

The Effectiveness of a Developed Unit in The Arabic Language Textbook for The Enhancement of 21st Century Skills

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Abstract

This research aims to develop a unit as part of a sixth-grade Arabic language textbook and measure its effectiveness in the development of twenty-first-century skills of female students. The author adopted the experimental approach with a quasi-experimental design of the pre-post single-group. A list of the major skills was derived from the framework for the 21st-century skills of the mother tongue that was developed by the Partnership for 21st-Century Skills and reviewed and adjusted by some specialists. According to their views, the unit was developed. The study targeted 15 sub-skills falling under three main skills. The results of the study showed the effectiveness of the developed unit in the development of twenty-first-century skills as a whole and of each skill set. Based on the findings, the study recommends that the concerned authorities responsible for development in the Ministry of Education consider developing school textbooks in light of twenty-first-century skills and enriching them in a way that contributes to the development of these skills among students.

Keywords: Twenty-first-century skills, unit, school textbook development

فاعلية وحدة مطورة في كتاب اللغة العربية في تنمية مهارات القرن الحادي والعشرين

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الملخص

هدفت هذه الدراسة إلى تطوير وحدة دراسية في مقرر لغتي للصف السادس الابتدائي وقياس فعاليتها في تنمية مهارات القرن الحادي والعشرين لدى الطالبات، وقد استخدمت الباحثة المنهج التجريبي ذا التصميم شبه التجريبي للمجموعة الواحدة القبلي — البعدي ، وقد تم إعداد قائمة بالمهارات اللازمة لهذا الصف مقتبسة من خارطة مهارات القرن الحادي والعشرين للغة الأم التي وضعتها (منظمة الشراكة من أجل مهارات القرن الحادي والعشرين)، وتم تحكيما وتعديلها من قبل مجموعة من المتخصصين، ثم تطوير الوحدة الدراسية في ضوءها، وبلغ عدد المهارات خمس عشرة مهارة فرعية تدرج تحت ثلاثة محاور هي: مهارات التعلم والإبداع، ومهارات المعلومات والإعلام والتقنية ومهارات الحياة والمهنة، وأشارت نتائج الدراسة إلى فاعلية الوحدة المطورة في تنمية مهارات القرن الحادي والعشرين مجتمعة وفي كل محور على حدة، ومن توصياتها: مراعاة مهارات القرن الحادي والعشرين من قبل الجهات المعنية بالتطوير في وزارة التعليم، وتطوير الكتب المدرسية في ضوءها، وإثرائها بما يسهم في تنمية تلك المهارات لدى الطلاب.

الكلمات المفتاحية

مهارات القرن الحادي والعشرين-وحدة دراسية- تطوير الكتاب المدرسي.

Introduction

The twenty-first century is witnessing a knowledge revolution that has pushed nations to work hard on investing everything into developing human abilities, especially in the field of education. This has led to radical changes in the fields of teaching and education, causing them to shift toward student-focused trends and to make students their centre of attention (Akinoglu, 2018; Abu Zahra, 2007).

For this reason, public education institutes around the world have endeavoured to accommodate these changes and to qualify students to keep up and cope with them. At the local level, a new era of education began in the Kingdom of Saudi Arabia, in line with the Saudi Vision 2030, as the National Transformation Program (2020) was launched, in which the Ministry of Education has worked with the rest of the public sector to achieve this transformation, establishing a set of goals including the development of general and essential skills for its students in coping with modern life. Among these skills are life and social skills, including leadership, social communication, teamwork, self-control and individual responsibility skills (Ministry of Education and the Saudi Vision 2030). These targeted skills are similar to what is known today as the twenty-first (21st) century skills, as the twenty-first, indicating a shift in teaching strategies and education curricula to qualify students to meet the demands and needs of this rapidly developing world. Education for the present and the future requires setting new goals that focus on the students, to enrich their patriotism and sense of responsibility to their homeland and the world (Zadja, 2010).

Although rapid and successive changes make it difficult to determine the skills required in tomorrow's world, educators should direct their efforts to discussing and identifying these skills (Chalkiadaki, 2018), and then work on developing them for students. In fact, many educational organisations have worked on identifying and classifying these skills, and a significant portion of educational research conducted in the last decade has aimed to develop them for students, using multiple teaching strategies and various methods.

However, today's actual education still shows a gap between the skills students learn in school and those that they actually need to live and work in the age of knowledge and openness to others (Shalbi, 2014; Chalkiadaki, 2018), and as Bybee (2010) mentioned, current learning outcomes are no longer sufficient to prepare students for life and work in the twenty-first century as students risk being prepared for jobs that have already disappeared or are likely to disappear soon.

Reducing this gap necessitates the development of the entire education system in light of the requirements of this era, and the Partnership for 21st Century Skills emphasises the necessity to include these skills in school curricula. This implies integrating them into all parts of the curriculum: goals, content, activities, assessment and evaluation methods, etc. To integrate these skills into the curricula, a comprehensive framework must be developed, beginning with the curriculum objectives and then focusing on interdisciplinary practices when selecting and designing content to achieve effective teaching and learning experiences of value for

a new generation of students. To help this reform process, tools and resources must be developed. Textbooks are significant tools for teaching 21st century skills. (battelsforkids.org, n.d ؛ Gian,2015)

The school textbook is undoubtedly the base for achieving the goals of the curriculum, as it contains the educational curriculum with its goals, content, activities, teaching, learning and assessment and evaluation methods. It is also the source from which the student derives their cultural education, knowledge and values; educators have carefully worked on its content and laid great stress on the quality of its concepts, activities and questions, and worked on fine-tuning and evaluating it to ensure that it remains an effective means of communication (Arafah, 2014).

Arabic language courses provide the student with the life, cognitive, and social skills required for education as well as handling situations, developments and challenges of life. They build his/her personality, as well. They also are adopted as a fundamental method for learning (Al-Fuhaid, 2021). Teaching language skills, in general, and reading in particular, requires a new method of thinking based on the skills, productivity, and expansion of learning language to promote creativity and thinking rather than memorizing (Shehata, 2010). To fulfill this, the 21st skills have to be adopted in teaching Arabic.

Therefore, much of research that was conducted to analyse and evaluate school textbooks in light of the findings of studies in the field of twenty-first-century skills. Most of these studies show a clear and significant lack of emphasis on twenty-first-century skills in the parts of the analysed curricula, in varying proportions. Younis (2016) found that life skills were the least evident, while both Al-Mansour (2018) and Al-Khuzaim and Al-Ghamdi (2016) showed that digital literacy skills were the least evident.

This decline, as demonstrated by the studies, highlights the need for further research to modify and improve the textbooks that help develop the students' 21st century skills.

However, there is still a significant lack of studies aiming to enrich the content of school textbooks to nourish and develop these skills for students, especially in Arabic studies and the Arabic language area in particular, which has led this researcher to study the effectiveness of the developed unit in the Arabic language textbook (Loughati Al Jameela) to develop twenty-first-century skills for sixth-grade students.

Problem and questions

Most countries have worked, since the beginning of the twenty-first century, to develop their educational systems in an aim to improve education to meet the needs of the new century and have focused on developing twenty-first-century skills for students. However, after nearly two decades, the desired goal of obtaining student-centred learning was not achieved in most educational systems (Sang, Liang, Chai, Dang and Tsai, 2018). Lee (2019); Baatout (2017) ; Al-Qahtani (2019) and Tindowen, Bassig, and Caguranga (2017) demonstrated that the students' evaluation showed a lack in most skills. Curricula analyses, in general, and Arabic language, in

particular, revealed a low degree of their inclusion in books. Al-Fuhaid (2021) aimed to show the degree of educational activities in the Arabic language curriculum for the third intermediate grade. The author adopted the analytical descriptive approach. Content analysis card was adopted as a tool. The results revealed a variety in the number of activities considering twenty-first-century skills, with percentages ranging from high to medium to low. Al-Sibiah (2020) aimed to analyze the Arabic language book in Jordan in light of twenty-first century skills. The author adopted the descriptive analytical approach. Content analysis form was adopted as a tool. The results showed a clear decline in the inclusion of twenty-first century skills in the Arabic language book for the 6th primary grade.

This shows the need for further research in the field of twenty-first-century skills and the development of Arabic language courses accordingly as well as enriching them with activities to help students acquire these skills.

On this basis, the research problem can be addressed in the following question:

Q: What is the effectiveness of the developed unit in the Arabic language textbook (Loughati Al Jameela) in enhancing twenty-first-century skills for sixth-grade female students?

It is subdivided into the following questions:

- What are the twenty-first-century skills that sixth-grade female students need to possess?
- What is the effectiveness of the developed unit in the Arabic language textbook (Loughati Al Jameela) in enhancing learning and innovation skills for sixth-grade female students?
- What is the effectiveness of the developed unit in the Arabic language textbook (Loughati Al Jameela) in enhancing information, media and technology skills for sixth-grade female students?
- What is the effectiveness of the developed unit in the Arabic language textbook (Loughati Al Jameela) in enhancing life and career skills for sixth-grade female students?

Objectives

- Determining a list of the twenty-first-century skills that sixth-grade female students need to possess
- Exploring the effectiveness of the developed unit in enhancing students' learning and innovation skills.
- Exploring the effectiveness of the developed unit in enhancing skills in dealing with information, media, and technology.
- Exploring the effectiveness of the developed unit in enhancing life and career skills

Significance

Theoretical significance

The present study keeps pace with the new era of education that conforms with the Saudi Vision 2030 and the National Transformation Program in which all public bodies collaborate, including the Ministry of Education, to achieve the objectives of

transformation. This program aims to promote general and basic skills for all students to face modern life. These skills match the twenty-first century skills. Moreover, the present study is one of the few studies in Saudi Arabia on developing the curricula of Arabic in the light of these skills.

Applied significance

The designers of Arabic curricula in Saudi Arabia and the Arab countries may benefit from the developed study module in the light of the twenty-first century skills to develop the Arabic courses.

Limitations

The study was limited to

Object limits: The study sample was limited to the module of (social awareness) in Loughati Al Jameela (lit. My Beautiful Language) coursebook for the sixth- primary grade in the second semester.

Spatial limits: The study was applied to the female students of the sixth-primary grades in the 345 Primary School.

Temporal limits: The study was applied in the second semester of 2020/ 2021.

Definition of terms

The Developed Unit

Unit of study: A planned unit of study that contains several activities done by students and facilitated by the teacher. (Shehata & Elnaggar ,2003)

The Developed Unit is procedurally defined as the module of (social awareness) in the My Beautiful Language coursebook for the sixth- primary grade in the second semester after enriching with a set of objectives, texts, activities, and assessment methods to promote the twenty-first century skills among students.

Twenty-first century skills: "A broad set of knowledge, skills, work habits, and character traits that are believed to be critically important to success in today's world, particularly in collegiate programs and contemporary careers and workplaces, and can be applied in all academic subject areas and in all educational, career, and civic settings throughout student's life". (Prasetyo, Suryono & Gupta, 2021,2).

The researcher defined these skills as a set of skills and methods that help students learn and work according to the developments of the twenty-first century. In the present study, there are fifteen skills distributed to three main categories: learning and innovation, life and career, and information, media, and technology.

Loughati Al Jameela Course (lit. My Beautiful Language Course) is the course of Arabic language for the sixth-primary grade in Saudi Arabia.

Theoretical framework

It involves two sections:

Twenty-first-century skills

One's success in life is defined by the quality of his/ her learning and good learning should be related to learners' life challenges, such as the need to live longer, have good health, and constructively engage in the economic, political, and social domains (Reimers & Chung, 2018).

This type of education requires consideration of students' learning skills. The information revolution and knowledge increase make filling the students brains with much information inappropriate. Thus, they should gain a variety of skills that facilitate accessibility to the sources of information that increase and update constantly. We have to teach them how to review and benefit from them as well as qualify them to be productive individuals who can undertake responsibility and leadership and obtain information from reliable sources when necessary.

Skills are one of the four dimensions of public education curricula standards in Saudi Arabia. They denote the mental, emotional, and motor abilities that must be present in the fields of learning to guide the development, application, and evaluation of educational curricula standards. Incorporating them into all areas of learning in an orderly manner, they contribute to preparing learners for life and constructively dealing with the economic, technological, and knowledge transformations, including the twenty-first century skills, in Saudi Arabia. These skills are required for the learner's continuous learning, creativity, innovation and production. They also empower him/ her to actively participate in achieving the vision of his/ her country and contributing to its programs and targets as well as prepare him/ her for the jobs, knowledge, technical horizons and challenges of the future through qualitative, directed learning experiences that integrate with the knowledge structure of each learning field (Education and Training Evaluation Authority, 2018).

Recently, the term 'twentieth-century skills' has been used frequently in educational communities.

Despite the need for a theoretical foundation linking twenty-first century skills to any of the psychological theories that addressed how to develop these skills and the relationship between them and theories as a single development process for the curriculum, all attempts to identify that relationship failed (Reimers & Chung, 2018).

Several studies were conducted to identify the knowledge, skills, and learning support systems required for our time and each study comprised different skill categories and lists. However, none showed the outcomes required for learning in the twenty-first century and the school differences required to support those outcomes (Tirling & Fadel, 2013).

Many international organisations and commissions have sought to define the term 'twenty-first-century skills', and have worked on identifying them and determined the appropriate ones for each domain of knowledge and learning, at each educational level, to facilitate their integration into educational systems and benefit from them in developing and evaluating curricula.

Among these efforts is the ATC21S, a system aimed at assessing and teaching twenty-first-century skills and at developing new assessment systems that work in line with these skills. The system was launched by some of the largest global technology companies, such as Cisco, Intel and Microsoft. In addition, the enGauge group report, a digital framework prepared by the North Central Regional Educational Laboratory (NCREL) in collaboration with Metiri Group, was also

published. This report has identified specific domains that fall under four key skills for the twenty-first century: digital-age literacy, inventive thinking, effective communication and high productivity (Reimers and Chung, 2018).

In another context, the Organisation for Economic Co-operation and Development (OECD) classified them into four domains: cognitive, personal, interpersonal and technical skills (Kurt, 2016).

This study adopts the classification of (the Partnership for 21st Century Skills) that involves three aspects:

Learning and Innovation Skills

Under creativity and innovation skills fall several sub-skills, as follows:

- Critical thinking and problem-solving skills: Students should be able to employ appropriate reasoning based on the situation, analyse and evaluate alternatives, link and make connections between bodies of information, interpret information, draw conclusions, reflect critically on knowledge and experience, analyse and solve problems in innovative ways, and ask significant and innovative questions that lead to better solutions.
- Communication and collaboration skills: Students should be able to communicate clearly, express their thoughts and feelings effectively using orally and in writing, and participate and work with others respectfully and take individual responsibility, demonstrating the ability to collaborate with others to accomplish common goals and make compromises that satisfy all parties.
- Creativity and innovation skills: Students should be able to think creatively to widen the scope of their ideas and refine them; they should also be able to work with others creatively, develop new and innovative ideas, respond to different points of view, demonstrate originality in their work and understand real-world limits; to accept failure and view it as an opportunity to learn, and to realise that innovation happens following several attempts, repeated failures and mistakes.

Information, media and technical skills

Under these fall a number of sub-skills:

- Information literacy skills: The student should be able to access information efficiently and effectively from various broad resources, and then evaluate this information competently and use it creatively to tackle the problem at hand.
- Media literacy skills: The student should understand how to construct media messages and how values and points of view are included in these messages. Moreover, they should understand how media messages can influence behaviour and beliefs, and the usage of media production tools and appropriate expressions in multi-cultural environments.
- Information, communication and technology literacy skills: The student should be able to use technology as a tool for research and organisation, to use communication tools and networks appropriately, and to have a fundamental understanding of ethical and legal issues related to the access and use of information technology.

Life and career skills

Under which fall the following:

- Flexibility and adaptability skills: The student should be able to change and adapt to various roles and responsibilities, work effectively despite changing priorities, deal positively with obstacles, benefit effectively from feedback, understand different points of view and respect diverse beliefs and reach fair solutions in multicultural environments.
- Initiative and self-direction skills: The student should be able to set clear goals based on certain criteria, achieve a fair balance between short-term goals (tactics) and strategic goals, and manage their time and workload effectively. The student is characterised by self-guidance and the ability to monitor tasks and accomplish them according to priority without direct supervision and to prove commitment to lifelong learning.
- Social and cross-cultural skills: The student should be able to interact with others, communicate with them, and direct them in a professional manner; learn to listen and speak when appropriate and work effectively in multicultural teams, respecting and open-mindedly responding to diverse ideas and values and leveraging diversity to develop new and innovative ideas.
- Productivity and accountability skills: The student should be able to manage projects, set goals and achieve them even in the face of obstacles and under pressure, set work priorities, plan and manage work, participate actively and punctually, and multi-task, while embracing work ethics and taking responsibility for the results (Fadel, 2008; Trilling and Fadel, 2013).

When looking through studies that addressed twenty-first-century skills, we notice some variation in the identification and number of these skills. Some researchers have listed them under the fields of communication and collaboration skills and information, media and technology skills), like the study conducted by Ghanem (2014). Messias et al. (2018) categorize it into five domains, as follows: Creativity, innovation, problem solving, communication, collaboration, and learning to learn. Other researchers listed seven fields under which twenty-first-century skills fall, as shown in the studies of (Cai, Gu, and Wong, 2017; Al-Khuzaim and Al-Ghamdi, 2016; and Al-Sulaiti, 2015).

In this research, A list of the major skills was derived from the framework for the 21st century skills of English language (mother tongue) that developed by the Partnership for 21st Century Skills that comprise information, media and technology skills and life and career skills.

Thus, it is consistent with Hani (2019) that presented a proposal for science curriculum in light of the curricula based on excellence and its effectiveness in developing twenty-first century skills and Younes (2019) that evaluated high school geography textbook in light of twenty-first century skills. They helped the author formulate the skills of the list.

However, it is inconsistent with Abdullah (2019) that adopted the classification of Design and Teaching Organization (ACT 21), which comprises four skills: methods of working, ways of thinking, work instruments, and living in the world. It is also inconsistent with Chalkiadaki (2018) that was based on developing a list of the skills that were evaluated by some institutions and authors.

The study unit

Curricula represent societies' ambitions and aspirations for the future generations. Because they are deployed to prepare students for life in society, with all of its worldwide cultural, economic, and social developments, curricula development has become a need mandated by the nature of modern life, with its consecutive changes and continual advancements, to have the best form of the educational process and so accomplish the goals and aspirations. Modern curricula have been updated to serve learning and teaching (Ba Ryan, 2019) Curricula development involve numerous forms:

- Omission, addition or replacement.
- Developing textbooks, teaching aids, methods and tools.
- Considering educational updates (Mahmoud, 2009).

This research aims develop the textbook and adding some goals relevant to 21st century skills, activities, texts, and instruments, which help fulfill them, to one of its units.

The term "unit of study" refers to a systematic structure of subject matter delivered in the form of interrelated concepts and subjects regarding a particular issue, problem, situation, or several concerns (Saada & Ibrahim, 2004).

Design or developing Arabic language textbooks requires the following:

- Design according to a specific curriculum document and clear criteria.
- Developing language skills and thinking skills.
- Consistency with life skills and twenty-first century skills.
- Integration with other courses.
- Compatibility with modern teaching strategies and the requirements for using technology in language teaching (Al-Hudaibi, 2019).

Accordingly, the present research aims to develop the Arabic language curriculum by developing a unit in the Arabic language book that the 6th grade students study to provide them with some twenty-first century skills that help develop their personalities in a balanced manner that affects their performance outside school. The author attempted to identify the studies that develop or design units of study to develop the skills of the twenty-first century. The author found three studies related to science, as follows:

Abu Al-Wafa (2017) aimed to design a unit based on (STEAM) approach to develop the the ruling and interdisciplinary concepts and the skills of the twenty-first century among the fifth grade students. The researcher used the experimental design with the experimental and control groups. The author adopted the experimental approach of

the control and experimental groups. The author prepared a list of twenty-first century skills that are appropriate for the fifth-grade students, the student's book, the teacher's guide, the ruling and interdisciplinary concepts test, and the twenty-first century skills observation card. The results showed that statistically significant differences in the twenty-first century skills in favor of the experimental group.

Taha (2019) aimed to design a proposed unit in physics in light of the (STEAM) approach to develop the skills of the twenty-first century among the 1st grade secondary stage students. The author designed the proposed unit entitled (Electric and Magnetic Energy Conversion Devices) and a test for the skills of the twenty-first century. The author adopted the one-group experimental design, and the pre-post testing was applied to the students. The results showed the effectiveness of the unit in developing the skills of the twenty-first century.

Hilal (2021) aimed to develop a study unit from the science book for the sixth grade in light of (STEM) approach and explore its effectiveness in developing the skills of the twenty-first century. The author prepared a list of the 21st century skills appropriate for the 6th grade, a booklet of the developed unit and a teacher guide. To measure the skills of the twenty-first century, the author used a test of higher mental skills and a measure of social, personal and digital skills. The experimental design with the experimental and the control groups was used. The results showed the superiority of the experimental group over the control group in the skills of the twenty-first century as a whole, and in each skill, separately.

It should be emphasized that all of the studies described were carried out on the books of Egypt, to the author's knowledge. No similar study was conducted on the books of the Saudi Arabia. Furthermore, the author found no study addressing the development of study units in Arabic language books to accomplish the prior objective, i.e. developing the twenty-first-century skills. The researcher drew on past research in developing the study problem, preparing the skills list and designing the twenty-first century skills test.

Method and procedures

Population and sample

- Population: All sixth-grade female students in the city of Riyadh in the 1440 to 1441AH academic year. This grade was selected because primary stage is the most essential of public education. It is the stage where students learn the foundations, their personal traits are formed, the type of person they will be in the future is defined. Upon which their learning is built in the subsequent stages of education. In this stage, one's mind is characterized by flexibility, allowing him/ her to accept values and new trends.

Females were chosen because the education system in Saudi Arabia is based on the separation of males and females in education in all levels. Thus, the researcher can conduct testing only in girls' schools.

- Sample

Pilot sample: The study tool was applied to a pilot sample of 37 sixth-grade female students.

Experimental sample: This consisted of 28 sixth-grade female students in a public school in the city of Riyadh. Riyadh was selected because it is the capital of Saudi Arabia and the most regions in terms of cultural and social diversity for students. The author dwells there, as well.

The researcher utilized three criteria for including and excluding female students from the study:

1. Parental consent.
2. Pre-exam.
3. Student's consistent attendance; so student will be excluded if she exceeds two absents.

Research tool

Twenty-first-century skills test for the sixth grade, prepared by the researcher.

Research procedures

To prepare the research tools; a list of twenty-first-century skills needed by sixth-grade female students has been prepared based on the aforementioned 21st Century Skills Framework for English Language (the native language) developed by the Partnership for 21st Century Skills for the fourth and eighth grades, considering that the sixth grade is falls in between. Thirty sub-skills were listed under the three skills: learning and innovation skills; information, media and technology skills; and life and career skills.

The list was presented to a number of specialists to nominate the most suitable skills for the sixth grade and add their modifications and suggestions; the 15 most frequently nominated skills were selected and some skills were paraphrased.

The design of the developed unit

The developed unit was designed according to the following steps:

- A list of twenty-first-century skills suitable for the sixth grade was prepared according to the above-mentioned steps.
- The two units of Arabic language textbook (Loughati Al Jameela) for the sixth grade, second semester (third and fourth units) were revised to select the most suitable unit to develop according to twenty-first-century skills; the fourth unit (Social Awareness) was selected.
- The Social Awareness unit was developed by enriching it with 15 new objectives, which were distributed across lessons based on the alignment of content with each objective; the lessons were enriched with activities, texts and methods of evaluation to help achieve these objectives and measure their degree of accomplishment. The new objectives were also included in the teacher's guide for teaching the developed unit, and worksheets specific to this unit were prepared.
- The teacher's guide and worksheets were presented to a number of specialists for feedback on the alignment of the developed unit with the targeted skills on one hand

and their suitability for sixth graders on the other. In addition to presenting their opinions and remarks on the phrasing of the content and providing suggestions for consideration, and the unit was finalized per their comments.

Twenty-first-century skills test for sixth-grade female students

The test is designed as a situational test, in which the student is placed in a realistic situation and then asked to determine his/ her behavior in that situation by selecting one of four options presented to him/ her. This is because one of the Partnership Project for the Development of Twenty-First Century Skills' objectives is to replace traditional assessment tools such as tests with modern assessment methods, such as real assessment, assessment scales, performance tests, and attitude tests) as traditional tools are inconsistent with the nature of the twenty-first century skills (Saudi, 2013).

The skills test was prepared according to the following steps:

Test objective: The test objective was to measure the effect of the developed unit on developing twenty-first-century skills for sixth-grade female students.

Phrasing the test questions: The test questions were phrased based on the list of twenty-first-century skills that was prepared, consisting of 15 sub-skills that fall under the three main skills. The test was designed in 15 sections, of which 14 are in the form of multiple-choice questions, and one is in the form of a short-answer/essay question; each of the questions was assigned one mark. The distribution of questions was as follows:

Table 1: Twenty-first-century skills test specifications

Main skill	Sub-skill	Questions	Total
Learning and innovation skills	Critical thinking and problem-solving;	1-2-3	5
	communication and collaboration;	4	
	creativity and innovation	5	
Information, media and technology skills	Information literacy	6-7-8	5
	ICT (Information, communication and technology)	9-10	
Life and career skills	Flexibility and adaptability;	11	5
	initiative and self-direction;	12-13	
	social and cross-cultural	14	
	productivity and accountability	15	
Total			15

Pilot application of the test: The researcher selected a random sample of 37 out-of-sample female sixth graders to complete the test to confirm the availability and validity of its psychometric conditions. The pilot study showed that the test

instructions and questions were clear and understandable, except for the fifth section, on which many students had questions and scored poorly. On this basis, the fifth section was changed to an essay question in the final version of the test.

Determining the test duration: The time required for the test to be completed was determined by calculating the time each student took to answer the questions, then calculating the average time using this formula:

Test duration = Sum of time taken by students to complete the test ÷ number of students

The average duration was approximately 35 minutes.

Test validity:

1. Testing the face validity (Inter-rater validity):

The test was presented to a number of raters, who were asked to comment on the suitability of the questions and how well they achieved the objectives of the study, comprehensiveness, diversity of content and language correctness. In addition, they were asked to add suggestions. The researcher benefited from their notes and comments, which have enriched the test and helped finalise it (Appendix 1). Thus, the face validity of the test was confirmed.

1. The validity of internal consistency measured by:

2. Measuring the internal consistency of the test vocabulary: Pearson's correlation coefficient between the score of each question and the overall score of the theme under which it falls was calculated. Table 2 shows these results.

Table 2: Correlation coefficient between the score of each question and the overall score of the theme under which it falls.

Learning and innovation skills		Information, media and technology skills		Life and career skills	
Theme	Correlation coefficient	Theme	Correlation coefficient	Theme	Correlation coefficient
1	0.49**	6	0,59**	11	0.70**
2	0.36*	7	0,70**	12	0.63**
3	0.47**	8	0,80**	13	0.62**
4	0.56**	9	0,37*	14	0.52*
5	0.61**	10	0.73**	15	0.37**

Note: **Statistically significant at $\alpha \leq 0,01$ *Statistically significant at $\alpha \leq 0,05$

Table 2 shows that the correlation coefficient between the score of each question and the total score of the theme it belongs to, is statistically significant at an alpha (α) value less than 0.05. This proves that the questions are reliable and valid to apply to the study sample.

a.Measuring the internal consistency of the themes included in the test: Pearson's correlation coefficient between the score of each theme and the overall score of the test was calculated. Table 3 shows these results.

Table 3: Correlation coefficient between each theme and the overall test score

Theme	Correlation coefficient
Learning and innovation skills	0,73**
Information, media, and technology skills	0.9٠**
Life and career skills	0,80**

Table 3 shows that the correlation coefficient between the score of each theme of the twenty-first-century skills test and the total score of the test is statistically significant at an alpha (α) value less than 0.01. This proves that the questions are reliable and applicable to the study sample.

b.Measuring test reliability

The reliability of the test was measured using Cronbach's Alpha (α); reaching a value of 0.79, a high value that proves the reliability of the twenty-first-century skills test, indicating that the test is applicable to the study sample.

Research method

The researcher used the experimental method and a semi-experimental, single group, pre-post research design, such that it is first tested, the independent variable introduced, and then tested afterwards with the aim to measure the effectiveness of the developed unit in the Arabic language textbook (Loughati Al Jameela) as an independent variable in the development of twenty-first-century skills.

Practical application of the study tools

The author received the approval of the Scientific Research Ethics Committee at Princess Nourah Bint Abdul Rahman University, then the approval of the primary school in which the study was conducted. The twenty-first-century skills test was conducted before the unit was taught. The developed unit was taught virtually (remotely) to the students as its teaching coincided with the global COVID-19 (CoronaVirus) pandemic, which resulted in the suspension of studies in schools. Several applications and tools were used for this purpose, namely: PowerPoint presentations, Google tests, Internet browsers, YouTube and WhatsApp applications. The developed unit was taught from 24/4/2019 to 5/5/2019 over 12 meetings between the author and the students, which is the period permitted by the school administration for testing. The twenty-first-century skills post-test was conducted, following the completion of teaching the developed unit, to evaluate the effect of the unit on the students.

Statistical Processing:

The author adopted the Statistical Package for Social Sciences (SPSS) program to process the research data using the following statistical methods:

- Pearson Correlation coefficients to verify the validity and internal consistency of the items of the twenty-first century skills test and its domains.
- Alpha Cronbach Coefficient to measure the reliability of the twenty-first century skills.
- Paired Samples T Test (the one group to which the test is applied before and after testing) to define the significance of the differences between the average scores of female students in the pre-post testing of the experimental group of the twenty-first century skills testing.
- Eta squared (η^2) to measure the size of the effect, the size of the impact of the developed unit on developing the skills of the twenty-first century among the sixth-grade female students. According to the following equation:

$$\eta^2 = \frac{effect^2}{Degrees\ of\ freedom + effect^2}$$

- Estimating the effectiveness of the proposed unit on developing the skills of the twenty-first century for the 6th grade female students using Blake Modified Gain Ratio equation.

$$\frac{Y - X}{T - X} + \frac{Y - X}{T}$$

Y = the average score of the students in the post-test.

X = the average score of the students in the pre-test.

T = final score for the test. Blake has suggested that the closer the ratio to (1.2), the more.

Results

Results related to answering the first question

The first question: What are the twenty-first-century skills that sixth-grade female students need to possess?

To answer this question, the researcher prepared a list of twenty-first-century skills needed for sixth graders, following the steps that were listed in the study procedures, and she finalised the list containing 15 skills, which are shown in Table 4.

Table 4: List of twenty-first-century skills for sixth-grade female students

Main skills	Sub-skills
<i>a. Learning and innovation skills</i>	
Critical thinking and problem-solving skills	a. Making tough decisions
	b. Choosing from complicated options
	Asking significant and important questions that show different points of view and lead to better solutions
Communication and collaboration skills	Expressing ideas clearly and effectively using written and oral skills
	Assuming shared responsibility for collaborative

	work
g. Information, media and technology skills	
Information literacy skills	Accessing information (resources) effectively
	Evaluating information critically and competently
	Using information accurately and innovatively to solve a problem
e. Information and communication literacy	f. Using the Internet safely
	Acting according to ethical and legal behaviour when using the Internet
h. Life and career skills	
Flexibility and adaptability skills	Adapting to various roles and responsibilities
Initiative and self-direction skills	i. Managing time and workload effectively
	Prioritising, defining, and accomplishing tasks with no direct supervision
Social and cross-cultural skills	Leveraging social and cultural differences to create new ideas and increase innovation and quality of work
n. Productivity and accountability skills	Investing the points of strength of others to accomplish a common goal

Results related to answering the second question

To answer the second question (What is the effectiveness of the developed unit in the Arabic language textbook (Loughati Al Jameela) in enhancing learning and innovation skills among sixth-grade female students?), The twenty-first century skills test was applied to the participants before studying the developed unit, then the test was applied after completing the study unit.

The author used the paired sample t-test to test the significance of the difference between the average student grades in the pre and post learning and innovation skills test. Afterwards, the researcher calculated the eta-squared (η^2) value to measure the effect of the developed unit on the learning and innovation skills and statistically measured the difference between the mean values. Table 5 shows these results.

Table 5: t and (η^2) values to measure the significance of the difference between student grades in the pre and post applications of the test for the learning and innovation skills theme

Test	Mean	Standard deviation	Degree of freedom	t-value	Alpha (α)	η^2 value	Effect size
Pre	2.00	0.96	27	11.03	0.001	0.82	Very large
Post	5.15	0.97					

Table 5 shows the following:

- Average of student grades in the learning and innovation skills theme after being taught the developed unit is higher than their grades beforehand.
- There are differences between the average student grades in learning and innovation skills theme before and after being taught the developed unit, with a p -value less than 0.05, a t -value of 11.03, an alpha (α) value of 0.001, and an eta-squared (η^2) of 0.82, which indicates that the effect size is very large. These results show that teaching the developed unit has a high positive impact on developing learning and innovation skills for students.
- To measure the effectiveness of the developed unit in the Arabic language textbook (*Loughati Al Jameela*) in developing learning and innovation skills for students, Blake's modified gain ratio was calculated, and Table 6 shows the results.

Table 6: Blake's modified gain ratio to measure the effectiveness of the developed unit in the development of learning and innovation skills

Theme	Pre-teaching average	Post-teaching average	Final grade	Modified gain ratio
Learning and innovation skills	2.00	5.35	7	1.16

Table 6 shows that Blake's modified gain ratio for the developed unit in the development of learning and innovation skills among sixth-grade female students has a value of 1.16, a value very close to Blake's quotient (1.2), which proves the effectiveness of the developed unit.

Results related to answering the third question

To answer the third question (What is the effectiveness of the developed unit in the Arabic language textbook (*Loughati Al Jameela*) in enhancing information, media and technology skills among sixth-grade female students?), the researcher used the paired sample t -test to test the significance of the difference between the average student grades in the pre and post information, media and technology skills test. Afterwards, the researcher calculated the eta-squared (η^2) value to measure the effect of the developed unit on the information, media and technology skills and statistically measured the difference between the mean values. Table 7 shows these results.

Table 7: t and (η^2) values to measure the significance of the difference between student grades in the pre and post applications of the test for the information, media and technology skills theme

Test	Mean	Standard deviation	Degree of freedom	t -value	Alpha (α)	η^2 value	Effect size
Pre	2.28	1.01	27	13.42	0.001	0.87	Very large
Post	4.54	0.65					

Table 7 shows that:

- Average of student grades in the information, media and technology skills theme after being taught the developed unit is higher than that of their grades beforehand.

- There are differences between the average student grades in learning and innovation skills theme before and after being taught the developed unit with a p-value less than 0.05, a t-value of 13.42, an alpha(α) value of 0.001, and an eta-squared (η^2) value of 0.87, which indicates that the effect size is very large. These results show that teaching the developed unit has a high positive impact on developing information, media and technology skills for students.

- To measure the effectiveness of the developed unit in the Arabic language textbook (Loughati Al Jameela) in developing information, media and technology skills for students, Blake's modified gain ratio was calculated, and Table 8 shows the results.

Table 8: Blake's modified gain ratio to measure the effectiveness of the developed unit in the development of information, media, and technology skills

Theme	Pre-teaching average	Post-teaching average	Final grade	Modified gain ratio
Information, media and technology skills	2.28	4.54	5	1.28

Table 8 shows that Blake's modified gain ratio for the developed unit in the development of information, media and technology skills among sixth-grade female students has a value of 1.28, a value very close to Blake's quotient (1.2), which proves the effectiveness of the developed unit.

Results related to answering the fourth question

To answer the fourth question (What is the effectiveness of the developed unit in the Arabic language textbook (Loughati Al Jameela) in enhancing life and career skills among sixth-grade female students?), the researcher used the paired sample t-test to test the significance of the difference between the average student grades in the pre and post life and career skills test. Afterwards, the researcher calculated the eta-squared (η^2) value to measure the effect of the developed unit on life and career skills and statistically measured the difference between the mean values. Table 9 shows these results.

Table 9: t and (η^2) values to measure the significance of the difference between student grades in the pre and post applications of the test for the life and career skills theme

Test	Mean	Standard deviation	Degree of freedom	t-value	Alpha (α)	η^2 value	Effect size
Pre	2.04	1.34	27	10.72	0.001	0.81	Very large
Post	4.64	0.51					

Table 9 shows that:

- Average of student grades in the life and career skills theme after being taught the developed unit is higher than that of their grades beforehand.

- There are differences between the average student grades in the life and career skills theme before and after being taught the developed unit, with a p-value less than 0.05, a t-value of 13.42, an alpha(α) value of 0.001, and an eta-squared (η^2) value of 0.87,

which indicates that the effect size is very large. These results show that teaching the developed unit has a high positive impact on developing life and career skills for students.

- To measure the effectiveness of the developed unit in the Arabic language textbook (Loughati Al Jameela) in developing career and life skills for students, Blake's modified gain ratio was calculated, and the Table 10 shows the results.

Table 10: Blake's modified gain ratio to measure the effectiveness of the developed unit in the development of information, media, and technology skills

Theme	Pre-teaching average	Post-teaching average	Final grade	Modified gain ratio
Career and life skills	2.04	4.64	5	1.40

Table 10 shows that Blake's modified gain ratio for the developed unit in the development of information, media and technology skills among sixth-grade female students has a value of 1.40, a value greater than Blake's quotient (1.2), which proves the effectiveness of the developed unit.

Results related to answering the main question

To answer the main question (What is the effectiveness of the developed unit in the Arabic language textbook (Loughati Al Jameela) in enhancing twenty-first-century skills for sixth-grade female students?), the researcher used the paired sample t-test to test the significance of the difference between the average student grades in the pre and post twenty-first-century skills test. Afterwards, the researcher calculated the eta-squared (η^2) value to measure the effect of the developed unit on the life and career skills and statistically measured the difference between the mean values. Table 11 shows these results.

Table 11: t and (η^2) values to measure the significance of the difference between student grades in the pre and post applications of the test for the life and career skills theme

Test	Mean	Standard deviation	Degree of freedom	t-value	Alpha (α)	η^2 value	Effect size
Pre	6.32	2.37	27	14.48	0.001	0.89	Very large
Post	14.32	1.25					

- Average of student grades in the twenty-first-century skills test as a whole after being taught the developed unit is higher than that of their grades beforehand.

- There are differences between the average student grades in the life and career skills theme before and after being taught the developed unit, with a *p*-value less than 0.05), a *t*-value of 14.48, an alpha(α) value of 0.001, and an eta-squared (η^2) value of 0.89, which indicates that the effect size is very large. These results show that teaching the developed unit has a high positive impact on developing twenty-first-century skills for sixth-grade female students.

- To measure the effectiveness of the developed unit the Arabic language textbook (Loughati Al Jameela) in developing twenty-first-century skills for students, Blake's modified gain ratio was calculated, and Table12 shows the results.

Table 12: Blake's modified gain ratio to measure the effectiveness of the developed unit in the development twenty-first-century skills

Theme	Pre-teaching average	Post-teaching average	Final grade	Modified gain ratio
Twenty-first-century skills	6.71	14.32	17	1.2

Table 12 shows that Blake's modified gain ratio for the developed unit in the development of twenty-first-century skills among sixth-grade female students has a value of 1.2, one that is exactly equal to Blake's quotient (1.2), which proves the effectiveness of the developed unit.

Discussion

The findings revealed an improvement in the level of twenty-first-century skills among the female students (the participants) in each of the three domains. Moreover, there was a significant impact of the developed unit on the domains of learning and creativity, dealing with information, technology and media and life and profession. Furthermore, the study showed the effectiveness of the developed unit in developing the 21st century skills.

The present result is consistent with Abu Al-Wafa (2017) that demonstrated the effectiveness of the proposed science unit in developing twenty-first century skills in all domains for the 6th grade students, Hilal (2021) that indicated the effectiveness of the developed science unit in developing twenty first century skills among the primary school students and Taha (2019) that illustrated the effectiveness of the suggested science unit in developing twenty-first-century skills among the secondary school students.

However, it disagreed with the results of the study of Abdul Aal (2018), which showed the effectiveness of the web-enhanced program that it proposed in developing critical thinking/problem solving, information/technology and information literacy, but not its effectiveness in developing life and career skills.

The positive impact of the developed unit on the skills of the twenty-first century for female students may be due to several factors, including: the students' sense of comfort during the application, as the prevailing teaching climate enhances self-confidence, grants them freedom of expression without fear, and encourages expressing views, which may have an impact on developing communication and sharing skills cooperation, and the fulfilment of many activities for the students; The student used many applications and conducted electronic searches, which had an impact on developing skills in dealing with information, technology, and media, the spirit of competition between groups, continuous encouragement to cooperate with the group's students, working in a team spirit, and giving priority to the group's

interest over personal interest, all of which contribute to the development of life and career skills. The variety of activities in the designed unit, as well as their relevance to the kids' dispositions and interests at this age, as well as the treatment of the same skill in more than one method and at different periods, helped students in acquiring it.

Based on the results, the developed unit, with its contents of objectives, activities, and evaluation methods, can be regarded as a guide for Arabic language teachers, in general, and sixth grade teachers, in particular. It helps them develop twenty-first century skills among their students by integrating these skills with the content of the courses they teach.

Recommendations and suggestions

In light of the results of the study, the researcher recommends the following:

- That the field specialists work on developing a map of twenty-first-century skills appropriate for each field of study arranged according to the academic stages.
- Arabic language textbooks can be enriched with proposed or developed units in light of twenty-first-century skills.
- Training in-service teachers to improve their capacity to incorporate twenty-first-century skills into curricular components.
- Those studies be performed to analyse and evaluate academic curricula in light of twenty-first-century skills.
- Conduct the studies that evaluate the effectiveness of some modern strategies in developing twenty-first-century skills be measured.

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