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A proposal for developing third intermediate grade’s computer and information technology textbook in the light of digital citizenship dimensions

The problem and the aim of the study. Digital Citizenship has become a force affecting the construction and the implementation of the curriculum, and the idea of including its knowledge, skills and values in the school curriculum experiences has become an educational goal and a basic standard of the national standards for learning digital technology in the Kingdom of Saudi Arabia, believing in its effective role in preparing learners for life, and preparing them to deal constructively with the transformations that The Kingdom of Saudi Arabia and the world are witnessing it. This research aimed to present a proposal for developing third grade's Computer and Information Technology Textbook in the light of digital citizenship dimensions.

Research methods. To achieve this goal, the researcher used the descriptive approach and designed a content analysis card with digital citizenship dimensions that consists of digital access, digital commerce, digital communication, digital literacy, digital etiquette, digital law, digital rights and responsibility, digital health, and digital security. There are adequate 48 standards that represent the digital citizenship dimensions. The researcher double-checked the card's validity and reliability. Twenty-five experts in the field have reviewed the card, and it has achieved a high score for reliability 96,24%.

Results. The content analysis results indicated that the dimension of digital literacy had the highest degree of availability in the computer and information technology book with a percentage of 74,62%, while the rest of the dimensions were not sufficiently covered in the book. Digital law had the lowest availability percentage at 0,38%, followed by digital health at 0,57%, digital etiquette at 0,76%, digital commerce at 1,14%, digital security at 1,23%, digital rights and responsibility at 1,42%, and digital communication at 4,83%. Finally, digital access came in at 15,06 %, in ascending order of percentage availability.

Conclusion. According to the results, the researcher presented a proposal to include digital citizenship dimensions in the Computer and Information Technology textbook for third grade intermediate level. The researcher suggested adding educational activities and tasks to the current units of the book to increase the level of availability of digital citizenship dimensions. Furthermore, the researcher created a proposed unit based on digital citizenship dimensions to achieve knowledge continuity. Finally, many recommendations were presented to curriculum designers in Saudi Arabia, those who are responsible for developing the infrastructure of public education schools, and those who are in charge of professional development for teachers.

Keywords: computer and information technology, digital citizenship dimensions, third intermediate grade, content analysis

For Reference:
Introduction

The rapid developments of digital technologies have made the individual's mastery of dealing with these technologies skill a condition to be able to communicate with others and participate in different social issues as an active citizen [59]. In light of the development of digital technologies and their spread in all aspects of life, there has become an urgent need for indicative preventive policies that regulate the use of digital technologies and seek benefit from them [20]. This led to the emergence of the term digital citizenship which Kaya & Kaya [37] define it as a set of rules, controls, and standards that young and old citizens follow when using digital technologies [37], while Al-Shamrani [19] defines it as a set of knowledge, skills and values that individuals in the digital society should have in order to be able to develop and respond to the requirements of the era and technological developments [19].

The concept of digital citizenship has begun to occupy a prominent position in the national framework of the standards for general education curricula in the Kingdom of Saudi Arabia, and in particular the field of learning digital technology for computer curricula [27]. One of the main reasons for developing the digital citizenship concept is the rapid development in knowledge, digital technologies and the products they follow, which have become accessible to everyone, young and old, and the need for a base to use digital technologies that form the basis of the digital society, and the desire to raise good citizens who use technology perfectly and make good judgments [40].

As the school curriculum constitutes one of the themes of the educational and learning process that provides opportunities for learner’s growth in all aspects of life, as well as its effective role in empowering learners, educating them digitally and promoting positive behavior and digital health for them; The International Society for Technology in Education [33] has stressed the importance of integrating digital citizenship into school curricula as it provides learners with safe practice and responsible, legal and ethical use of digital technologies [3]. It helps them develop healthy online practices, creates a better space for them to interact with others, enables them to use the Internet with a high sense of self-awareness, and reduces inappropriate behaviors [28; 53]. Therefore, digital citizenship has become a force affecting the construction and the implementation of the curriculum, and the idea of including its knowledge, skills and values in the school curriculum experiences has become an educational goal and a basic standard of the national standards for learning digital technology in the Kingdom of Saudi Arabia, believing in its effective role in preparing learners for life, and preparing them to deal constructively with the transformations that The Kingdom of Saudi Arabia and the world are witnessing it [27].

Despite the developmental efforts and initiatives that have taken place in the school curricula in Saudi Arabia, in which the computer and information technology curriculum has received lots of development processes, this development focused on the two dimensions which are technical knowledge and skills at the expense of the emotional, social and moral dimensions [18], while these dimensions cannot be isolated from each other, as they interact with each other, and each one of them affects and is affected by the other [54]. This will
only be achieved by paying attention to digital citizenship that focuses on developing the learner’s cognitive, skill and value aspects together.

To verify the extent to which the third intermediate grade’s computer and information technology textbook include digital citizenship dimensions, the researcher conducted several interviews. These interviews targeted educational supervisors and computer teachers in the middle stage. They asked them about the availability of each digital citizenship dimension in the third intermediate grade’s computer and information technology textbook. The results agreed upon weaknesses in covering learners’ rights and responsibilities, especially with the urgent need for digital responsibilities and digital behaviors these days and the decreasing adherence to digital behaviors and procedures that improve interactions between individuals in the digital society. The interviewers also agreed that the textbook needs to educate learners about digital health practices, such as proper sitting in front of a computer. The textbook also needs to review Saudi Arabia the Saudi Anti-Cybercrime Law and the laws of the international digital society. Further, it needs to sufficiently contribute to consolidating a culture of maintaining digital safety among learners while interacting with the Internet. From this point of view, it is necessary to know the extent to which third intermediate grade’s computer and information technology textbook include the dimensions of digital citizenship, Therefore, it is necessary to study these dimensions and evaluate the textbook in their light.

Research questions:
1. To what extent digital citizenship dimensions are available in the third intermediate grade’s computer and information technology textbook?
2. What is the proposal for developing third intermediate grade’s computer and information technology textbook in the light of the digital citizenship standards?

Digital Citizenship

Digital citizenship expresses a set of values, behaviors and habits that appear in our actions in the digital world. It is defined as the ability to use technology and the internet in a responsible, safe, critical, productive, and civil manner [28]. It is based on a number of principles mentioned by AL-Mallah [12] such as Digital Equality which refers to the availability of an equal infrastructure among all users. Digital democracy which works to transfer the space for elections and participation in decisions from the box to the network. Digital rights and responsibilities which refers to the digital citizen's enjoyment of the rights of privacy, freedom of expression, and others. In order to properly understand them, they should be studied and discussed in the digital world, and with these rights, responsibilities come, they are linked to each other, and they must be activated together to prepare effective participating citizens. Digital culture which encourages Digital citizens to become producers of the culture, so that it is easy for them to diversify their personal creative inputs and use modern digital technologies to build their cultural products in an attempt to attract the attention of consumers from different places, and take advantage of what exists. They are producers, distributors, consumers at the same time. Digital citizenship skills offer students the proper tools for interacting with the digital world and establishing healthy online communities.
Digital citizenship includes a set of dimensions that enable those interested in dealing with digital citizenship and developing appropriate standards for it to design curricula and implement their educational programs. By reviewing those who have investigate digital citizenship, such as: Al-Dosari [4], Al-Muslimani [14], and Öztürk [44] and Tan [60], it is clear that they agree largely with the nine dimensions referred by Ripple [48; 51], and categorized them into three main themes, each theme linked to three dimensions related to each other [49]. The following figure illustrates that:

![Diagram of Digital Citizenship Dimensions]

**Figure 1** Dimensions of digital citizenship

The following is an explanation for the nine dimensions of digital citizenship according to Ribble themes [49].

The first dimension is respecting yourself and others which includes the following three sub-dimensions:

**Digital Access:** It refers to the ability of internet user to communicate with other users or access to online information resources. This dimension emphasizes that all the learners use the internet and other digital technologies in the classroom continuously, and provides them with additional ways for digital access, such as open computer labs and school libraries. It guides them on how to search for valuable, relevant, and safe information on the internet and offer an opportunities for students who are living in disadvantaged communities to exploit using computers and other technological resources to enhance their digital access [48; 51].

**Digital Etiquette:** it relates to deal with other users of the internet with respect avoiding inappropriate behavior. In the digital world, inappropriate and unacceptable behaviors are prevalent. Banning and depriving the user is an ineffective way to achieve digital citizenship, where it is necessary to resort to the process of education because it will change the behavior in the future [57].
Digital Law: It includes the rules or guidelines established within any organization for the use of the internet. The digital world has many restrictions that address the issue of digital ethics, where there are legislations that should be observed and reversing. It is tantamount to committing violations, and electronic crimes, including theft of the scientific property of authors and publishers without their permission [57; 47].

The second dimension is educating yourself and connecting with others which includes the following three dimensions:

Digital Commerce: It refers to the responsible buying and selling of electronics; As online buying and selling has become a reality, and is constantly increasing, it touches all the users in the light of the technical progress of services and transactions, especially the educated people who make online purchases extensively. They need to be smart consumers in choosing services, products, and making transactions. They should be aware of the risks they may be exposed to, and are able to consider career paths related to digital sales [45].

Digital Communication: It relates to the options available to students to communicate online and interact digitally with others. With the development of the digital revolution, many applications of communication between individuals have emerged, making it possible to communicate, collaborate, and exchange ideas and experiences with everyone, regardless of their location. In this context, digital citizenship seeks to teach students how to communicate safely and effectively over the internet and provide them with the ability to use these applications, make the suitable decisions whether communication is synchronous or asynchronous, and be careful about the people in it.

Digital Literacy: It relates one's ability to learn how to adopt technologies and access online information such as knowing how to use a computer keyboard or mouse and how to use search engine efficiently. In order for the citizens to be able to keep pace with the era in which it is imperative to have knowledge and skills to eradicate his digital illiteracy as Literacy today is connected with individual's digital knowledge and his ability to deal with technology. So, it is important to teach internet skills to fill the gaps in digital literacy [17; 53].

The third dimension is protecting yourself and others which includes the following sub dimensions:

Digital Rights and Responsibility: It refers to the privileges that all students enjoy while using the internet, such as the freedom of expression, and this dimension is related to the dimension of digital etiquette and digital law so that the individual needs to know his advantages and freedoms, such as the right of expression, privacy, and digital identity. Since he has rights, he also has duties and responsibilities to preserve those rights, they are two sides of the same coin. It is necessary to use digital technologies appropriately to preserve the rights of others, and to protect their digital identity from unauthorized use, and to have responsible digital citizens [47; 50].

Digital Health and Wellness: It includes teaching students how to protect their mental and physical health while using the internet. Dealing with digital technologies is a double-edged sword, either helping to achieve requirements and completing work easily, or it leads to health problems and physical diseases as a result of the incorrect use of technology [32; 40]. Therefore, individuals should be educated and trained in preventive procedures against the increasing number of fixed and portable electronic devices and spend a long time dealing with technology [60], as well as discuss digital health with them.
in schools and homes, and how they should live a digital life socially and healthy with physical and psychological safety [45].

**Digital Security:** it includes teaching students how to stay safe online. The digital world is surrounded by many dangers that threaten users such as hacking, theft, and spreading viruses, which are carried out by a number of professionals targeting the youth who use the internet on a continuous basis in order to expand the circle of friends, explore interests, and obtain information [14]. With the increase in sensitive information that is stored electronically day after day, the interest in digital security increases, especially in information security. Therefore, it is imperative for them to learn how to protect their personal and financial data electronically, and to know the ways in which they can detect theft or other forms of fraud practices [25].

To better understand the nine dimensions presented, they have also been categorized according to the priority of need in the school environment into the following categories [48; 51]:

1. Dimensions that directly affect learners’ learning and academic performance, including: digital access, digital communication, and digital culture.
2. Dimensions that affect the school environment and learners’ behavior including: digital etiquette, digital rights and responsibilities, digital security.
3. Dimensions that affect the learners’ lives outside the school setting, including digital commerce, digital law, and digital health.

**Digital Citizenship in Curricula**

Using digital technologies now is no longer limited to electronic communication but has extended to electronic participation in the digital society. Technology has become a lifestyle, especially for the youth who came to this life carrying smart devices in their hands [55]. There is no doubt that this requires a balance between preserving their values, identity, security, and health, and benefiting from the use of technology in their lives [39]. Therefore, digital citizenship is one of the goals of the educational process that prepares individuals to participate in their digital society in line with the objectives of the local community [15] especially in the light of the expansion of educational systems and their inclusion in the application of e-learning.

Digital citizenship gains its importance from being an integral part of e-learning [2], and it is one of the twenty-first century competencies that should be provided to individuals to be successful in their scientific and practical lives [31]. It defines the organizing framework for the individual in dealings with the digital world and explains the advantages and disadvantages of dealing with digital technologies, in addition to its promotion of personal and societal responsibility [56]. Promoting digital citizenship is a requirement for users from a young age to develop their digital citizenship with their local citizenship side by side [4]. This is consistent with what is stipulated by the National Transformation Program in Saudi Arabia to enhance learners’ values and skills, and to build their Islamic, national, and intellectual personality with knowledge, skills, and values in the digital world [62]. With the efforts made by the Saudi Education and Training Evaluation Commission in developing the curricula, the curriculum today contributes to developing knowledge, skills, and values that
make the learner believe in the country in which he/she lives and in the digital world to which he/she belongs.

The Ministry of Education [42] has taken vigorous steps to achieve all the stages referred to by Ripple [52] in its reflective model. It has developed policies and plans that organize efforts in a cooperative framework agreed upon by all relevant individuals. A digital citizenship curriculum has been adopted in order to meet the actual needs of the learners with regard to life and professional skills, and to balance between technology opportunities and risks [42].

Considering the computer – as a curriculum in Saudi society – began almost three decades ago for high education, it stemmed from the general objectives of the Kingdom, which emphasize in the developments that may arise, whether at the local or global level, and the conscious interaction with them. Then, computer teaching was introduced in the intermediate stage by launching a number of initiatives, including the development of the computer and information technology curriculum document for the intermediate stage and issuing a document of standards for the field of digital technology learning “to constitute a conscious Saudi generation able to create and develop knowledge, make a good use of it, deal efficiently with future skills, participate in advancing the national economy and diversifying its sources” [27].

The continuous interest in developing the content of computer curricula and information technology comes from the position occupied by the computer, and the dependence of many sectors and future professions on it. This made educators and curriculum developers required to reconsider the goals of education, especially in the field of computers and its technologies, and to build the curricula on vital, active and thought-provoking goals to meet the needs of the learners, and to form generations able to face the future [11].

Related Studies

The importance of digital citizenship and its inclusion in school curricula is important for the researchers to pay their attention to it by conducting scientific studies. Al-Ghalth [8] conducted a study aimed to develop a list of digital citizenship standards that are required to be met in the content of the computer and information technology textbook (general preparation) for the second semester system in the Kingdom of Saudi Arabia, and to identify the extent of its verification in the content. Mattson [41] analyzed three specialized curricula in digital citizenship education, which are: (Netsmartz) Curriculum, (Common Sense Media) Curriculum, and (Digital Citizenship in Schools) Curriculum. Al-Mohammadi [13] aimed to know the extent to which ethical values are included in computer curricula for the intermediate and high school levels in the Kingdom of Saudi Arabia.

Ünal [46] aimed to identify the elements of digital citizenship included in the "ICT" curriculum that is implemented at the high school level, and to determine the levels of digital citizenship elements among participating students as a result of studying this curriculum. The study concluded that the elements of digital citizenship included in curricula and textbooks were not sufficient in terms of the number to make students acquire the elements of digital citizenship. The study showed that students' attitudes are not positive towards practicing digital citizenship, and that the behaviors they display
indicate their misconduct in practice. It recommended that the elements of digital citizenship should be included more in curricula and textbooks.

Dawaba [26] aimed to know the extent to which technology curricula for the high stage include the values of digital citizenship and to present a proposal for its development, while Al-Qahtani [16] focused on content analysis to identify the values of digital citizenship included in the educational technology textbook from the point of view of faculty staff members at Princess Nourah University and King Khalid University in the Kingdom of Saudi Arabia.

Gleason and Von Gillern [30] addressed the use of social media to teach digital citizenship, and suggested a social media-supported curriculum for high school students to develop digital citizenship practices, and Başarmak et al. [22] aimed to analyze high education programs (computer science, English language, geography, democracy and human rights, religious culture and moral knowledge, philosophy, French, visual arts, music, health and traffic sciences) and their curricula in terms of the sub-dimensions of digital citizenship. She explained that most of the content related to digital citizenship is included in the "computer science" and "democracy and human rights" curricula. Despite the extensive use of the digital skills in computer science curricula, Rights and responsibilities; and ethical and critical thinking skills in the digital environment are given only a little space. In other curricula program, there is a very limited content on digital citizenship.

Al-Harthy [10] aimed to reveal the availability degree of digital citizenship standards in the computer and information technology textbook for the second intermediate grade and to present a proposal to include them on the textbook. Öztürk [44] sought to provide a theoretical framework for the concept of digital citizenship, and to know how it can be introduced the concept of digital citizenship or the elements of digital citizenship within the educational curricula, examine the curricula within the framework of digital citizenship, and know how to teach it.

It is obvious from the previous studies that they are varied in their objectives, as some studies focused on content analysis. Al-Mohammadi [13] focused on moral values, Al-Qahtani [16] focused on the values of digital citizenship, the standards of digital citizenship in the study of Al-Ghalth [8], and the method of presenting digital citizenship concepts in the study of (Mattson [41]; Ünal [46]; Başarmak et al. [22]. The study of Al-Harthy [10], Dawaba [26], and Öztürk [44] presented a proposal for including digital citizenship in the school curricula.

The current research agrees with Dawaba [26], Al-Harthy [10], and Öztürk [44], which aimed at evaluating academic textbook and presenting a proposal, and it differs from them as it analyzed the third intermediate grade’s computer and information technology textbook and presented the proposal in two stages. The first stage by adding educational activities and tasks to the current units of the textbook in order to increase the availability level of the standards, while the second stage by building a proposed unit based on digital citizenship standards, achieving the principle of knowledge continuity, Where the intermediate school textbooks and the digital technology textbook for the first year high stage were examined, so that this proposal becomes a link between the intermediate and high stages. Bloom's Classification of Digital verbs has been adopted to formulate the unit's educational objectives, in addition, the affective aspect cannot be neglected, as well as focusing on developing twenty-first century skills alongside digital citizenship.
Methodology

The research followed the descriptive approach, as one of the objectives of the current research is to identify the availability of digital citizenship standards in the third intermediate grade’s computer and information technology textbook; The method of content analysis is the most appropriate method of the descriptive approach for this type of objectives.

Research community and sample

The research community included the computer and information technology curriculum for the intermediate stage in the Kingdom of Saudi Arabia for the academic year 2020, which includes 3 textbooks: computer and information technology for the first intermediate grade, computer and information technology for the second intermediate grade, and computer and information technology for the third intermediate grade. The sample was limited to the computer and information technology textbook for the third intermediate grade in the Kingdom of Saudi Arabia, which is taught in the first and second semesters of the academic year 2022. The third intermediate grade’s textbook was chosen intentionally because it is the beginning of the adolescence stage, which is an important stage in shaping the ideas and cultures of the learners, as some of them suffer from a lack of awareness and loyalty to their homeland, and they are fascinated by foreign cultures and drift towards them and are affected by the issues of Western societies [1].

Research Tool

To answer the research questions, the content analysis card was designed, and the following are the steps of the card:

The first stage: preparing a list of digital citizenship standards, and verifying their content validity: the list was prepared according to the following steps:

1. Reviewing the educational literature, especially which related to digital citizenship, to help in observing the standards and facilitating their derivation and formulation, which including:
   - Previous relevant studies and scientific research, such as: [5; 61; 9].
   - Standards of some organizations and associations, such as: Internet Keep Safe Coalition [35]; and the International Society for Technology in Education [34]; and an organization [24].
   - The digital technology learning standards document issued by the Education and Training Evaluation commission [27].

2. Preparing the initial list of digital citizenship standards for the third intermediate grade’s computer and information technology textbook. The list included 54 standards distributed over the nine dimensions as mentioned by Ripple [48; 51]: digital access (five standards), digital commerce (seven standards), digital communication (seven standards), digital culture (five standards), digital etiquette (six standards), digital law (seven standards), digital rights and responsibilities (six standards), digital health and wellness (five standards), and digital security (six standards ); To clarify the extent to which the standards are included in the textbook, whether their presence is explicit or implicit.

3. The list was presented in its initial form to a panel of twenty-five jury member specialized in the field of curricula and teaching methods, and in educational technologies
to judge the extent of the clarity of the standards, their linguistic integrity, the extent to which the standards belong to the dimensions, and the extent of the importance of the standards for the third intermediate grade learners. According to observations of the jury members, the necessary modification was done, and the final form of the list are as follows: digital access (five standards), digital commerce (six standards), digital communication (five standards), digital culture (five standards), digital etiquette (six standards), digital law (five standards), digital rights and responsibilities (five standards), digital health and wellness (five standards), and digital security (six standards).

4. Determining the categories of analysis, its units, and the unit of counting and measurement: The main categories of analysis were the main dimensions of digital citizenship, which were nine dimensions, while the sub-categories of analysis were represented in the standards of digital citizenship, which numbered forty-eight standards. Regarding units of analysis, the unity of the idea was adopted, due to its relevance to the nature and objectives of the current research. Finally, frequencies were used as a unit of counting and measurement by counting the number of times the unit of analysis appears, whether explicitly or implicitly.

The second stage: the reliability of the computer and information technology textbook content analysis card for the third intermediate grade:

After reaching the final form of the list, the researchers designed a card to analyze the content of the textbook. The final form consisted of forty-eight standards, distributed over nine main dimensions. To use the content analysis card scientifically, the reliability of the content analysis card was verified in two ways: The first is the reliability of the analysis by different analysts: where the researchers calculated the reliability of the analysis using the Holistic equation, and the value of the total reliability coefficient was (0.96), which is a high reliability coefficient, which gives the content analysis tool a degree of confidence to achieve the research objectives. The second is the reliability of the analysis over time where the researchers calculated the agreement percentage between the two analyzes using the Cooper equation, and the value of the total reliability coefficient was (96.24%), which is a high agreement, which gives an indication of the reliability of the content analysis tool.

Controls of the analysis process: the analysis process was conducted in the light of the following controls:

1. A complete preliminary reading of units to recognize the ideas it contains and the dimensions to which it belongs.

2. Another careful reading of each unit to reflect on all the texts, images, illustrations, activities, scientific enrichment, practical exercises, evaluation, and standardized tests to reveal the extent to which they meet the standards of digital citizenship.

3. Using the content analysis card to record how many times has the standard been achieved in the textbook, whether explicitly or implicitly.

4. Calculating the frequencies, the percentage and the mean for each standard inside the analysis card, and determining the availability of the standard.

5. Calculating the frequencies, the percentage and the mean of each dimension inside the analysis card, and determining its availability in the textbook, where the availability of digital citizenship standards was judged in the research sample according to the quadruple gradient scale, as it is commensurate with the objectives of the research. the following table shows the quadruple Gradation scale [23]:
Judging the availability of digital citizenship standards in the research sample

<table>
<thead>
<tr>
<th>Mean</th>
<th>From</th>
<th>To less than</th>
<th>Percentage</th>
<th>From</th>
<th>To less than</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.25</td>
<td>3.00</td>
<td></td>
<td>75%</td>
<td>100%</td>
<td></td>
<td>High</td>
</tr>
<tr>
<td>1.5</td>
<td>2.25</td>
<td></td>
<td>50%</td>
<td>75%</td>
<td></td>
<td>Intermediate</td>
</tr>
<tr>
<td>0.75</td>
<td>1.5</td>
<td></td>
<td>25%</td>
<td>50%</td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Less than 0.75</td>
<td></td>
<td></td>
<td>Less than 0.75</td>
<td></td>
<td></td>
<td>insufficient availability</td>
</tr>
</tbody>
</table>

The First Question’s Result

To answer the first question that states: To what extent digital citizenship standards are available in the third intermediate grade’s computer and information technology textbook? the third intermediate grade’s computer and information technology textbook in the Kingdom of Saudi Arabia was analyzed according to the analysis controls, and the procedures for its implementation, then the frequencies, percentages, and Means for the digital citizenship dimensions were calculated, and the results were as the following:

Results of the analysis of the third intermediate grade’s computer and information technology textbook in the light of the digital citizenship dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>First semester textbook</th>
<th>Second semester textbook</th>
<th>The two textbooks together</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The frequencies total number</td>
<td>The frequencies total number</td>
<td>The frequencies total number</td>
</tr>
<tr>
<td></td>
<td>(570)</td>
<td>(486)</td>
<td>in the two textbooks (1056)</td>
</tr>
<tr>
<td>Digital Access</td>
<td>102</td>
<td>17.89%</td>
<td>0.54</td>
</tr>
<tr>
<td>Digital Commerce</td>
<td>3</td>
<td>0.53%</td>
<td>0.02</td>
</tr>
<tr>
<td>Digital Communication</td>
<td>17</td>
<td>2.98%</td>
<td>0.9</td>
</tr>
<tr>
<td>Digital culture</td>
<td>425</td>
<td>74.65%</td>
<td>2.24</td>
</tr>
<tr>
<td>Digital Etiquette</td>
<td>6</td>
<td>1.05%</td>
<td>0.03</td>
</tr>
<tr>
<td>Digital Law</td>
<td>3</td>
<td>0.53%</td>
<td>0.02</td>
</tr>
<tr>
<td>Digital rights and responsibilities</td>
<td>6</td>
<td>1.05%</td>
<td>0.03</td>
</tr>
<tr>
<td>Digital Health and Wellness</td>
<td>4</td>
<td>0.70%</td>
<td>0.02</td>
</tr>
<tr>
<td>Digital Security</td>
<td>4</td>
<td>0.70%</td>
<td>0.02</td>
</tr>
</tbody>
</table>
It is obvious from Table 2 that according to the results of the content analysis of the third intermediate grade’s computer and information technology textbook, there is a discrepancy in the availability level of the nine dimensions of digital citizenship. The digital culture dimension ranked first as the most included standard in the textbook, with a percentage of 74.62% and its mean is 2.24, while the rest of the dimensions were not sufficiently available as they were arranged in ascending order according to the percentage and the mean as: digital law dimension with a percentage of 0.38% and a mean of 0.01, then the digital health and wellness dimension with a percentage of 0.57% and a mean of 0.02, followed by the dimension of digital etiquette with a percentage of 0.76% and a mean of 0.02, then the dimension of digital commerce with a percentage of 1.14% and a mean of 0.03, then the dimension of digital security with a percentage of 1.23% and a mean of 0.04, then the dimension of digital rights and responsibilities with a percentage of 1.42% and a mean of 0.04, then the dimension of digital communication with a percentage of 4.83% and a mean of 0.14, then the digital access dimension with a percentage of 15.06% and a mean of 0.45. Although all dimensions were available in the textbook at a very low degree except the digital culture dimension, the number of times the dimensions were available in the first semester textbook was 84 times more than the second semester textbook.

The First Question Discussion

By reviewing the results of the availability of digital citizenship standards in the third intermediate grade’s computer and information technology textbook, the researchers found that imbalance in the distribution of digital citizenship standards between the first and second semester textbooks. The frequencies total in the first semester textbook was 570, while it was 486 in the second semester textbook. This is due to the fact that the content of the first semester contains three units with sixteen topics while the content of the second semester contains two units with eight topics, it means that the content of the second semester textbook is less than the content of the first semester textbook in terms of units and topics, while the practical exercises are more included in the second semester textbook.

It is also clear that the standard of digital culture dimension have the highest value with an availability rate of 74.65%, and is considered that the most digital citizenship standard are included in the textbook with a number of 788 frequencies, due to the nature of computer courses and their specialization in teaching and spreading the culture of using digital technologies, and providing learners with knowledge and the basic skills related to technology and dealing with it as one of the twenty-first century competencies that should be provided to individuals to be successful in their scientific and practical lives [31]. This is consistent with what the digital technology learning field standards document seeks to “construct a conscious Saudi generation, able to Create and develop knowledge, use it well, and deal efficiently with future skills” [27]. The results are also consistent with the results of Al-Harthy [10] and Al Ghalth [8], which confirmed that the standards of digital culture (digital literacy) obtained the highest percentage among the standards of digital citizenship, It was 64.50% in Al-Harithi’s study [10] and 87.08% in Al Ghath’s study [8].

On the other hand, the results of Iordache et al. [36] showed that the cognitive aspect of digital literacy dimension did not receive much attention to be included in the thirteen
digital literacy models that were analyzed. The focus was on its skill aspect, this is in contrast to the contemporary global trend in digital citizenship adopted by the United States of America, which equally focuses on the cognitive, skill and value aspect in order to meet the learners’ needs, in addition to the needs of the age. Despite the importance of the digital culture dimension and the necessity to include its aspects and its standards, it should not be focused on it at the expense of other dimensions if we wish to develop the capabilities of the intermediate school student to become ready for life, qualified for work, and able to continue his education [27].

The results of the standards for the digital law dimension also showed that it had the lowest availability value of 0.38%, and it was more concentrated in the unit: I look for my information “Search and exploration in electronic information sources” due to the nature of the unit topic that is suitable for the dimension, while the concept can expand to include all the regulations and the rules that control the use of digital technologies, such as the usage policies and systems for combating information crimes. In addition, insufficient attention has been paid to the standards of the digital etiquette and digital rights and responsibilities dimensions. the study of Al-Harthy [10], Dawaba [26], Gleason and Von Gillern [30] found The same conclusion, as the results revealed the weakness of the computer curricula’s handling of the standards of digital etiquette and digital rights and responsibilities dimensions, in Al-Harthy [10] study the dimension of the digital etiquette was 5.04% while the dimension of digital rights and responsibilities was 1%. According to Dawaba [26] the dimension of the digital etiquette was 0.23%, and in Al-Ghalth [8] the percentage of availability of the digital etiquette dimension was 3.14%, while the dimension of digital rights and responsibilities got a percentage of 2.68%.

Al-Mohammadi [13] confirmed the availability of moral values (moderate degree) in the computer and information technology curriculum for the intermediate stage and this result differs from previously mentioned studies. It might be because the study handled the computer curriculum with its three textbooks as one block and judged on it. When we look at the results, we notice that the third intermediate grade’s textbook based on five values, with only ten frequencies. Although the results of Al-Dosari [6] and Al-Dosari [5] demonstrated the availability of the standards of the dimension of engaging in positive, legal and moral behavior among intermediate school learners at a high level, these results do not consistent with the reality of the textbook and its standards.

It also obvious that the standards of the digital health and wellness dimension have obtained 0.57%, which is a very low percentage. Despite the importance of this dimension and its contribution in reducing the impact of using digital technologies on the learners’ health in the light of the great spread of digital means, the textbook neglected it when it is necessary to train learners on the correct and proper ways to use digital technologies, and to raise the awareness of the addiction to technology, and to reduce it, especially that it can be included in the textbook from a moderate to a high degree in the appropriate units for this, such as the unit: I learn from technology “Using technology for learning and teaching” and the unit of my interface for the world "Internet services and website building", The results are in consistent with the results of Dawaba [26]. Lyons [38] confirmed that the rate of digital health risks faced by ninth grade learners is higher than the lower graders, and this is due to the fact that learners move to a higher stage and their consumption of technology
has increased. Therefore, Lyons [38] recommended raising awareness of digital citizenship issues through the school curriculum.

Lacking the attention to the standards of digital citizenship in the third intermediate grade’s computer and information technology textbook, the standards for the digital commerce dimension obtained an availability rate of 1.14%, which is a very low rate. This is due to neither the nature of the concept and the difficulty to apply it inside the classroom or the lack of Internet service inside classrooms and computer labs, or the lack of suitable computers for the number of learners in schools that would enable them to train and practice [48; 51]. However, these matters should not constitute an obstacle for providing learners with an appropriate amount of knowledge that aware them on how to safe online shopping, using credit cards to complete shopping, and choosing the best quality with the best price products through commercial sites.

The study of Al-Harthy [10], Al-Qahtani [16], Al-Ajami et al. [3] reached the same conclusion. The results revealed that there is a weakness of handling the digital commerce dimension inside the computer textbook. Al-Harithi study targeted the intermediate stage, while the studies of Dawaba [26], Al-Ghalath, [3] targeted the high stage, and Al-Qahtani [16] targeted the university stage. It is noted from tracking the computer textbooks in the different academic levels that they still suffer from shortcomings in their inclusion of this dimension, while it is necessary to take care of it and help the learners to deal a smart business through digital channels, especially with the prevalence of the consumption pattern and the increasing demand for digital commerce.

In addition, the results show the availability of standards for the digital security dimension at a very low rate of 1.23%. According to the researcher observation through her content analysis, there are some evidence that proves the low rate such as the textbook did not present hardware protection programs, did not activate the security settings for private accounts, and did not develop the skill of choosing strong passwords, the textbook also neglected constantly updating operating systems and software. This may be because the second-intermediate grade’s computer and information technology textbook handled it in the subject of information security mechanisms. When the importance of digital security increased, the dangers threatening educated users increased, such as hacking, theft, and spreading viruses [14], especially with the presence of the internet, the dangers were able to spread quickly and easily.

In general, the low results of the availability of digital security, digital communication, and digital access standards are consistent with the results of Al-Harthy [10] and Dawaba [26] study, which confirmed that the standards of the digital security, digital communication, and digital access dimensions have received a very low percentage. In Al-Harthy’s study [10], the percentage of the digital security dimension was 3.08%, while it was 5.09% in the digital communication dimension, and 11.08% in the digital access dimension. In Dawaba’s study, the digital communication dimension was 0.09%, the dimension of digital access was 0.37%, while the dimension of digital access is not available in Al Ghalth [8] study. To solve the problem of the low standards, Mattson (2016) recommended developing curricula to enhance them, especially communication skills and active interaction with others in digital societies, by taking advantage of modern trends in education and using digital technologies and networks. According to Siemens’ theory of communication, learning and knowledge lie in the diversity of opinions.
The results of Al-Qahtani [16] differ from the findings of the current research, where Al-Qahtani [16] confirmed that the dimensions of digital security, digital communication and digital access have been found in the educational technology textbook at Princess Nourah University to a large extent, and this is due to the fact that the course that was studied concerns learners of higher education. The results may be affected by the different age group and the nature of the textbook, in which the digital citizenship standards are included, as the nature of higher education textbook differs from general education textbook, as well as their content and the number of teaching hours.

The Second Research Question’s Result

To answer the second question, which is what is the proposal for developing a computer and information technology course for the third intermediate grade in light of the digital citizenship standards? The researchers reviewed the literature related to constructing proposals to develop educational textbook. The results of analyzing the third intermediate grade’s computer and information technology textbook indicated the weak availability of standards for digital access, digital commerce, and digital communication, the digital etiquette, in addition to digital law, digital rights and responsibilities, digital health and digital security in the third intermediate grade’s computer and information technology textbook.

The following is a detailed presentation of the proposal content that aims for developing the third intermediate grade’s computer and information technology textbook in the light of digital citizenship:

The Premises of the Proposal:

The idea of including digital citizenship standards in the computer and information technology textbook for the third intermediate grade in Saudi Arabia is based on a number of premises that collectively constitute the reference base for the perception. These premises are summarized in the following:

1. The ambitious development plans and the transformations that the Kingdom of Saudi Arabia is witnessing in accordance with Vision 2030, which has made education one of its fields and teachers, their students and their curricula an integral part of it.
2. The philosophy of developing general education curricula in the Kingdom of Saudi Arabia, especially the field of learning digital technology, where the structure of development focused on three main branches: digital concepts and applications, computer thinking, and digital citizenship.
3. What contemporary global trends seek to keep pace with digital transformation.
4. The results and recommendations of scientific studies on the importance of including digital citizenship in school curricula, whether Arabic such as the studies of [10; 12; 26].
5. The results of the current research which indicate the weakness of including digital citizenship standards in the third intermediate grade ‘s computer and information technology textbook, except the standards of digital culture.
The basis of the research proposal

The construction of the proposal based on the following
1. Digital citizenship Dimensions for its founder Ripple [48; 51].
2. Siemens’ Connectivism Theory [58] and Bandura’s Social Cognitive Theory [21; 43], which have been used to suggest topics and activities in which there are a cooperation between peers, social interaction among them whether inside or outside the lab, and exchange of experiences.

Proposal’s Objectives
This proposal was developed in response to the local and global challenges, and in response to the future trends of the curricula. The proposal aims to include digital citizenship standards in the third intermediate grade’s computer and information technology textbook in the Kingdom of Saudi Arabia, and its sub-objectives are as the following:
1. Including educational objectives in the third intermediate grade’s computer and information technology textbook that emphasizes the idea of digital citizenship in order to provide learners with knowledge, skills and values that enable them to contribute effectively in the digital world.
2. Including academic topics concerned with digital citizenship to help the learner keep pace with the requirements of the age.
3. Determining the educational activities and tasks that enhance digital citizenship.
4. Applying the recommendations contained in the documents of international educational organizations regarding the development of curricula to meet the requirements of digital citizenship.
5. Filling the gaps suffered by the third intermediate grade’s computer and information technology textbook in relation to the development of the cognitive, skill and value aspects of digital citizenship education.

The Proposal Designing Steps
1. Preparation stage
The researchers construct the proposal after answering the first research question, which found the weak availability of standards for digital access, digital commerce, digital communication, digital etiquette, in addition to digital law, digital rights and responsibilities, digital health and digital security in the third intermediate grade’s computer and information technology textbook. This stage included reviewing educational literature related to digital citizenship.

2. Planning stage
At this stage, a plan was developed based on the data collected from applying the content analysis tool, reviewing the relevant educational literature, and from examining the computer and information technology textbook for the intermediate stage and the digital technology textbook for the common first year in the tracks system in the high stage to achieve the principle of sequencing of topics and skills in intermediate and high school. In addition, the experiences of the United States of America, Canada, and New Zealand
were benefited in their inclusion and activation of digital citizenship through selected topics, activities and educational tasks. A jury member of thirteen experts (experts in the digital citizenship) from the technical and the educational fields were determined to evaluate the proposal.

3. Implementation Stage
This stage was completed by tracking the shortcomings in the third intermediate grade's computer and information technology textbook, which was revealed by the second research question, and then the proposal was constructed to address this shortcoming in two stages, the first: by adding educational activities and tasks to the current units of the textbook in order to increase the level of availability of standards, while the other by proposing a unit and educational topics based on digital citizenship standards that achieve the principle of knowledge continuity, and classified objectives according to Bloom’s classification of digital verbs with six levels, starting from remembering to creativity [29]. The levels of affective goals were not neglected in the proposal [7]. This unit can also be used when updating the title of the textbook to digital skills, as its structure was built to correspond with that update. In both phases, the results of the current research, educational literature, academic curricula, and the experiences of some countries that included digital citizenship in their curricula were benefited from.

The Proposal of the Research

Developing the current units of the computer and information technology textbook for the third intermediate grade:

<table>
<thead>
<tr>
<th>Textbook</th>
<th>Educational Units</th>
<th>Educational Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer and information technology (First semester)</td>
<td>I control my computer (programming and computer control)</td>
<td>The importance of programming - the concept of programming and programs - levels of programming languages - prevalent programming languages - programming rules</td>
</tr>
<tr>
<td></td>
<td>I search for my information (Search and exploration in electronic information sources)</td>
<td>The concept of electronic information sources - electronic information sources on the Internet - good search mechanisms on the Internet - evaluation of information sources on the Internet</td>
</tr>
<tr>
<td></td>
<td>I Learn from technology (Using technology for learning and teaching)</td>
<td>Introduction in investing modern technologies in education - educational devices - examples of some educational devices - educational programs - types of educational programs - online open education tools - practical exercises on using simulation systems in education</td>
</tr>
<tr>
<td>Computer and information technology (Second semester)</td>
<td>Robot is my friend (Smart devices and Robot)</td>
<td>Introduction to Hardware development - Embedded Devices - Smart Devices - Robots.</td>
</tr>
<tr>
<td></td>
<td>My interface to the world (Internet and website building services)</td>
<td>Internet services - ways of communication via the Internet - exchange of information and subscription to resources</td>
</tr>
</tbody>
</table>
Table 4
A proposal for developing the current units in the third intermediate grade’s Computer and Information Technology textbook

<table>
<thead>
<tr>
<th>Digital citizenship dimensions</th>
<th>Suggested activities for inclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Digital Access</strong></td>
<td>Demonstrate the efforts of the Communications and Information Technology Commission in the Kingdom of Saudi Arabia in facilitating digital access for different groups of society. Prepare a report on the types of robots using one of the electronic information sources, mentioning the source, and the reason for choosing it. Produce and publish a three-page interactive e-brochure using Flipsnack on the topic “The Internet in Our Lives”.</td>
</tr>
<tr>
<td><strong>Digital Commerce</strong></td>
<td>What do you think about e-commerce, mention the reason? Draw a diagram showing the precautions before making an online purchase. Make a purchase of one of the robot parts from secure websites virtually.</td>
</tr>
<tr>
<td><strong>Digital Communication</strong></td>
<td>Create and activate an email to communicate with teachers and colleagues within the school. Listen to the expert who will be hosted via Skype application; Where he will talk about technology in education, and after completing the hosting and writing down the most prominent points, mention the pros and cons of using technology in education in no more than 100 words. You encountered a problem in programming the robot, and to solve this problem, mention who you will communicate with? And what method of digital communication will you follow?</td>
</tr>
<tr>
<td><strong>Digital Etiquette</strong></td>
<td>Create an awareness board in collaboration with two of your colleagues about the ethics of dealing with the knowledge society for Scratch. Write a tweet in the Twitter application in which you are proud of your Islamic principles. A case study: 3 intermediate school students were punished for posting offensive comments about two of their teachers on their own blog, and their blog was suspended for 3 days. Define the problem, its consequences, and advice you would give to your three colleagues.</td>
</tr>
<tr>
<td><strong>Digital Law</strong></td>
<td>Read and explore the most widespread cybercrime, explaining their seriousness, and how the cybercrime system in the Kingdom of Saudi Arabia deals with them. Legally analyze the following situations: Your classmate has stolen your website that you created. Distribute a paid program to your classmates, ignoring copyrights.</td>
</tr>
<tr>
<td><strong>Digital Rights and Responsibilities</strong></td>
<td>Summarize the privacy policy that appears when creating a new Scratch account. Suggest a list of the acceptable use policy for digital technologies within the school that contains the learners’ digital rights and responsibilities with no less than ten items.</td>
</tr>
<tr>
<td><strong>Digital Health and Wellness</strong></td>
<td>If you must take a decision: What procedures and changes would you take to transform the computer lab into a healthy environment for study? Suggest ways to adjust the time spent using digital technologies using medical advice and health studies. Provide advice to people with the following diseases: eyestrain, back pain, and wrist inflammation because of their use of digital technologies.</td>
</tr>
<tr>
<td><strong>Digital Security</strong></td>
<td>Write a sentence that begins with beware, another with: avoid, and another with: be careful. How do you act in the following situations? With your classmate determine the procedures to protect your cellphone accounts from hacking.</td>
</tr>
</tbody>
</table>

**Recommendations**

1. The Ministry of Education should reconsider developing the third intermediate grade computer and information technology textbook in the light of the proposal.
2. Providing the requirements for applying the proposal, such as the educational equipment and techniques needed inside the laboratories to create a conducive environment for the application.
3. Reviewing and editing units and topics included in the computer and information technology textbooks for the intermediate stage which are compatible with digital citizenship standards and ensuring a relative balance between them.
4. Incorporating digital citizenship into the teacher’s guides for the intermediate stage, and including it within the professional development programs and for computer teachers and supervisors in order to enhance the quality of their performance towards teaching, and to realize their responsibility towards helping learners understand the dimensions of digital citizenship.

Suggestions for Further Research

1. An experimental study to reveal the effectiveness of the proposal FOR developing third intermediate grade learners’ awareness level of digital citizenship dimensions.
2. A blended study aimed at building a suggested curriculum based on national standards for digital technology learning and measuring its effectiveness in developing digital citizenship among primary school learners.
3. A descriptive study to compare computer curricula in KSA with some developed countries in terms of their activation of the digital citizenship dimensions.

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