The Degree of Possession of Jordan University Students of 21st-Century Skills from their Perspectives

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Abstract

The study aims to explore the degree of possession of the 21st-century skills, namely: creative thinking, critical thinking, cooperation, teamwork, and leadership, computing, and information technology culture, and communication, information and media skills among Jordan University students from their perspectives and identify statistical differences at the level of possession of the 21st-century skills according to the variables of gender, academic year, and faculty. To achieve the aims of the study, the descriptive approach is used. A questionnaire for determining 21st-century skills is also prepared for this aim. The study sample consists of (675) male and female students during the first semester of the academic year 2020/2021. The results of the study show that the degree of the Jordan University students' possession of 21st-century skills, in general, is of a high level with an arithmetic mean of (2.6548). Communication, information, and media skills are ranked first with the highest arithmetic mean, followed by creative and critical thinking, then the computing and information technology culture.

Keywords: 21st Century Skills, Jordan University Students.
1. **Introduction**

Current global changes in the 21st-century have increased the need to develop a new educational system whether at the level of higher education institutions such as universities and community colleges or at the school level due to the increasing importance of knowledge and skills and the development of knowledge societies, in line with the rapid transformations and changes.

Numerous universities, organizations, and institutions concerned with education work to better prepare their graduates to be ready to work in this developed world by incorporating the academic content with the necessary skills such as critical thinking skills, communication, technological literacy, and cooperation which shall be acquired so that the graduate can succeed in faculty and career life. Thus, this leads to ensuring participation, achievement, and competitiveness in our global community (AATE, 2008).

The current debate is about the role of universities in explaining these transformations and changes and adapting to them by incorporating academic content with many necessary skills such as critical thinking skills, communication, technological literacy, and cooperation that need to be acquired by the graduate to succeed in faculty and career. In this vein, universities retain their legitimacy and pioneering role in a changing and transforming world, thus ensuring participation, achievement, and competitiveness in our global community (Miller, 2009).

As put by the Partnership for 21st Century Skills Association, the term 21st-century skills refer to the “Set of skills needed to succeed and work in the 21st-century such as learning and innovation skills, information, media and technology literacy, and life and work skills”. Binkley et al. (2011) define 21st-century skills as “Ways of thinking, working, and living in connected worlds rich in media”.

The 21st-century skills are always required due to several important changes such as the huge shifts in the fields of technology and communication, the increase in competition, and the growing intensity of global challenges such as financial collapses, global warming, wars, and other threats to security and population growth and inflation (Trilling, 2009 & Fadel).

They add that this calls for developing students’ thinking skills to meet these challenges and the widening gap between the world inside the school and the world outside it. It is noteworthy that this gap costs the business sector large sums to find skilled workers and rehabilitate new employees because this age of knowledge requires a steady supply of well-trained workers using mental capabilities and digital means to apply good cognitive skills in their daily work (Wilborn, 2013).

Partnership for the 21st Century Skills Association actively contributes to establishing and achieving consensus on describing and identifying the 21st-century skills and knowledge that should be included in the curriculum. The Partnership for 21st Century Skills (P21) continuously reviews the framework for 21st-century skills over six years. Hundreds of teachers, leaders, business people, parents and students, and community leaders have contributed to it (Skills, 2008). In light of these challenges, the interest in learning and innovation skills has increased as a test and a criterion for judging the level of students’

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readiness to work in complex and sophisticated work environments and distinguishing them from those who are not prepared for that.

First, as summarized by (Scott, 2015), learning and innovation skills are as follows:

- Critical thinking and problem solving: such as analyzing and evaluating evidence, arguments, and proofs, and being able to solve many unfamiliar problems using both traditional or innovative methods.
- Communication: such as possessing verbal and written communication skills in different contexts and situations.
- Cooperation: such as the ability to work effectively with and respect diverse teams and groups.
- Creativity and innovation: such as the ability to use a wide range of technologies to create new and interesting ideas.

Second: as put by (Tobi and Fawaeer, 2016), information technology and media skills are as follows:

- General culture and information: such as the ability to efficiently access, evaluate and critique information.
- Media culture: such as the ability to understand how and why media messages are issued and what their purpose is, and how to benefit from the media.
- Information and communication technology culture: such as the ability to use technology as a research instrument to access, organize, and evaluate information.

To equip our students with 21st-century skills, our educational system needs to be completely reconsidered. This is not limited to the incorporation of an independent course at the university level, such as a life skills course, but the situation is more comprehensive as we need a complete interconnected system of reviewing the content of the courses, using the original evaluation methods such as achievement files, projects, and cumulative reports, activating teaching methods based on solving problems and projects and questions of all kinds, and providing the appropriate environment that stimulates creativity and innovation, including modern technical infrastructure, flexible classrooms, professional development for teachers and community participation to better prepare students to become productive, creative, and self-directed in the 21st-century society (Atwi, 2016).

2. Problem of the Study

Despite the challenges of the 21st-century faced by our public and private universities in developing the educational outputs of these universities, many global indicators indicate their deficiencies in preparing and qualifying graduates in line with the requirements of
this century. Accordingly, the problem of the study lies in examining the degree of possession of Jordan university students of 21st-century skills from their perspectives.

3. Questions of the Study

In light of the problem of the study, the following main questions are articulated.

a. What is the degree of possession of Jordan university students of the 21st-century skills from their perspectives?

b. Are there statistically significant differences at the level of significance (α = 0.05) in the degree of possession of Jordan university students of 21st-century skills according to the variables of the faculty (scientific, human), gender (male, female), and the academic year (second, third, fourth)?

4. Objectives of the Study

a. Identify the degree of possession of Jordan university students of 21st-century skills from their perspectives.

b. Examine if there are statistically significant differences at the level of significance (α = 0.05) in the degree of possession of Jordan university students of 21st-century skills according to the variables of the faculty (scientific, human), gender (male, female), and the academic year (second, third, fourth).

5. Significance of the Study

The significance of this study lies in addressing the role of higher education institutions in Jordan in providing their students with 21st-century skills, as this issue and area have not been addressed before within the limits of the researchers’ knowledge. This study also provides a real and procedural guide to the degree to which students of the University of Jordan possess these skills, as the study enables the university to identify the extent to which its students possess these skills from their perspectives, and thus the university can, through the results of the study, develop appropriate plans to support, develop or enrich these skills. Moreover, this study strongly contributes to enriching the Arab library in general, and the Jordanian library in particular with important information in the area of 21st-century skills. Importantly, it presents a message to decision-makers, those in charge, and those concerned with the issue of preparing curricula stressing the need to enhance the 21st-century skills and work to employ them in educational positions on the ground, whether in schools and universities and when training faculty members in universities or teachers in schools.

It is also essential as it shows that these skills are important for success in scientific and practical life as they direct youth towards learning, innovation, creativity, and active participation in solving problems and facing difficulties and challenges. These skills and energies can be invested in university students and directed through programs prepared by specialized supervisors at the university, and students' participation in enrichment pioneering programs, training projects, and local and international conferences to benefit
youth and the local community with the participation of several ministries and other concerned parties.

6. Previous Studies

Few studies have been done on the possession of 21st-century skills among Arab students in general and Jordanian students in particular. Khudair and Jasim’s study (2020) aims at identifying the extent to which students of the Mathematics Department in Faculties of Education possess 21st-century skills. Due to the nature of the study, the descriptive-diagnostic approach has been used. The research sample consists of (200) students from the second, third, and fourth-year students. To collect the required data, the 21st-century skills test is used. The results of the study show that the percentage of students at the Department of Mathematics in faculties of education possessing the 21st-century skills is (54.8%) that represents the acceptable limit for the 21st-century skills without having the level of mastery of (80%), as indicated by the studies. The results of the study also show that there are no statistically significant differences in the percentage of possessing 21st-century skills according to the variable of the academic year. Omari’s study (2019) aims at identifying the role of educational supervisors in developing higher thinking skills in light of Vision 2030. Due to the nature of the study, the descriptive and analytical approach is used. The questionnaire is used as a study instrument and applied to a sample of (160) teachers from the elementary grades. After the statistical processing, the results of the study show the presence of a role for supervisors in developing higher thinking skills, where the skills of creative and critical thinking, life skills management, student abilities management, supporting the knowledge economy, and education technology management are of a medium degree of applicability, and the skills of managing the art of education, managing the evaluation system are of a large degree of applicability.

The study of Maalouf et al., (2018) aims at identifying the perceptions of faculty members in Jordanian universities of the skills that a university student would prefer to possess in the 21st-century and identify the differences according to the variables of gender and academic rank. Due to the nature of the study, the study sample consists of (250) members. To achieve the objectives of the study, a questionnaire is prepared after ascertaining the significances of its validity. The results of the study show that the perceptions of faculty members in Jordanian universities of the skills that a university student would prefer to possess in the 21st-century are of a high degree. The study also shows that there are no statistically significant differences due to the impact of gender and academic rank variables in estimating the study sample for the necessary skills.

Sayed’s study (2018) aims at building and measuring the effectiveness of a program enhanced with web-2 instruments in developing 21st-century skills among students of mathematics teachers at the Faculty of Education. (40) male and female students are selected from the third year of the Mathematics Department of the Faculty of Education at Ain Shams University. The results of the research show that there is a statistically significant difference between the mean scores of the student in the research group in the pre and post applications to the 21st-century skills test as a whole which are in favor of the post-application. The study also shows that there is no difference between the mean
scores of the students in the research group in the two pre-and-post applications to the 21st-century skills test, i.e. dimension of cooperation and partnership, and the presence of a statistically significant difference between the mean scores of research students in the two pre-and-post applications to the 21st-century skills test, i.e. the dimension of critical thinking and problem solving, dimension of informational culture, dimension information and communication technology in favor of post-application.

In another study by Salimon et al. (2018), it aims at identifying the degree to which basic education teachers possess 21st-century skills. Due to the nature of the study, the descriptive approach is used. A questionnaire comprising (60) items is prepared and distributed into 6 main skills. The results of the study show that the degree to which basic teachers possessed the 21st-century skills is of high degree, and there are no statistically significant differences in the degree of possession of the 21st-century skills due to the variables of the type of high school diploma and the number of years of experience. The results also show that there are also statistically significant differences in the degree of possession of the 21st-century skills credited in favor of females.

Tobi and Fawaeer’s study (2016) aims to describe the role of higher education institutions in the Sultanate of Oman in providing their graduates with 21st-century skills. The study sample consists of (70) students of educational qualification enrolled at the University of Nizwa and who have completed their bachelor’s stage from various Omani colleges and universities. The results of the present study indicate that the role of higher education institutions in the Sultanate of Oman in providing their graduates with 21st-century skills and knowledge is of medium degree. The results also show that the largest role of higher education institutions in providing their graduates with 21st-century skills and knowledge is in life and job skills. The study also shows that the least role of higher education institutions in providing their graduates with 21st-century skills and knowledge is in general skills, i.e. awareness of the surrounding world issues, health, and environmental culture, followed by the culture of citizenship and entrepreneurship, and then followed by learning and innovation skills. There are also no statistically significant differences in the role of higher education institutions in providing their graduates with 21st-century skills and knowledge according to the student’s graduating university or college.

A study conducted by Fawaeer (2016) aims to determine the extent to which workers in early intervention programs in the Sultanate of Oman possess the 21st-century skills and knowledge, in addition to identifying statistical differences at the level of possession of the 21st-century skills and knowledge according to the variables of educational qualification and specialization, experience, and gender. Due to the nature of the study, a questionnaire is prepared to determine 21st-century skills. The study sample consists of (64) workers in early intervention programs in the Sultanate of Oman in the year 2014/2015. The results of the study indicate that more than 90% of workers in early intervention programs in the Sultanate of Oman have a low level of possession of 21st-century skills, where the skills of learning and innovation are the 21st-century least possessed skills among the respondents. There are also no statistically significant
differences at the level of workers in early intervention programs possessing the 21\textsuperscript{st}-century skills and knowledge due to the variables of academic specialization and experience, while there are statistically significant differences according to academic qualification in favor of masters’ and doctorates according to the gender variable in favor of females.

Kayange and Msiska’s study (2016) aims at identifying the extent of integrating 21\textsuperscript{st}-century skills into Chinese teacher training programs in a Chinese university. The qualitative approach is used by conducting interviews with (17) teachers from pre-service teachers and professors from teacher training programs. The results of the study show that some of the 21\textsuperscript{st}-century skills are integrated and merged, while other skills are partially integrated. There are also challenges in integrating 21\textsuperscript{st}-century skills.

Another study conducted by (Wilborn 2013) aims at identifying the self-efficacy of teachers in teaching 21\textsuperscript{st}-century skills in the curriculum in Georgia state in the USA. Due to the nature of the study, three practical situations of highly trained teachers in the four 21\textsuperscript{st}-century skills (4Cs): creative thinking, critical thinking, cooperation, and communication, are properly analyzed. A questionnaire, observation, and interview as study instruments are used to collect data. The results of the study show that there are major topics related to teachers’ attitudes toward 21\textsuperscript{st}-century skills, which are the issue of learning, the culture of learning, and student learning styles. The study also shows there are few topics related to 21\textsuperscript{st}-century skills, which are critical thinking and learning in the world.

In light of the previous studies, the current study agrees with previous studies in dealing with 21\textsuperscript{st}-century skills, but the current study differs from previous studies in addressing a new study population, which is the universities, specifically the students of the University of Jordan. This study has also discussed the variation in the degree of students’ possession of these skills in light of gender, faculty, and academic year. As previous studies have indicated that school students’ acquisition of skills that enable them to cope with the challenges of the current era, the current study has taken advantage of the previous studies in determining the procedural definitions of study terms represented in 21\textsuperscript{st}-century skills, interpretation of results and their analysis, and presenting the theoretical framework of the study.

7. Limitations of the Study:

The results of the current study are limited to the students of the University of Jordan in the first semester of the first academic year 2020/2021. The results of the study are determined by the responses of the sample members to the study instrument, i.e. the 21\textsuperscript{st}-century skills questionnaire prepared by the two researchers, as well as the psychometric characteristics, i.e. elements of the validity and reliability of the study instrument used.

8. Procedural Definitions of the Study

The 21\textsuperscript{st}-century skills and knowledge: it is a set of skills and knowledge compatible with the modern developments of the 21\textsuperscript{st}-century represented in five basic skills: creative thinking, critical thinking, cooperation, teamwork, and leadership, computing, and information technology culture, and communication, information, and media skills. They
are procedurally defined as a degree response of respondents to the 21st-century skills questionnaire and the study instrument used.

9. Methodology of the Study

This study is regarded as one of the descriptive and analytical studies, which aims to describe and analyze the 21st-century skills and the role of higher education institutions in Jordan in providing their students with these skills. Accordingly, the current study relies on the quantitative research method, i.e. questionnaire in collecting and analyzing the study data.

Study Population

The study population consists of the entire (40,312) male and female students of the University of Jordan in the academic year 2020/2021.

Study Participants

A random sample consisting of (680) male and female students is selected from various scientific and humanitarian specializations at the University of Jordan for the first semester of the academic year 2020/2021 as shown in Table (1).

Table 1

<table>
<thead>
<tr>
<th>Categories</th>
<th>Frequencies</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>305</td>
<td>44.8 %</td>
</tr>
<tr>
<td>Female</td>
<td>375</td>
<td>55.2 %</td>
</tr>
<tr>
<td>Faculty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scientific</td>
<td>267</td>
<td>39.2 %</td>
</tr>
<tr>
<td>Humanities</td>
<td>413</td>
<td>60.8 %</td>
</tr>
<tr>
<td>Total</td>
<td>680</td>
<td>100.0 %</td>
</tr>
</tbody>
</table>

Study Participants

The 21st-century skills questionnaire is prepared after reviewing many works of literature and previous studies, including the study of Tobi and Fawaer (2016) and Subhi’s study (2016). The instrument consisted of 30 items divided into five main skills:

Skill 1: Creative Thinking
Skill 2: Critical thinking
Skill 3: Cooperation, teamwork, and leadership.
Skill 4: Computing and information technology culture.
Skill 5: Communication, information, and media skills.

The items of the questionnaire are distributed by 6 items for each of the previous five main skills.

**Calculation of Validity and Reliability of the Instrument**

The face validity of the instrument: The instrument (questionnaire) is presented to a group of experts in curricula, teaching methods, and psychology to formulate the content of each item of the questionnaire, and express an opinion on the extent to which the items of the questionnaire represent the main skills of the 21st-century skills. A form is prepared for the validators that include determining their opinion in each item in terms of relevance, clarity of language, relatedness, and applicability to the target sample.

**Calculation of the Validity of Internal Consistency:**

Correlation coefficients are calculated between each item of the questionnaire by using the coefficient (Alpha Cronbach), as shown in Table (2)

**Table 2**

*Correlation Coefficients for 21st-Century Skills*

<table>
<thead>
<tr>
<th>Q. No.</th>
<th>Skill 1 Correlation coefficient value</th>
<th>Skill 2 Correlation coefficient value</th>
<th>Skill 3 Correlation coefficient value</th>
<th>Skill 4 Correlation coefficient value</th>
<th>Skill 5 Correlation coefficient value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.549</td>
<td>0.579</td>
<td>0.631</td>
<td>0.177</td>
<td>0.588</td>
</tr>
<tr>
<td>2</td>
<td>0.555</td>
<td>0.564</td>
<td>0.529</td>
<td>0.195</td>
<td>0.707</td>
</tr>
<tr>
<td>3</td>
<td>0.615</td>
<td>0.605</td>
<td>0.633</td>
<td>0.215</td>
<td>0.664</td>
</tr>
<tr>
<td>4</td>
<td>0.628</td>
<td>0.582</td>
<td>0.577</td>
<td>0.196</td>
<td>0.625</td>
</tr>
<tr>
<td>5</td>
<td>0.625</td>
<td>0.512</td>
<td>0.706</td>
<td>0.241</td>
<td>0.607</td>
</tr>
<tr>
<td>6</td>
<td>0.639</td>
<td>0.666</td>
<td>0.668</td>
<td>0.270</td>
<td>0.561</td>
</tr>
</tbody>
</table>

Table (2) shows that the correlation coefficients for all items are significant and statistically significant at a significant level of 0.01. The correlation coefficients are also
high in all domains except for the fourth domain where they are low, but they are still significant.

**Calculation of the Reliability Coefficient Alpha’s Cronbach**

A scale in its initial form is applied to the study sample to calculate the stability of the instrument using Cronbach’s alpha formula. Table (3) shows the results of Cronbach’s alpha values for the domains and the self-validity coefficient for each domain.

Table 3

*Cronbach’s Alpha Coefficient to Measure Reliability*

<table>
<thead>
<tr>
<th>Domains</th>
<th>Items No.</th>
<th>Cronbach's Alpha Coefficient</th>
<th>Self-validity coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creative Thinking</td>
<td>6</td>
<td>0.65</td>
<td>0.80</td>
</tr>
<tr>
<td>Critical thinking</td>
<td>6</td>
<td>0.62</td>
<td>0.79</td>
</tr>
<tr>
<td>Cooperation, teamwork, and leadership.</td>
<td>6</td>
<td>0.68</td>
<td>0.82</td>
</tr>
<tr>
<td>Computing and information technology culture.</td>
<td>6</td>
<td>0.78</td>
<td>0.88</td>
</tr>
<tr>
<td>Communication, information and media skills.</td>
<td>6</td>
<td>0.69</td>
<td>0.83</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>0.88</td>
<td>0.94</td>
</tr>
</tbody>
</table>

Table (3) shows that all the Cronbach’s alpha values have ranged between good and very good, which reflects the good reliability of the questionnaire. The value of the Cronbach’s alpha coefficient for the questionnaire as a whole is (0.88), which is a very good value, indicating that the scale has a high degree of reliability.

**Statistical Critrion**
The 3-Likert scale is adopted to correct the study instrument by giving each of its items one score from among its three degrees (agree, disagree, unsure), which is represented numerically (3, 2, 1) respectively. The following scale has been adopted to analyze the results:

From 1.00- 1.66 low
From 1.67 - 2.33 medium
From 2.34 - 3.00 high

Thus: The scale is calculated by using the following equation:

\[ \text{Number of required classes} = \frac{\text{Upper limit of the scale (3)} - \text{the lower limit of the scale (1)}}{3} \]

\[ 3 - 1 = 0.66 \]

And then add the answer (0.66) to the end of each category.

**Data analysis method**

After collecting the data, the responses are categorized and prepared and the necessary statistical analyses of the data are conducted by the Statistical Package for the Social Sciences (SPSS). To answer the first question: What is the degree of possession of Jordan university students of 21st-century skills from their perspectives? The arithmetic means and standard deviations are calculated for the extent to which the University of Jordan students possess the 21st-century skills for each domain alone and the domains as a whole. To answer the second question: Are there statistically significant differences at the level of significance (\( \alpha = 0.05 \)) in the degree of possession of Jordan university students of 21st-century skills according to the variables of the faculty (scientific, humanities), gender (male, female) and the academic year (second, third, fourth)?, the (t) test is used for independent samples to find out if there is an effect of the gender and faculty variables on the degree to which the sample members possess the 21st-century skills. The Analysis of variance (ANOVA) test is also used to find out the significance of the statistical differences among the means of students’ responses about the degree of their possession of the 21st-century skills depending on the variable of the academic year.

**10. Results and Discussion**

This section gives insight into the results and discussion related to the questions of the study.

- **Results related to the first question:** What is the degree of possession of Jordan university students of 21st-century skills from their perspectives?

To answer this question, arithmetic means and standard deviations are calculated for the extent to which students at the University of Jordan possess the 21st-century skills for each domain alone and the domains as a whole, as shown in Table (4).
Table 4

<table>
<thead>
<tr>
<th>Domain No.</th>
<th>Domain</th>
<th>Domain arrangement</th>
<th>AM</th>
<th>SD</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Communication and media skills</td>
<td>1</td>
<td>2.718</td>
<td>0.339</td>
<td>High</td>
</tr>
<tr>
<td>1</td>
<td>Creative thinking skills</td>
<td>2</td>
<td>2.698</td>
<td>0.315</td>
<td>High</td>
</tr>
<tr>
<td>4</td>
<td>Computing culture skills</td>
<td>3</td>
<td>2.687</td>
<td>0.393</td>
<td>High</td>
</tr>
<tr>
<td>4</td>
<td>Critical thinking skills</td>
<td>4</td>
<td>2.627</td>
<td>0.337</td>
<td>High</td>
</tr>
<tr>
<td>1</td>
<td>Cooperation and work skills</td>
<td>5</td>
<td>2.544</td>
<td>0.412</td>
<td>High</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>2.6548</td>
<td>0.3592</td>
<td>High</td>
</tr>
</tbody>
</table>

Table (4) shows that the extent of students of the University of Jordan possessing the 21st-century skills, in general, is of a high degree, with the arithmetic mean of (2.6548) and a standard deviation (0.3592), while the communication and media skills have the highest mean of (2.718) and a standard deviation of (0.339). The creative thinking skills are ranked second with an arithmetic mean (2.968) and a standard deviation (0.315), and computing culture skills are ranked third with an arithmetic mean of (2.687) and a standard deviation (0.393), as shown in (4).
Communication and media skills  
Cooperation and work skills  
Critical thinking skills  
Computing culture skills  
Creative thinking skills

Figure 1

Distribution of Arithmetic Means of the 21st Century Skills

The increase in the possession of these skills is due to the interest of the Ministry of Higher Education in general and the University of Jordan administration in particular to the importance of students' possession of the 21st-century skills and their impact on the educational process. Possessing the communication, information, and media skills, cooperation and work skills, critical thinking skills, computing culture skills, and creative thinking skills are among the basic skills that university students shall possess to face the challenges of the 21st-century and keep abreast of the rapid developments, especially technological developments that have imposed themselves on everyone, employ them in the educational process through the integration of communication, information, and technology skills in education, adopt and activate quality standards, whether on campus or in blended learning and distance education, focus on the student and encourage him/her to research, explore, think and create, and provide an environment that supports this, where this result is consistent with Maalouf’s study (2018) and Salimon’s study (2018).

- Results related to the second question: Are there statistically significant differences at the level of significance (= α 0.05) in the degree of possession of Jordan university students of 21st-century skills according to the variables of the faculty (scientific, humanities), gender (male, female) and the academic year (second, third, fourth)?
The test is used for independent samples to find out if there is an effect of the gender variable on the degree to which members of the sample possess 21st-century skills as shown in Table (5).

Table 5

Table 5 shows that there are no statistically significant differences in the first four domains, where the value of the statistical significance of the four domains is greater than the suggested level of significance (0.05). Thus, there are no statistically significant differences, meaning that there is no difference among students, whether the respondent is male or female in terms of their possession of the 21st-century skills in the first four domains from their point of view. Concerning the fifth domain of the formation, communication, and media skill, the value of the statistical significance for this domain is (0.008) which is smaller than the suggested level of significance (0.05), i.e. there are statistically significant differences among students' answers, and these differences are in favor of the female group with the highest arithmetic mean of (16.44) compared to the lowest arithmetic mean for males (15.98). In other words, this difference shows that the female evaluation of their possession of 21st-century skills is higher than the evaluation of males in the domain of information and communication skills. Thus, it can be said that the differences are only achieved in the fifth domain, while they were not achieved in the
first four domains, and this result was in agreement with the study of Salimon et al. (2018) and Fawaeer’s study (2016).

This can be attributed to the fact that the four skills, i.e. creative thinking skills, critical thinking skills, computing and information technology culture skills, and cooperation, teamwork, and leadership skills are among the skills that the student needs, whether male or female in his daily, academic and social life, as they are considered among the requirements of life in this age. Concerning the existence of statistically significant differences in favor of females in possessing information, communication, and media skills, this result may be attributed to the students’ awareness of the importance of women's participation and their involvement in scientific and practical life. Importantly, communication and media skills play a prominent role to enable females to achieve this effective and constructive integration into society.

To find out if there is an effect of the faculty variable on the degree to which members of the sample possess 21st-century skills, a (t) test is used for independent samples as shown in Table (6).

Table 6

<table>
<thead>
<tr>
<th>Indicators Variables</th>
<th>Scientific Faculties N=267</th>
<th>Humanities Faculties N=413</th>
<th>Calculated (t)</th>
<th>Statistical Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AM</td>
<td>SD</td>
<td>AM</td>
<td>SD</td>
</tr>
<tr>
<td>Creative thinking skills</td>
<td>16.06</td>
<td>1.920</td>
<td>16.29</td>
<td>1.870</td>
</tr>
<tr>
<td>Critical thinking skills</td>
<td>15.84</td>
<td>2.010</td>
<td>15.71</td>
<td>2.035</td>
</tr>
<tr>
<td>Cooperation, teamwork, and leadership skills</td>
<td>15.02</td>
<td>2.510</td>
<td>15.46</td>
<td>2.431</td>
</tr>
<tr>
<td>Computing and Information Technology Culture skills</td>
<td>16.32</td>
<td>2.299</td>
<td>15.98</td>
<td>2.394</td>
</tr>
<tr>
<td>Information, communication, and media skills</td>
<td>16.13</td>
<td>2.161</td>
<td>16.45</td>
<td>1.919</td>
</tr>
</tbody>
</table>
Table (6) shows that there are no statistically significant differences in the 21st-century skills, as the value of the statistical significance of the skills is greater than the level of significance (0.05), meaning that there is no difference among students, whether from a scientific or humanities faculty in terms of their possession of the 21st-century skills in these areas from their point of view. This result is consistent with the study of Tobi and Fawaeer (2016), and this result can be attributed to the fact that 21st-century skills are skills necessary for the student regardless of the faculty. In the various faculties and disciplines, students are required to employ the 21st-century skills such as creative thinking, critical thinking, and computing culture and information technology, and where it is not possible to keep pace with the times without these skills, it can be said that young people at this age stage possess the awareness, energies, and will that enable them to acquire the skills of the century with desire and perception.

The Analysis of variance (ANOVA) test is also used to find out the significance of statistical differences between the means of students’ responses regarding the degree of their possession of the 21st-century skills according to the variable of the academic year as shown in Table (7).

Table 7

Procedures for the ANOVA Test

<table>
<thead>
<tr>
<th>Indicators Variables</th>
<th>Source of Variance</th>
<th>Sum of squares of deviation</th>
<th>Degrees of Freedom (DF)</th>
<th>Mean squares</th>
<th>Value of F</th>
<th>Level of Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creative thinking skills</td>
<td>Between groups</td>
<td>1,311</td>
<td>2</td>
<td>.655</td>
<td>.182</td>
<td>.833</td>
</tr>
<tr>
<td></td>
<td>Within groups</td>
<td>2431,800</td>
<td>676</td>
<td>3,597</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2433,110</td>
<td>678</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical thinking skills</td>
<td>Between groups</td>
<td>1,294</td>
<td>2</td>
<td>.647</td>
<td>.158</td>
<td>.854</td>
</tr>
<tr>
<td></td>
<td>Within groups</td>
<td>2772,473</td>
<td>676</td>
<td>4,101</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2773,767</td>
<td>678</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooperation, teamwork and leadership skills</td>
<td>Between groups</td>
<td>11,064</td>
<td>2</td>
<td>5,532</td>
<td>.905</td>
<td>.405</td>
</tr>
<tr>
<td></td>
<td>Within groups</td>
<td>4132,748</td>
<td>676</td>
<td>6,114</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domain</td>
<td>Total</td>
<td>Between groups</td>
<td>Within groups</td>
<td>Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>----------------</td>
<td>----------------</td>
<td>---------------</td>
<td>-------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computing and Information Technology Culture skills</td>
<td>4143,811</td>
<td>18,198</td>
<td>3748,162</td>
<td>678</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information, communication and media skills</td>
<td>6,629,3766,359</td>
<td>6,247,230</td>
<td>2796,423</td>
<td>678</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All domains are greater than the suggested level of significance 0.05. In other words, Table (7) shows that there are no statistically significant differences between the means of groups in the studied domains at a level of significance less than (0.05) in the degree to which the sample members possess the 21\textsuperscript{st}-century skills according to the variable of the academic year. Therefore, the level of students’ evaluation of their possession of the 21\textsuperscript{st}-century skills does not differ, whether the student belongs to the second, third, or fourth year from their point of view, and this result is consistent with Khudair and Jasim’s study (2020).

This result can be attributed to the fact that these 21\textsuperscript{st}-century skills are emphasized in the curricula of various academic years. Importantly, the University of Jordan works to integrate communication, information, and technology skills in the learning process in its various stages stresses the need to activate them, whether on campus or in blended learning and distance education and focus on the student and encourage him/her to research, explore, think and create regardless of the student’s academic year. More importantly, the role of technology and the digital lifestyle that characterizes this century shall not be ignored, as daily life is inseparable from these developments.

11. Conclusion

In a nutshell, given the importance of 21\textsuperscript{st}-century skills, and the need for university students to possess these skills, this study aims to reveal the degree to which students at the University of Jordan possess 21\textsuperscript{st}-century skills from their point of view. The study is devoted to the following areas: creative thinking skills, critical thinking skills, cooperation, teamwork, and leadership skills, computing and information technology culture skills, and communication, information, and media skills. The results of the study show that the extent of students at the University of Jordan possessing 21\textsuperscript{st}-century skills, in general, is of a high degree with an arithmetic average of (2.6548). However,
communication, information, and media skills have the highest arithmetic mean, creative thinking skills are ranked second, and computing and information technology skills are ranked third.

The study also shows that there are no statistically significant differences, meaning that there is no difference among students, whether the respondent is male or female in terms of their possession of the 21st-century skills in the first four domains from their point of view. As for the fifth domain, information, communication, and media skills, it can be said that there are statistically significant differences among the students’ answers, and these differences are in favor of the female group, meaning that the females’ evaluation of their possession of the 21st-century skills is higher than the males’ assessment in the domain of information, communication, and media skill.

Besides, the study shows that there is no difference between students, whether from a scientific or humanities faculty in terms of their possession of the 21st-century skills in these areas from their point of view. However, the level of students’ evaluation of their possession of 21st-century skills does not differ whether the student belongs to the second or third, or fourth academic year.

12. Recommendation

In light of the results and discussion, several recommendations are made such as the necessity of reviewing university courses to include the various skills of the 21st-century, conducting more studies on the extent to which 21st-century skills are included in the training programs for faculty members in universities, creating urgent educational and enriching brochures that help faculty members integrate the 21st-century skills in their teaching, conducting studies on other skills of the 21st-century skills, making studies on the other five skills of the century examined in this study, but from the viewpoint of the faculty, and establishing cooperative programs to exchange experiences among Jordanian universities.
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Atwi, Saleh. (2016). The reality of integrating e-learning into the educational environment from the viewpoint of high school graduates who study in the preparatory year at Majmaah University as one of the 21st-century skills. *Journal of Educational Sciences*, 2(10), 357-414.


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