allowed convergence analysis, identifying consistencies and divergences between graduate and employer perspectives.

Results and Discussion

Results for the First Question: "What are the most demanded HOTS in the Saudi labour market from the perspective of employers and graduates of Imam Abdulrahman bin Faisal University?" To answer this question, previous studies and literature were reviewed, followed

by discussions with a group of experts and professionals across diverse educational pathways and occupational specializations. The findings were as follows:

1. A list of core HOTS was identified, including creative thinking, critical thinking, and future-oriented thinking, which further branch into fourteen sub-skills. Experts and professionals reviewed this list and suggested additional skills where applicable.
2. A questionnaire was developed based on this list of HOTS demanded by the Saudi labour market. It was administered to graduates, experts, and professionals. The results are presented in Table (2), showing response rates for each main skill and its sub-skills according to their perceived importance for both specialization and the labour market.

Table (2) indicates a near-full consensus among participants on the importance of these HOTS, identified through expert interviews and literature review. The skill with the lowest highest-importance rating was "visualization" within future-oriented thinking, rated at 52.6%, while "argumentation" and "evaluation," both critical thinking skills, received the highest importance ratings of 75.4%. Moderate importance ratings ranged from 21% to 40.4%, with the lowest ratings between 0% and 7%. This affirms the accuracy and relevance of the compiled list according to participant viewpoints.

Table (2) Percentages of the research sample's responses to the questionnaire on HOTS

Main Skill	**Sub-skills**	**Ratings According to the Importance of the Skill for Specialization and the Labour Market**		
		1 = Low	**2= Moderate**	**3= High**
Creative Thinking—The ability to generate new and original ideas resulting from the interaction between the individual and their environment	1.1 Fluency: The ability to create or generate a large number of ideas and solutions to problems.	0%	29.8%	70.2%
	1.2 Flexibility (Adaptability): Seeing things from different perspectives and working on them using a variety of strategies.	1.8%	26.3%	71.9%
	1.3 Originality: The ability to express or produce new, unique, and creative ideas.	7%	31.6%	61.4%
	1.4 Problem Sensitivity: The ability to identify problems in things, tools, or social systems that others may not notice, or to think of improvements that can be made to such systems.	3.5%	33.3%	63.2%
	1.5 Elabouration: The ability to add details to plans and ideas, contributing to	3.5%	36.8%	59.6%

Main Skill	Sub-skills	Ratings According to the Importance of the Skill for Specialization and the Labour Market		
		1 = Low	2= Moderate	3= High
	the completion of a situation or issue under study or solution.			
Critical Thinking— Making judgments in light of considerations and standards	2.1 Analysis: The ability to identify a concept or problem and analyze it into its elements or small components to make decisions or judgments about it.	7%	21.1%	71.9%
	2.2 Evaluation: The ability to identify strengths and weaknesses in a situation, event, or phenomenon based on a set of criteria to make a decision, modify, or determine points of benefit.	1.8%	22.8%	75.4%
	2.3 Discrimination: The ability to distinguish between features and flaws, opinion and fact, science and imagination, based on consistent criteria used for judgment.	7%	29.8%	63.2%
	2.4 Decision-Making: Issuing a judgment or taking an action regarding a specific issue.	7%	29.8%	63.2%
	2.5 Argumentation: Supporting an opinion with reasoning and evidence that prove its validity and strength over other available ideas and solutions.	1.8%	22.8%	75.4%
	2.6 Inference: The ability to derive rules, conclusions, and generalizations from particular observations, evidence, and indicators through examining and analyzing the logical relationships among them.	3.5%	28.1%	68.4%
Future-oriented Thinking— A type of thinking that aids in	3.1 Forecasting: The ability to know what will happen in the future by referring to prior knowledge — in other words, extrapolating the future from current observations.	5.3%	40.4%	54.4%

Main Skill	Sub-skills	Ratings According to the Importance of the Skill for Specialization and the Labour Market		
		1 = Low	2= Moderate	3= High
understanding and analyzing information for continuous improvement to keep pace with contemporary technological characteristics and future challenges	3.2 Visualization: The process of forming integrated mental images of events in a future period, influenced by creativity, imagination, and scientific innovation in an attempt to shape that future vision.	7%	40.4%	52.6%
	3.3 Future Problem-Solving: A cognitive process that uses one's knowledge, rules, skills, and past experiences to resolve contradictions, clarify ambiguities, or overcome difficulties preventing one from reaching a specific future goal.	1.8%	33.3%	64.9%

The Delphi method, known for its rigor and precision in future foresight and obtaining reliable predictions, underpinned this process. These findings also reflect the specific nature of the Saudi labour market demands, which emphasize problem-solving, creativity, and other 21st-century skills as core requirements in employment selection. For instance, the competency test for graduates from education colleges, which is necessary for obtaining the teaching license, assesses cognitive, academic, professional, social, and personal skills that align closely with these thinking skills (Qiyas Center, 2021; Saudi Education and Training Evaluation Authority, Online).

Regarding suggestions for additional skills, responses varied: some participants saw no need to add more HOTS, others proposed traits like leadership, social skills, initiative, and punctuality, which do not strictly fall under cognitive thinking skills, while some reinforced skills already listed, such as creativity and flexibility, highlighting their importance. This mix of perceptions may relate to differences in experience and academic specialization, emphasizing the need for clear definitions to aid participants' understanding and accurate selection. Figure (1) illustrates sample participant responses regarding the addition of HOTS to the list. In summary, the identified list of HOTS comprises three main categories: creative thinking (with five sub-skills), critical thinking (six sub-skills), and future-oriented thinking (three sub-skills), totalling fourteen sub-skills.

Figure (1): Samples of responses from research participants regarding the addition of higher-order thinking skills to the list

Results for the Second Question: "What is the level of HOTS required in the Saudi labour market from the perspective of employers and graduates of Imam Abdulrahman bin Faisal University?" Data from Table 2 and Figure 1 demonstrate that mastery of all the identified HOTS is essential to secure future employment across various specializations in the Saudi labour market. Ninety percent of the sample, graduates of Imam Abdulrahman bin Faisal University, affirm the importance of these skills and indicate that different professions always require proficiency in them, advocating for dedicated training activities and programs during academic study to prepare graduates for market competition. Employers unanimously (100% of those surveyed) confirmed the importance of these skills but noted difficulties in finding graduates who meet the required skill levels. This suggests a need to reevaluate curricula and programs to better prepare graduates for workplace demands.

Employers highlighted that expectations for graduates have increased markedly in recent years, with recruitment criteria becoming more stringent. They require employees who can adapt to varying work environments, handle changes flexibly, anticipate and solve problems proactively, and plan and monitor progress effectively. Creativity, excellence, competitiveness, and smart utilization of material and human resources are also valued attributes.

Significantly, many employers in scientific fields, especially medical and engineering sectors, acknowledged an increase in Saudi graduate numbers but not to the desired extent compared to fully Saudized fields like education, administration, and accounting. They still favour non-Saudi contracted employees due to their better mastery of required skills, signalling a need for enhanced qualification and training programs in these fields to meet Vision 2030 goals and bridge the gap between graduate competencies and labour market needs — efforts that are already underway.

Results for the Third Question: "What are the consequences of the gap between the graduate's HOTS and those required in the Saudi labour market, from the perspective of employers and graduates of Imam Abdulrahman bin Faisal University?"

A majority of participants agreed that this skill gap significantly impacts both the Saudi society and the overall progress of the Kingdom in two main ways:

First, it affects the graduate's employability and competitiveness. Ninety percent noted this gap reduces the chances of securing a suitable job or results in acceptance of positions below the graduate's academic qualification level. This contributes to higher unemployment rates or leads to job loss following poor performance due to insufficient skill development and adaptability, especially when stronger candidates possess higher skill levels, which further elevates unemployment and frustration within society.

Second, it influences the labour market's productivity and competitive capacity nationally and internationally. Several professionals, especially in industrial and technical fields, emphasized the need for more attention and infrastructure such as institutes and training centers dedicated to preparing graduates. These sectors rely heavily on innovation, analytical problem-solving, anticipation of future challenges, rapid adaptability, and continuous skill upgrades.

Overall, participants stressed the critical importance of equipping graduates with the specified HOTS and unanimously called for mobilizing all available resources to close the skills gap and enhance the readiness of graduates to compete and contribute effectively to societal advancement and national development aligned with Saudi Arabia's Vision 2030.

Conclusion and Recommendations

This study explored the HOTS required for graduates from Imam Abdulrahman bin Faisal University to successfully integrate into the Saudi labour market, drawing insights from both graduates and employers through interviews and surveys. The findings identified three primary categories of thinking skills: creative thinking, critical thinking, and future-oriented thinking, including future problem-solving, further divided into fourteen sub-skills. It is crucial for higher education policymakers and graduate qualification programs to emphasize these skills through targeted educational activities, diverse pedagogical approaches, and continuous skill development, guided by educational experts and academic specialists.

The study also revealed a unanimous agreement on the essential nature of these skills for enhancing graduate employability and competitiveness. Mastery and regular practice of these skills are imperative, achievable through ongoing training programs both during the academic period and post-graduation.

Moreover, the research underscored the detrimental impact of the gap between the skill levels possessed by graduates and those demanded by the Saudi labour market, affecting individual productivity and regional and global market competitiveness. This calls for systematic monitoring of evolving market requirements, continuous updating of educational curricula, and proactive feedback mechanisms to higher education authorities to maintain alignment with labour market needs. Such efforts should be framed within the context of national security, aiming to position the Saudi labour market robustly within international competitive landscapes.

Finally, the study highlights the importance of establishing dedicated monitoring centres acting as connectors between academia and industry. These centres would facilitate collaborative research, foster new partnerships, and host regular scientific and professional forums. These initiatives would promote effective dialogue among stakeholders committed to producing highly qualified graduates capable of contributing substantially to national development and global competitiveness.

Acknowledgments

This work was supported by the Deanship of Scientific Research, Vice Presidency for Graduate Studies and Scientific Research, King Faisal University, Saudi Arabia (Proposal Number: KFU254267).

References

Abdaoui, F.& Grine, N. (2020). The effect of university education on developing learners' critical thinking skills: A comparison between freshmen and senior learners of English as a Foreign Language at the University of Guelma. *Journal of Psychological & Educational Sciences*, 6 (2), 389–398. https://doi.org/10.54001/2258-006-002-021

Abdul-Hussein, S. I., & Al-Ali, M. H. (2020). The relationship between future thinking skills and openness to experience among university students. *South Valley University International Journal of Educational Sciences*, 4(5), 1–37. https://doi.org/10.21608/musi.2020.124361 [in Arabic]

Abu Hattab, F. A. L. (1990). *Mental Abilities*. Cairo, Egypt: Anglo Egyptian Bookshop. [in Arabic]

Abu Jado, S. M., & Noufal, M. B. (2007). *Teaching Thinking: Theory and Application*. Amman, Jordan: Dar Al-Masira for Publishing. [in Arabic]

Adriana, O.; Kajsa, F.; Eva, Edman, S. (2018). Enhancing graduates' employability skills through authentic learning approaches". *Higher Education, Skills and Work-Based Learning*, 9 (1), 107–120. https://doi.org/10.1108/HESWBL-04-2018-0049

Ahmed, Z. (2017). University programs and their responsiveness to labor market needs. *Human Development Journal*, (7), 159–189. [in Arabic]

Al-Darbaka, M. M. (2018). Future thinking skills among gifted and non-gifted students: A comparative study. *Journal of Al-Quds Open University for Research and Educational and Psychological Studies*, 8(23), 57–67. https://doi.org/10.5281/zenodo.1404646 [in Arabic]

Al-Dosari, J. M. (2020). The effectiveness of a proposed model based on integrating the educational stations and computer simulation strategies in teaching the home decoration unit in developing future thinking skills and academic aspiration levels among secondary school female students. *Journal of Humanities and Social Sciences*, 5(11), 97–134. https://doi.org/10.55074/hesj.v5i11.143 [in Arabic]

Al-Halak, H. S. (2010). *Creative thinking: Skills worth learning. Syria*: Publications of the General Syrian Book Authority. [in Arabic]

Al-Huwiti, A. (2018). The degree of possession of future thinking skills among students of the Faculty of Education and Literature at Tabuk University. *Scientific Research Journal in Education*, 1(19), 123–148. https://doi.org/10.21608/jsre.2018.7930 [in Arabic]

Al-Khudhari, M. R., & Al-Mani', A. B. M. (2021). Social affairs requirements for developing future skills in Saudi universities through the three university functions. *Faculty of Education Journal*, Assiut University, 37(6), 132–171. https://doi.org/10.21608/mfes.1999.183978 [in Arabic]

Al-Murawwi, A. O. (2019). A proposed framework for mini-action research laboratories to develop future skills among university students. *Journal of Scientific Research in Education*, (20), 637–654. https://doi.org/10.21608/jsre.2019.33904 [in Arabic]

Al-Radhi, J. S. (2021). The skills required to achieve alignment between educational outcomes and labor market needs according to Saudi Vision 2030 for graduates of the College of Social Services and ways to enhance them. *Islamic University Journal of Educational and Psychological Studies*, 29(5), 30–60. https://doi.org/10.33976/IUGJEPS.29.5/2021/2 [in Arabic]

Al-Shahri, A., & Al-Saadoun, B. A. (2019). The reality of the relationship between the Fourth Industrial Revolution and educational outcomes from the perspective of faculty members at the Technical and Vocational Training Corporation in Al-Kharj. *Faculty of Education Journal*, Assiut University, 35(11), 485–522. https://doi.org/10.21608/mfes.2020.99747 [in Arabic]

Al-Sharif, K. H. B. (2017). The degree of possession of critical thinking skills and academic self-efficacy as perceived by a sample of students at the Faculty of Education, King Faisal University, in light of academic achievement levels. *Educational and Psychological Sciences Journal*, University of Bahrain, 18(3), 417–446. [in Arabic]

Al-Tamimi, A. F. (2016). *Higher order thinking skills: (Creative thinking, critical thinking)*. United Arab Emirates: De Bono Thinking Centre. [in Arabic]

Al-Wutban, A. (2018). *21st century skills in Saudi Vision 2030*. Retrieved from https://www.new-educ.com [in Arabic]

Al3awda, I. A. K., & Al-Otaibi, B. B. J. (2021). The role of Saudi universities in meeting labor market needs: A proposed framework. *Fayoum University Journal of Educational and Psychological Sciences*, 14(3), 1–50. [in Arabic]

Andrew, K.; Catherine, M.; Emma, L. (2022). Traditional Exams, 21st Century Employability Skills and COVID-19 Disruptive Opportunities for Rethinking Assessment Design in Higher Education STAR Scholars in collaboration with Open Journals in Education and Journal of International Students.

Aql, M. S., & Abu Musa, I. H. (2019). The effectiveness of an electronic learning environment employing active learning strategies in developing future thinking skills in technology among seventh-grade female students. *Islamic University Journal of Educational and Psychological Studies*, 6(27), 1–34. [in Arabic]

Atiyba, A. M. H. (2021). Soft skills: An approach to aligning university outputs with labor market requirements. *Educational and Gender Studies Journal*, (5), 67–86. https://doi.org/10.21608/jeor.2021.166036 [in Arabic]

Azmi, I. A. (2019). Digital education and labor market skills: Basic concepts and practical experiences in the era of the digital revolution. *Arab Journal of Literature and Human Studies*, (7), 67–102. https://doi.org/10.21608/ajahs.2019.44589 [in Arabic]

Bahnsawy, L. K. (2018). Employers' perception of university education outcomes and the labor market: A study on a sample of employers in urban areas. *Faculty of Arts Journal*, Cairo University, (3), 78, 14–72. https://doi.org/10.21608/jarts.2018.82037 [in Arabic]

Blanca, P.; Paloma, B.; Inés, M.; Beatriz, C. (2019). A systematic review on critical thinking intervention studies in higher education across professional fields. *Studies in Higher Education*, 44:5, 860-869. https://doi.org/10.1080/03075079.2019.1586333

Chalkiadaki, A. (2018). A Systematic Literature Review of 21st Century Skills and Competencies in Primary Education. *International Journal of Instruction*, 11(3), 1-16. https://doi.org/10.12973/iji.2018.1131a

Deanship of Academic Development. (2020). *Project for developing and defining graduate characteristics at Imam Abdulrahman bin Faisal University*. Imam Abdulrahman Bin Faisal University Printing Press. [in Arabic].

Diani, R. (2017). *Critical thinking and creative thinking: A practical guide for teachers* (M. Muhammad, Trans.). Saudi Arabia: Al-Ebikan Publishing House. [in Arabic]

Ditsele, R., & Mji, A. (2017). *Lecturers' perceptions of 21st century graduates' attributes in undergraduate humanities programmes*. Proceedings of EDULEARN17 Conference. Barcelona, Spain.

Fadzi, N., Farzana, M., Noor, N., & Hidayana, M. (2021). *Models in approaching higher order thinking skills (HOTS) towards the Malaysian labor market*. E-proceeding 8th International Conference on Public Policy and Social Science (ICoPS). eISBN: 978-967-14569-4-1.

Fisher, A. (2009). *Critical thinking* (Y. Al-Otaibi, Trans.). Egypt: Dar Al-Sayyid for Publishing. [in Arabic]

Garcia-Esteban, S.& Jahnke, S. (2020), Skills in European higher education mobility programmes: outlining a conceptual framework", *Higher Education, Skills and Work-Based Learning*, 10 (1), 33-55. https://doi.org/10.1108/HESWBL-09-2019-0111

Hafez, A. Y., & Al-Jubouri, A. M. (2019). Future thinking among university students. *Al-Qadisiyah Journal for Humanities Sciences,* 6(22), 274–743. [in Arabic]

Hanafi, M. K. (2015). 21st century skills. In Proceedings of the 24th Scientific Conference of the Egyptian Society for Curricula and Teaching Methods and the 3rd International Conference on Teacher Preparation Programs in Universities for Excellence (pp. 289–311). Ain Shams University. [in Arabic]

Hassan, H. R. (2013). *Thinking: Educational programs and measurement methods*. Cairo, Egypt: Dar Al-Kutub Al-Ilmiyyah for Printing, Publishing, and Distribution. [in Arabic]

Hasyim, H., Hasan, M., Yusuf, A., & Sitti, N. (2019). Application of higher order thinking skills (HOTS)-based problem-based learning models to increase the critical thinking ability of students in education in economic lessons in class XII SMAN 11 Makassar. *International Journal of Scientific Development and Research (IJSDR)*, 4(10), 109–113.

Hoskins, B., & Crick, R. (2010). Competences for learning to learn and active citizenship: Different currencies or two sides of the same coin? *European Journal of Education*, 45(1), 121–137. https://doi-org.library.iau.edu.sa/10.1111/j.1465-3435.2009.01419.x

Ibrahim, A. H., & Al-Kandari, K. M. (2018). The degree of possession of critical thinking skills by male and female students of the Faculty of Education specializing in science and Islamic education at Kuwait University. *Gulf and Arabian Peninsula Studies Journal*, (44)169, 194–227. https://doi.org/10.34120/jgaps.v44i169.2515 [in Arabic]

International Labour Organization. (2021). *Global framework on core skills for life and work in the 21st century*. International Labour Office.

Joynes, C., Rossignoli, S., Rossignoli, S., & Fenyiwa, E. (2019). *21st century skills: Evidence of issues in definition, demand and delivery for development contexts (K4D Helpdesk Report)*. Institute of Development Studies, Brighton, UK.

Jrouan, F. (2007). *Teaching thinking: Skills and applications*. Egypt: Dar Al-Fikr for Publishing and Distribution. [in Arabic]

Ku, K. Y. L.& Au, R. H. Y. (2021). Exploring University Students' Perceived Values of Knowledge and Critical Thinking Using Triple-Response Mode Assessment. *Anatolian Journal of Education*, 6 (2), 1–12. https://doi.org/10.29333/aje.2021.621a

Kurbanov, R. A., Belyalova, A. M., Yarygina, N. A., Schetinina, S. Y., Feshina, S. S., Buslaev, S. I., & Dugarskaya, T. A. (2020). Student attitude to future profession in field of information technology at university training stage. *International Journal of Psychosocial Rehabilitation*, 24(4), 5019–5026. https://doi.org/10.37200/IJPR/V24I4/PR201601

Liu, O. L., Frankel, L., & Roohr, K. C. (2014). Assessing critical thinking in higher education: Current state and directions for next-generation assessment. *ETS Research Reports Series*, 2014(1), 1–23. https://doi-org.library.iau.edu.sa/10.1002/ets2.12009

Malkawi, N. M. (2020). The role of university education and training in developing future skills from the perspective of Jordanian public university faculty members. J*ournal of Public Administration*, 61(2), 235–292. [in Arabic]

Mlhem, A. M. (2017). *The degree of availability of 21st century skills in the technology curriculum for upper basic stage and the degree of students' possession of these skills* (master's thesis). An-Najah National University, Nablus, Palestine. [in Arabic]

Mohamed, I. F. (2020). Proposed procedures for enhancing the professional competencies of humanities graduates in light of labor market needs in the Kingdom of Saudi Arabia: A case study of King Faisal University. *The Educational Journal*, (71), 1–71. [in Arabic]

Mousa Ahmed, A. M. (2017). A proposed Arabic language program based on global civilizational dialogue dimensions to develop future thinking and positive thinking skills among secondary school students. *Faculty of Education Journal, Assiut University*, 33(2), 154–227. https://doi.org/10.12816/0042350 [in Arabic]

Mustafa, F. (2005). *The school of the future and fields of distance education*. Cairo, Egypt: Dar Al-Fikr Al-Arabi. [in Arabic]

Nahaba, A. S., & Aboud, A. H. (2021). The Degree of Future Thinking for the Students of the Educational Open College. *University of Babylon Journal for Humanities*, 2(29), 1–18. [in Arabic]

Neolaka, F., & Corebima, A. (2018). Comparison between correlation of creative thinking skills and learning results, and correlation of creative thinking skills and retention in the implementation of predict observe explain (POE) learning model in senior high schools in Malang, Indonesia. *Education Process: International Journal*, 7(4), 237–245. https://doi.org/10.22521/edupij.2018.74.2

Obeidat, O. M., & Saada, S. T. (2010). Available skills in Jordanian higher education outputs as required by the local labor market. *Arab Journal for Quality Assurance in Higher Education*, 3(5), 74–95. https://doi.org/10.21608/mfes.1999.183978 [in Arabic]

OECD. (2017). In-depth analysis of the labour market relevance and outcomes of higher education systems: Analytical framework and country practices report. *Enhancing higher education system performance*. OECD Publishing, Paris.

Petra, T. Z. H. T., & Ab Aziz, M. J. (2021). Analysing student performance in higher education using fuzzy logic evaluation. *International Journal of Scientific & Technology Research*, 10(1), 322-327.

Qatami, N. (2001). *Teaching Thinking for The Basic Stage*. Jordan: Dar Al-Fikr for Publishing and Distribution. [in Arabic]

Qiu, M., Xu, Y., & Omojokun, O. (2020). To close the skills gap, technology and higher order thinking skills must go hand in hand. *Journal of International Technology and Information Management*, 29(1), Article 5. https://doi.org/10.58729/1941-6679.1444

Qiyas Center. (2021). *Professional license and competency test for obtaining teaching positions*. Educational Evaluation and Accreditation Authority, Kingdom of Saudi Arabia. Retrieved from https://www.etec.gov.sa/ar/productsandservices/Qiyas/profession/TeachersLicensure/Pages/default.aspx [in Arabic]

Ritter, S. M., Gu, X., Crijns, M., & Biekens, P. (2020). Fostering students' creative thinking skills by means of a one-year creativity training program. *PLOS ONE*, 15(3), e0229773. https://doi.org/10.1371/journal.pone.0229773

Scott, S., & Cynthia, L. (2015). *The futures of learning 2: What kind of learning for the 21st century? (ERF Working Paper No. 14)*. UNESCO Education Research and Foresight. https://unesdoc.unesco.org/ark:/48223/pf0000242996

Shavelson, R. J., Zlatkin-Troitschanskaia, O., Beck, K., Schmidt, S., & Marino, J. P. (2019). Assessment of university students' critical thinking: Next generation performance assessment. *International Journal of Testing*, 19(4), 337–362. https://doi.org/10.1080/15305058.1.1543309

Shaw, A., Liu, O. L., Gu, L., Kardonova, E., Chirikov, I., Li, G., Hu, S., Yu, N., Ma, L., Guo, F., Su, Q., Shi, J., Shi, H., & Loyalka, P. (2020). Thinking critically about critical thinking: Validating the Russian HEIghten® critical thinking assessment. *Studies in Higher Education*, 45(9), 1933–1948. https://doi.org/10.1080/03075079.2019.1672640

Thawqan, A. H., Al-Hamouri, S. S., & Al-Ma'aytah, R. N. (2017). *Future supervision and its creation: Before strategic planning. Smart Readiness*. United Arab Emirates: Dar Qandil for Publishing and Distribution. [in Arabic]

Timiyo, A., & Sriram, N. (2021). Role of research-based learning on graduates' career prospects. *Higher Education Studies*, 11(3), 10–20. https://doi.org/10.5539/hes.v11n3p10

Vera, G., Goulart, L., & Luciana, O. (2021). Balancing skills in the digital transformation era: The future of jobs and the role of higher education. *Industry and Higher Education*, 1–10. https://doi.org/10.1177/09504222211029796

Wickramasinghe, V., & Perera, L. (2010). Graduates', university lecturers' and employers' perceptions towards employability skills. *Education and Training*, 52(3), 226–244. https://doi.org/10.1108/00400911011037355

Yousef, A. (2016). Assessment techniques and students' higher order thinking skills. *International Journal of Secondary Education*, 4(1), 1–11. https://doi.org/10.11648/j.ijsedu.20160401.11