The Level of Digital Skills for Amman Arab University students in Light of Some Variables

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Abstract: The current study aimed to investigate the level of digital skills among students of Amman Arab University in light of some variables. The study sample consisted of (308) students from various faculties and academic programs, to achieve the goal of the study, a scale for digital skills was applied to the study sample after assuring validity and reliability of it. The study results showed the existence of moderate level of digital skills among the students of Amman Arab University; moreover, the results showed no statistically significant differences between the means of digital skills according to gender, faculty, GPA variables. The results displayed statistically significant differences for the interaction between the faculty and the students' PGA in favor of students with a "very good" average in scientific faculties. The study recommended developing students 'digital skills through holding training workshops, scientific lectures and focusing on courses that create and establish appropriate digital skills.

Keywords: Digital Skills, Amman Arab University, Scientific Research.

مستوى المهارات الرقمية لدى طلبة جامعة عمان العربية في ضوء بعض المتغيرات

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المستخلص: هدفت الدراسة الحالية إلى معرفة مستوى المهارات الرقمية لدى طلاب جامعة عمان العربية في ضوء بعض المتغيرات. تكونت عينة الدراسة من (308) طالباً وطالبة من مختلف الكليات والبرامج الأكاديمية، لتحقيق هدف الدراسة، تم تطبيق مقياس المهارات الرقمية لعينة الدراسة بعد التأكد من خصائص المقياس السيكومترية المناسبة. أظهرت نتائج الدراسة وجود مستوى متوسط من المهارات الرقمية لدى طلبة جامعة عمان العربية، كما أظهرت النتائج عدم وجود فروق ذات دلالة إحصائية بين المتوسطات الحسابية للمهارات الرقمية باختلاف متغيرات الجنس، الكلية، المعدل التراكمي. وأظهرت النتائج فروق ذات دلالة إحصائية للتفاعل الثنائي بين الكلية ومعدل الطالب التراكمي لصالح الطلبة ذوي المعدل "جيد جدا" في الكليات العلمية. واستنادا للنتائج أوصى الباحثون

وأكدوا على أهمية تنمية المهارات الرقمية لطلبة جامعة عمان العربية من خلال عقد ورش عمل تدريبية ومحاضرات علمية والتركيز على الدورات التي تخلق وتؤسس للمهارات الرقمية المناسبة.

الكلمات المفتاحية: المهارات الرقمية، جامعة عمان العربية، البحث العلمي.

Introduction.

The wide use of new electronic technology has contributed to finding new methods for new lifestyles after the demise of traditional cultures, and the rise and crystallization of new data and skills that have come to be called digital skills, especially since the culture of the new generation has reached complexity until it has become multiple sources and concepts, and branched into frameworks governed by worlds virtual, by digital communication technology under the name of the culture industry.

The culture in this era has also undergone a change, and the manifestations of collective values have turned into individual values with the emergence of youth culture affected by the fast- flowing technical culture systems as a result of the growing use of technology and modern means of communication by new generations, until the world has become a small village in which knowledge spreads at record speed, and it has become Cultural practices are linked to the digital space, disrupting a set of rules, which indicates that comprehensive transformations of culture have taken place in this digital age and that the world is witnessing the increasing importance of digital culture(Mantiri, 2019).

Digital skills are the basic functional skills needed for the basic use of digital devices and online applications, in fact, these skills are currently the main reason for the prosperity and development of society, as digital skills work alongside with other abilities such as reading, writing and thinking skills. Critical and creative, complex problem solving, ability to work collaboratively, and social skills (Laar etal., 2017; Allmann et al., 2021).

Employing the technology of the third millennium is more comprehensive than simply acquiring information or printing a scientific, as the need to change according to developments, through providing individuals the ability to succeed in the twenty- one century, by mastering the academic knowledge content and the basic skills necessary for their success at the personal and societal levels (Park, 2014).

Lever- Duffy & McDonald (2017) described Digital skills as the ability to use digital resources perfectly and benefit from them through critical thinking, communication, cooperation and innovation to ensure that the individual adapts to face the changing society, which includes three sub- skills as following:

First: Literacy of Information.

The interest in literacy of information comes from their importance as a major indicator of the emergence of the data society, which constitutes the nucleus of the digital knowledge society in the current century. Assessing the validity, effectiveness, and credibility of information, and verifying its

sources and methods for reaching it, is the essence of information skills in the context of science, because this information forms the basis for building scientific explanations and formulating arguments and logical evidence adopted in critical thinking to solve both individual and societal problems., this makes it imperative for students to distinguish between reliable scientific information from its references, opinions and issues raised in different sources and to pay attention to the accuracy of the methods adopted in accessing it(McDougall, 2018).

The information life cycle does not exceed a maximum of seven years in the scientific, digital and economic fields alike, this means that what the student learns in his first year at university, for example, will not be useful shortly after graduating; this reinforces the need for new knowledge, which forces schools to develop scientific and technological curricula in particular periodically and frequently (Alnasraween, Almughrabi, Ammari, & Alkaramneh, 2021).

In addition, Kilbane & Milman (2014) assert that students who possess information skills are more able to deal with the rapid changes of this age than others, in light of the large number of sources of information and their varying degrees of authenticity and reliability.

Second: Literacy of Media.

The huge leap in ICT has led to the production of a global culture that is about to wipe out local cultures, which requires contemporary media to be careful in choosing its topics and to investigate its consistency with peoples' values and traditions, moreover, it is important to satisfy future needs (Lever-Duffy & McDonald, 2017).

Since complex scientific topics and phenomena are not accurately expressed in the media, students must be aware of scientific knowledge and develop critical analysis skills to determine the degree of consistency of data that the media may present with scientific knowledge; the media interpretation of scientific information may differ from the interpretation formulated by the specialized scientific community for the same information; as a result of what the media broadcasts of opinions instead of scientific facts, thinking that they meet the needs of society (Laar, Deursen, Dijk & Haan, 2017).

Third: Information and Communications Technology (ICT) Literacy.

The ability to interact with the flowing amount of scientific knowledge, analyze it and invent new tools to employ and benefit from it, this requires possessing the wide capabilities provided by information and communication technology, which requires students to understand the function of technology in different ways, and capturing its tools in achieving the goals of science (Schout etal., 2019; Polizzi, 2020).

Perhaps the importance of digital skills is embodied in its investment to provide solutions to the problems facing societies, the most important of which is: the time gap between the manufacture and use of technology in developed countries and its consumption in developing countries, which imposes the need for change on the education system in the twenty- first century described as the digital age.

Technology is an additional option, but rather an essential part of the structure of education that would be incomplete without it, which necessitates preparing students for digital culture and preparing them to engage in collaborative technological experiences using critical thinking to solve the problems they face (Lever- Duffy & McDonald, 2017; Kilbane & Milman, 2014).

In a related context; Alnasraween etal (2021) emphasized that Arab countries suffer from a clear decline in the production and consumption of digital skills and lack of the correct tools handling as a result of their contentment with teaching students to use technology to meet needs only. Without focusing on understanding how technology is produced and developed, which reinforces the existence of a gap in Digital skills.

There is no doubt that digital skills increase learners' experiences and contribute to adding an encyclopedia of concepts and knowledge to their world, which makes them transcend geographical and temporal boundaries towards the culture of other peoples. It, and the various technical systems, programs and means to become an active member of the educational organization.

Statement of study Problem:

The world is witnessing a digital transformation in life, which has changed a lot of the modern social, cultural and economic scene, so there was a need for "Digital skills" to be the focus of attention and among the priorities given by institutions in different societies, in order to spread technical awareness and optimal use of that technology in facilitating tasks, operations, and providing services to beneficiaries with quality and perfection.

Digital skills have become the nucleus of all business and use in various types of knowledge and life, they depend entirely on knowledge of electronic work and its many tools, becoming one of the pillars of daily work, especially in developing countries that have to overcome the digital gap and catch up with the developed countries. Moreover, the young generation, especially university students, is the largest segment in society, it is necessary to provide them with these skills necessary to enter the age of science enabling them to use the tools of research and scientific production. In sum the current study aimed to measure the level of digital skills among Amman Arab University students in the light of some variables.

Study Questions:

The first question: What is the level of digital skills among Amman Arab University students?

The second question: Does the level of digital skills differ according to the variables: Gender, GPA, faculty, and the interaction between these variables?

Terms and procedural definitions

Digital Skills:

A set of digital capabilities that help the use of digital devices, communication applications and networks, to access and manage information in an optimal and manner, as it enables people to create digital content and share it effectively, communicate effectively with others, cooperate and solve various problems, as well as for learning and working on social activities in general (Deursen et al., 2010).

Grade Point Average:

A number that indicates how well or how high student scored in all the courses on average.

Significance of the study

This study has theoretical and practical importance, as follows:

Theoretical importance.

The theoretical importance is represented in the theoretical frameworks that this study will add to the Arab library and to researchers and those interested in this subject. Moreover, the importance of this study stems from its novelty because of the great importance of this topic in the age of information, and data processing.

Practical importance:

The practical importance stem from the data it will provide which will enable decision- makers to formulate policies and modify curricula to improve and enrich student digital skills, also, the practical importance is represented by what this study will provide as an instrument with appropriate psychometric properties that researchers and those interested can use.

Previous studies:

- **Alnasraween et al (2021)** carried out a study aimed is to construct a digital culture test in light of IRT, the study sample consisted of (650) students in the eighth grade from Jordan. The results displayed statistically significant differences in the means of the digital culture test due to gender in favor of female students. Moreover, the outcomes presented statistically significant differences attributed to the education sector variable favoring the private sector.

- **Al- Masry & Shaath (2017)** study sought to identify the level of digital citizenship among a sample of students at the University of Palestine. The sample included (300) male and female students, a questionnaire consisting of (68) items was used. The results showed that the relative weight of the level of digital citizenship was (71.13%), the results also showed no significant differences attributed to the gender variable.

- **Al- Dosari's study (2017)** aimed to reveal the level of availability of digital citizenship standards for computer teachers in the city of Riyadh, a questionnaire consisting of (47) items was used. The study population included computer teachers of the secondary stage, and the sample size was (277) teachers. The study found that teachers have high standards in terms of: digital access, digital health, digital communication, digital behavior, digital rights and responsibilities. As for digital security standards, digital law, digital literacy and digital commerce, they are available to teachers at an average level.

- **While Tawalbeh's study (2017)** aimed to identify the degree to which civic and civic education books include the concepts of digital citizenship and the teachers' familiarity with these books, through the use of the descriptive approach, and the sample included (43) teachers in addition to all civic and civic education books, and the results showed that all National and civic education books for the term digital citizenship, and that it is free of any repetition of (63) concepts, and that digital literacy and digital access are the two areas that some of their concepts have been mentioned in all national and civic education books, and the knowledge of national and civic education teachers is significantly low in the concepts and axes of digital citizenship.

- **As for the study of Mabrouk & Metwally (2017)** it sought to employ enrichment activities in home economics to develop digital citizenship skills and cultural intelligence among secondary school students. The sample included (89) female students, and the results showed the effectiveness of enrichment activities, and a positive correlation between the digital citizenship skills scale, and cultural intelligence in favor of the experimental group.

- **Al- Hamshari (2016)** conducted a study aimed at identifying the positive and negative effects of digital culture on the university student from student's point of view at Zarqa University and their attitudes towards it. The study sample consisted of (220) male and female students. The results of the study showed that the positive social, personal, and economic influences of digital culture received high ratings, while the academic influences received medium ratings, and that all negative personal, social, academic and economic influences, respectively, also received moderate ratings. The results also showed that there were no statistically significant differences between the means of students' estimates of the effects of digital culture due to the variables of gender, school year, specialization, moreover, their attitudes towards this culture were positive and high.

- **Park (2014)** conducted a study aimed at identifying the relationship between university students' learning outcomes and their participation in social networking services and their social acceptance. The study sample consisted of (730) university students in South Korea. The results revealed a positive relationship between student learning outcomes and both social participation and social acceptance.

Commenting on previous studies:

It is noted by reviewing previous studies that they varied in their objectives, samples they dealt with, and this study was distinguished from other previous studies in that it sought to know the level of digital skills among private university students in the light of some variables.

3- Study Procedures.

This part includes a description of the study tools and procedures, as follows

Study Methodology the descriptive survey method was used.

Study Population

The study population consists (1008) students at Amman Arab University whom are enrolling in master's degrees in all faculties, for the academic year (2020/2021).

The study sample

The study sample consisted of (298) male and female students with percentage of (30%) from the study population, whom were selected via the simple random sampling, Table (1) shows the study sample according to its's demographic variables.

Table (1): study sample according to its variables

faculty	No
humanity	204
Scientific	103
Total	307
Gender	No#
Male	152
female	155
Total	307
GPA	No#
Acceptable	17
Good	19
Very Good	93
Excellent	178
Total	307

Study Instrument

The study tool was developed by referring to the theoretical literature and previous studies such as the Al- Hamshari study (2016), the Mabrouk and Metwally study (2017), consisting in its initial form consisted from (26) items.

Validity of the study instrument

Content Validity:

The validity of the scale was verified by presenting it to a group of arbitrators in measurement, evaluation, curricula and teaching methods, and their number was (9) arbitrators(23) items.

Construct validity:

It was verified by calculating the Pearson correlation coefficient between items and the total score, as shown in Table (2).

Table (2): person correlation values between item and total degree

Item	Person correlation	item	Person correlation
1	**0.48	.13	*0.49
2	*0.33	.14	**0.60
3	**0.70	.15	**0.54
4	**0.52	.16	**0.70
5	**0.56	.17	*0.36
6	*0.30	.18	*0.35
7	**0.59	.19	*0.34
8	**0.50	.20	*0.33
9	*0.33	.21	*0.42
10	**0.60	.22	*0.41
11	**0.52	.23	**0.56
12	*0.47		

** significant at ، (0.01=α), *significant at (0.05=α)

Table (2) display the values of the correlation coefficients, which were higher than (0.30), this indicates that the scale has an appropriate construct validity (Al- Jadri, 2016).

The reliability of the study instrument:

The reliability of the study instrument was verified by finding the internal consistency by Cronbach's alpha formula, where its value reached (0.83), which is suitable for the purposes of the current study.

4- Study Findings.

Results of the first question, which state: what is the level of digital skills for Amman Arab University students?

To answer this question, the arithmetic means and standard deviations were extracted, and Table (3) shows this.

Table (3) Arithmetic means and standard deviations of Amman Arab University students' digital skills

No	Item	Mean	S.D	Rank	Level
16	I can easily create an e- mail and correspondence through it	4.01	0.87	1	High
7	My digital skills have made me more open to the world and what goes on in it without any obstacles	3.94	1.06	2	High
19	I can deal with different storage media such as: CD, or USB Memory	3.90	.94	3	High
10	My digital skills allow me to keep more than one backup of my data	3.88	1.10	4	High
4	I can prepare my homework and my required studies through the Internet and social networking sites without relying on the university library	3.84	1.00	5	High
12	My digital skills have increased my awareness of the importance of protecting my data and devices	3.81	1.00	6	High
3	I can use various computer programs such as text editing and data entry	3.80	1.02	7	High
20	My digital skills helped me succeed during distance learning	3.80	1.07	8	High
22	My digital skills contributed to shortening the time for me to obtain, transfer and exchange information and to reduce my efforts	3.80	0.97	8	High
23	My digital skills helped me obtain information with no financial cost	3.80	0.93	10	High
11	I can create accounts on cloud applications such as: One drive or Google Drive, and I can store and deal with my data from anywhere	3.79	1.02	11	High
21	My digital skills helped me to be more free to express my opinion and learn about other people's opinions on different topics	3.77	1.00	12	High
8	I can distinguish between sources of information available on the Internet and to choose from trusted sites	3.76	.92	13	High
2	I can access research databases and obtain recent studies and information	3.67	.93	14	Moderate
18	I can create appropriate presentations	3.66	1.11	15	Moderate
17	I can document my references using Microsoft Word	3.61	1.19	16	Moderate

No	Item	Mean	S.D	Rank	Level
1	My digital skills help me find jobs opportunities on websites	3.59	1.11	17	Moderate
13	I can deal with translation sites and reformulate the resulting text	3.57	1.08	18	Moderate
9	I can access the websites of Arab and international universities and obtain knowledge sources.	3.47	1.15	19	Moderate
6	My digital skills have made me more aware of the issues and things going on at the university as they happen	3.46	1.03	20	Moderate
5	My digital skills helped me build wide friendships with my colleagues at university and outside the university	3.33	1.09	21	Moderate
15	I can create an accounts on the websites of any research journals in order to publish the research	3.17	1.31	22	Moderate
14	I can access the sites of Arab journals in order to publish research	3.00	1.27	23	Moderate
	Total score	3.67	0.72		Moderate

It is noted from the results of Table (3) that the means of the digital culture total score was moderate, as it reached (3.67) with a standard deviation of (0.72). According to the items in the first rank came item (16), which states "I can create mail E- mail and correspondence through it easily" with a mean (4.01) and a standard deviation (0.87) with a high degree. In the last rank came item (14), which states "I can access the sites of Arab journals in order to publish research" with a mean (3.00) and a standard deviation (0.72).) with a moderate level. This result may be attributed to the nature of the academic courses at Amman Arab University, which focus on employing computer skills, dealing with databases, and writing scientific research, by students.

The results of the second question, which states: Does the level of digital skills differ according to the variables: gender, GPA and the faculty, and the interaction between these variables?

To answer this question, the arithmetic means and standard deviations of the level of digital skills were extracted according to variables as Table (4) shows.

Table (4): means and standard deviations of digital culture skills according to the study variables

Faculty	no	Arithmetic Mean	Standard deviation
humanity	204	3.70	.74
scientific	103	3.60	.66
Total	307	3.67	.72
gender	no	Arithmetic Mean	Standard deviation
male	152	3.72	.72
female	155	3.62	.72
Total	307	3.67	.72
GPA	no	Arithmetic Mean	Standard deviation

Faculty	no	Arithmetic Mean	Standard deviation
Acceptable	17	3.61	.79
Good	19	3.59	.61
Very Good	93	3.47	.66
Excellent	178	3.79	.73
Total	307	3.67	.72

It is noticed from the results of Table (4) that there are apparent differences between the means according to the different variables: faculty, gender, and GPA.

Table (5): ANOVA test results between the arithmetic means of digital skills according to gender, GPA and faculty

Variance Source	Sum Square	Df	Mean Square	f	Sig.
faculty	0.031	1	0.031	0.064	0.801
gender	0.040	1	0.040	0.083	0.774
GPA	3.940	4	0.985	2.056	0.087
Gender * faculty	0.603	1	0.603	1.258	0.263
GPA * Faculty	6.611	3	2.204	4.599	0.004
GPA * gender	2.749	3	0.916	1.913	0.128
GPA * Gender * Faculty	0.716	1	0.716	1.495	0.222
Error	139.896	292	0.479		
Total	4296.794	307			

Table (5) shows that there are no statistically significant differences between the arithmetic means of the digital skills according to variables: gender faculty, and GPA, the interaction between the faculty and gender, the gender and the average, and the triple interaction, as the significance values of "P" are greater than (0.05)., while the differences between the means were statistically significant according to the binary interaction between (Faculty and GPA), and to study this interaction, the following graphic representation was extracted:
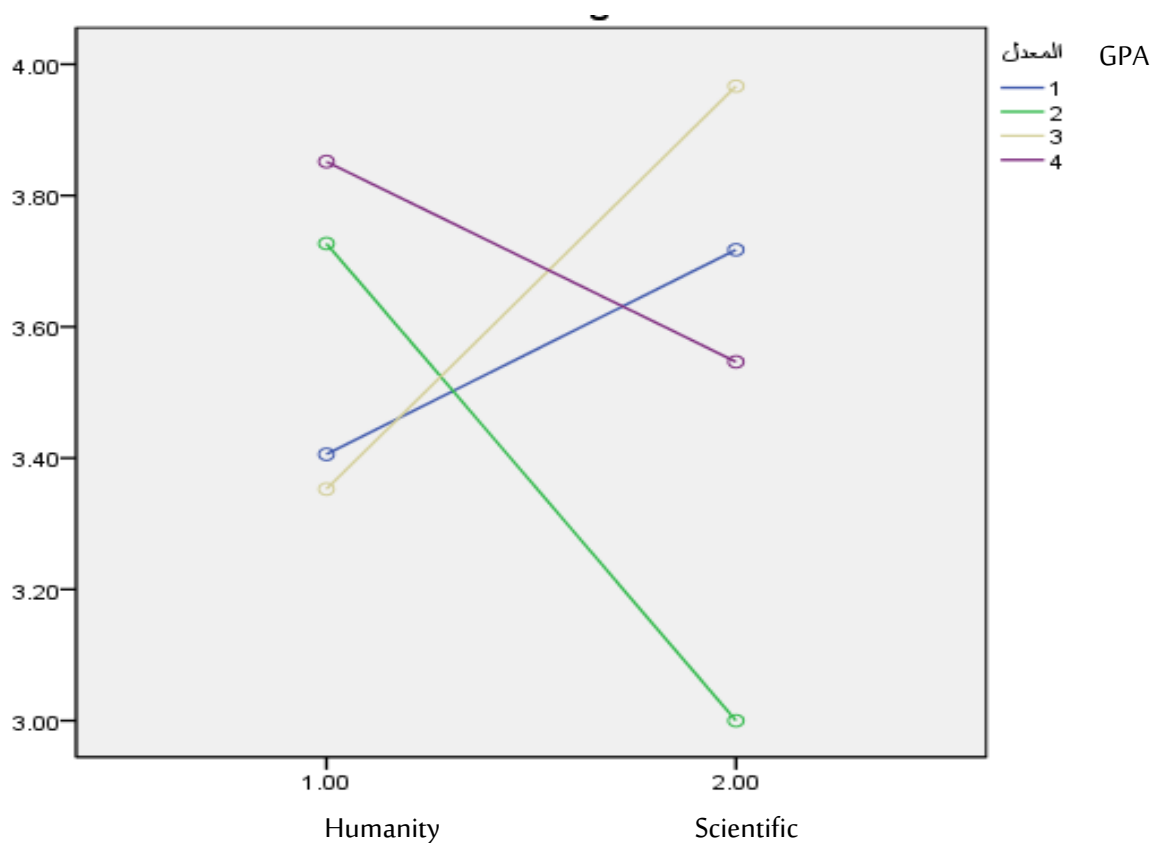
Figure (1) The Graphical representation of the interaction between the total and the rate

It is noted from Figure (1) that the differences between the means are attributed to students with a "very good" average in scientific faculties, and this result may be attributed to the fact that the students of scientific faculties in general have higher digital skills than students of humanities faculties due to the nature of the courses they study and their constant need to employ and use technology and the Internet The result of the lack of statistically significant differences due to the variables: gender, faculty and average may be attributed to the interest of all students in developing their digital skills and their continuous pursuit of academic achievement and obtaining high grades.

The results of this question aligned with the results of Al- Hamshari (2016) which showed that there were no statistically significant differences between the means of students' estimates of the effects of digital culture due to the variables of gender, school year, specialization, moreover, their attitudes towards this culture were positive and high. Also, these results differ from the results of Alnasraween etal (2021) which displayed statistically significant differences in the means of the digital culture test due to gender in favor of female students.

Conclusion

Digital skills are terms that describe the mechanism of information technology and the Internet in shaping the way in which people interact with this technology and use it in their working and personal lives. Digital skills include new methods, technologies and media that can be used to perform the required

tasks; they also refer to the cultural changes produced by the development and dissemination of digital technology, especially the Internet and the Web. The content and concept of digital skills are based on building a methodology of thinking by integrating elements from several previously separate cultural fields, and working with the other even if it is far away.

Having the skills and abilities to participate in a digital economy and in particular the ability to use, understand and interpret digital communications has helped people exchange a lot of information at high speed among themselves, from anywhere in the world.

Digital Skills help to perform activities, working quickly with high quality, eliminating working according to the hierarchy, as this helps to speed up work and allow employees to make their own judgments, and enables them to make their decisions quickly in a timely manner. Institutions encourage instilling the concept of creativity and innovation in the workplace and motivating employees to try new and unfamiliar things for them. With regard to the educational process, digital skills enable students to access the world of knowledge, master and prepare assignments related to their studies and carry out scientific research according to the highest academic standards.

The results of this study showed a moderate level of digital skills for the study sample, moreover the study results showed no statistical differences according to the study demographic variables.

Recommendations.

1. Conducting studies to compare the level of digital culture for students in different universities (public and private).
2. Improving the level of digital culture for students by enriching the university curricula with digital contents.
3. Holding training workshops for students and providing them with digital skills.

References

- Al- Haroun, Shaima (2016). The effectiveness of including media culture competencies in teaching science to develop twenty- first century skills and achievement among middle school students. Retrieved on September 16, 2019 from https://shams.academia.edu/shaimaaelharon.

- Al- Jadri, Adnan. (2016). Methodological foundations and statistical uses in educational and human sciences research. Amman: Ithraa for Publishing and Distribution.

- Al- Rasai, Mohammed (2017). Building a list of science teachers' competencies in the field of information and communication technology and measuring their availability before service. Al- Hussein Bin Talal University. Journal of Research, 2, 167- 191.

- Allmann, K. et al. (2021). Rethinking digital skills in the era of compulsory computing: methods, measurement, policy and theory. Information, Communication & Society, Vol 24, 633–648. Routledge.

- Alnasraween, M, S., Almughrabi, A. M., Ammari, R & Alkaramneh, M. (2021). Validity and reliability of eight grade digital culture test in light of item response theory. Cypriot Journal of Educational Science. 16(4), 1816- 1835. https://doi.org/10.18844/cjes.v16i4.6034.

- Bergdahl, N., Nouri, J. & Fors, U.(2020), Disengagement, engagement and digital skills in technology-enhanced learning, Education and Information Technologies volume 25, pages957–983.

- Bybee, R. (2010). The teaching of science: 21st century perspectives. Arlington, VA: NSTA Press.

- Deursen, A. J. A. M. van et al. (2010). Measuring Internet Skills. International Journal of Human-Computer Interaction, 26, 891–916. 23.

- Hashmari, Omar. (2016). The effects of digital culture on the university student from the point of view of the students of the Faculty of Educational Sciences at Zarqa University, Zarqa Journal for Research and Studies, 16(1), 22- 39.

- Kaeophanuek, Siriwatchana & Na- Songkhla, Jaitip & Nilsook, Prachyanun. (2018). How to Enhance Digital Literacy Skills among Information Sciences Students. International Conference on Knowledge and Education Technology. 8. 292. 10.18178/ijiet.2018.8.4.1050.

- Kilbane, C., & Milman, N. (2014). Teaching models: Designing instruction for 21st century learners. Boston: Pearson.

- Laar, E., Deursen, A., Dijk, J., & Haan, J. (2017). The relation between 21st- century skills and digital skills: A systematic literature review. Computers in Human Behavior, 72, 577–588. DOI: 10.1016/j.chb.2017.03.010.

- Lever- Duffy, J., & McDonald, J. (2017). Teaching and learning with technology. Florida: Pearson Education.

- Mahdi, Hassan (2018). The effectiveness of a smart learning strategy based on project learning and Google services in providing student teachers at Al- Aqsa University with some skills of the twenty-first century. Journal of Educational Sciences, 30(1), 101- 126.

- Mantiri, O. et al. (2019). Digital Literacy in ESL Classroom. Universal Journal of Educational Research, 7, 1301– 1305.

- McDougall, J. et al. (2018). The uses of (digital) literacy. Learning, Media and Technology, 43, 263–279. Routledge.

- Melhem, Amani (2017). The degree of availability of twenty- first century skills in the technology course for the upper basic stage, and the degree to which students possess those skills. Unpublished Ph.D. Thesis, An- Najah National University, Nablus.

- National Science Teachers Association- NSTA. (2011). Quality Science Education and 21st Century Skills. Retrieved in 11 Aug 2018 from http://www.nsta.org /nstapress/position statement draft 21st century skills.pdf.

- National Science Teachers Association- NSTA. (2013). NSTA Position Statement. Retrieved in 11 Jan 2019 from http://www.nsta.org/about/positions/21stcentury.aspx.

- Park, S. (2014). The Relationship between University Student Learning Outcomes and Participation in Social Network Services, Social Acceptance and Attitude towards School Life. British Journal of Educational Technology.42 (1): 97- 111.

- Partnership for 21st for Century Skills (2008). 21st Century Skills Assessment. Retrieved in 9 Aug 2018 from http://p21.org/storage/documents/21st_Century_Skills_Assessment_paper.pdf.

- Pheeraphan, N. (2013). Enhancement of the 21st Century Skills for Thai Higher Education by Integration of ICT in Classroom. Procedia- Social and Behavioral Sciences, 103, 365- 373. DOI: 10.1016/j.sbspro.2013.10.346.

- Polizzi, G. (2020). Digital Literacy and the National Curriculum for England: Learning from how the Experts Engage with and Evaluate Online Content. Computers & Education, Vol152, 12- 42.

- Rodríguez- Abitia, G., Martínez- Pérez, S., Ramirez- Montoya, M. and Lopez- Caudana, E. (2020), Digital Gap in Universities and Challenges for Quality Education: A Diagnostic Study in Mexico and Spain, http://dx.doi.org/10.3390/su12219069, https://www.mdpi.com/journal/sustainability.

- Schou, J. et al. (2019). Digital by default? A qualitative study of exclusion in digitalised welfare. Social Policy & Administration, Vol 53, 464—477.

- Sheta, Rawya (2006). Adolescents' cultural media needs. Alexandria: Alexandria Book Center.

- Shunn, W. (2008). An Alternate History of the 21st Century. Retrieved in 28 Dec 2018 from http://sfsite.com/07b/ah276.htm.

- Siddiq, F., Gochyyev, P., & Wilson, M. (2017). Learning in Digital Networks — ICT literacy: A novel assessment of students 21st century skills. Computers & Education, 109, 11- 37.

- Trilling, B., & Fadel, C. (2012). 21st Century Skills: Learning for Life in Our Times. San Francisco, CA: Jossey- Bass.

- Twain, Marcel & Solomon, Noir (2011). Science and technology education for pre- school and primary school levels. Amman: Al- Warraq Establishment for Publishing and Distribution.

- Zaid, Sumaia & Baharuldin, Zuraidah & Jamaluddin, Shahrir & Shaharom, mohd shahril nizam. (2019). The Role of Teacher Readiness as a Mediator in the Development of ICT Competency in Pahang Primary School.