The Degree to which STEAM Concepts are Included in the English World Textbook for the Tenth-Grade

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Abstract

This study aimed to explore the extent to which the STEAM concepts were included in the English World textbook for the tenth-grade. A content analysis checklist was adapted in light of Alahmads' (2020) requirements of the STEAM approach namely, integrative knowledge, integrative skills, science, technology, engineering, arts, and mathematics practices, and future professions and professional awareness. All reading texts and activities were analyzed by identifying the STEAM major domains and their sub-requirements. The results of the analysis revealed that the requirements of the STEAM approach concepts integrated within the content of the English World10 were generally poor. The integrative skills domain came in the first rank at a percentage of (32.2), followed by the science, technology, engineering, mathematics, and art practices domain in the second rank at a percentage of (28.89), the integrative knowledge domain in the third rank at a percentage of (23.96), and the future professions and professional awareness domain came in the fourth rank at a percentage of (14.94).

Keywords: Content Analysis, English World Textbook, STEAM Concepts.

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درجة تضمين مفاهيم STEAM في كتاب
English World للصف العاشر

الملخص

هدفت هذه الدراسة إلى الكشف عن درجة تضمين مفاهيم STEAM في الكتاب المدرسي English World 10. وتم تعديل قائمة رصد لتحليل المحتوى مفاهيم STEAM في ضوء متطلبات الأحمدي (2020) للنهج STEAM وهي المعرفة التكاملية والمهارات التكاملية، وممارسات العلوم والتكنولوجيا، والهندسة، والفنون والرياضيات، والمهن المستقبلية، والوعي المهني. كذلك تم تحليل جميع نصوص وأنشطة القراءة من خلال تحديد المجالات STEAM الرئيسية ومتطلباتها الفرعية. وكشفت نتائج التحليل. ويلاحظ أنّ متطلبات المفاهيم STEAM المدمجة في محتوى الكتاب قد كانت ضعيفة بشكل عام. وجاء مجال المهارات التكاملية في المرتبة الأولى بنسبة **32.2**، يليه مجال ممارسات العلوم والتكنولوجيا والهندسة والرياضيات، والفنون في المرتبة الثانية بنسبة **28.89**، كما جاء مجال المعرفة التكاملية بالمرتبة الثالثة بنسبة **23.96**، ثم مجال المهن المستقبلية والوعي المهني في المرتبة الرابعة بنسبة **14.94**.

الكلمات المفتاحية: تحليل المحتوى، كتاب English World، مفاهيم STEAM.

Introduction

The global revolution in technology, economy, science, and education has brought about an urgent need to prepare students for the twenty-first century in knowledge and skills and has eventually given rise to innovative trends in education. Such trends aim to modify the education system to make use of these developments for the maximum benefit of individuals and societies. This has changed English into a lingua franca needed in all fields like science, engineering, medicine, technology, and mass media. Since it is the most used language on the Internet and in electronic media, English has become a tool to help learners cope with the rapid developments in this dynamic world (Rao, 2019).

Teaching English as a foreign language (henceforth EFL) evolved from merely teaching the rules of grammar and vocabulary to equipping students with twenty-first-century skills like critical thinking, creativity, collaboration, communication, and problem-solving to succeed in competitive global markets (Fandiño Parra, 2013). These skills help students to more easily handle daily life problems and adapt to the requirements needed in future careers (Kanadli, 2019).

Teaching EFL is difficult even with a well-structured textbook, a basic tool to improve the quality of teaching and learning (Cunningsworth, 1995) that gives students the chance not only to learn the language but also to develop new essential skills (Hutchinson & Torres, 1994). The textbook serves as a practical resource for learning, a rich source of ideas and activities, and a reference for students (Yakman, 2008). It also contributes to the development of the skills necessary for the demands of real life (Yakman & Lee, 2012).

Effective EFL textbooks should provide students with enough opportunities to use English in meaningful and authentic contexts (Hadley, 2009) since meaningful learning can only take place when students engage their prior knowledge, new experiences, and skills to deal with daily situations (Brooks & Brooks, 1993). An unsuitable EFL textbook can negatively affect teacher and learner performance as it wastes time and money and reduces motivation (Dweik, 2007), especially nowadays with the movement to take education away from the traditional curriculum geared towards subject-matter knowledge toward integrating different fields to foster necessary life skills (Kim, Lee, Yang, Lee, Jang, & Kim, 2019).

Science, Technology, Engineering, Arts, and Mathematics (henceforth STEAM) is a modern international reform of K-12 education that calls for the integration of the five domains to equip students with the skills to handle the rapidly changing world (Miralimovna, 2022). It is the starting point for integrating technical, natural, and mathematical sciences through art in an authentic environment for creativity, inquiry, discussion, and critical thinking hoped to increase students' motivation for learning and professional development (Perignat & Katz-Buonincontro, 2019).

Science, Technology, Engineering, and Mathematics (i.e., STEM) was introduced by the National Science Foundation (henceforth NSF) in the USA in

the 1990s to address the numerous challenges in the labor market, stimulate students' motivation in learning innovation and STEM practical skills, and keep America in a globally competitive place (NRC, 2012). STEM is a "multi- or interdisciplinary approach to learning, in which academic concepts are coupled with real-world lessons to make connections between school, community, work, and business" (Siekmann&Korbel, 2016: 17). It is based on an integrative view that focuses on understanding relationships and overlapping concepts between the four domains when building, developing, and teaching curricula (Yakman & Lee, 2012). This approach reconsidered the boundaries of the traditional 'flawed' textbook separating knowledge and skills into topic areas (Hirst, 1974) to establish relationships with real life and produce a holistic image of the world (Siekmann, 2016) through developing students' critical thinking skills and their ability to solve problems in realistic, practical contexts (Dakers, 2006). It also helps students to strengthen their skills to collaborate, communicate, self-regulate, and use information and communication technologies (ICT) for learning (Stehle& Peters-Burton, 2019).

STEAM, with an additional A for visual arts and crafts, liberal arts, linguistic arts, social studies, music, and culture (Sullivan, Kazakoff, &Bers, 2013), has recently replaced STEM to promote creativity, the habit of taking risks, collaborative, experiential learning, and problem-solving perseverance to prepare students to become future leaders, innovators, scientists, engineers, and educators (EducationCloset, 2019). It combines the five domains in interdisciplinary investigative learning as a whole using modern technology and design (Stroud & Baines, 2019). The inclusion of arts offers students many gateways to engage in the creative process and accomplish objectives across all subject areas (Silverstein & Layne, 2010) which takes STEAM one step further in the advancement of society, the protection of the quality of life, and improving learners' interest in innovation (Perignat & Katz-Buonincontro, 2019).

Researchers (cf., for example, Kelley and Knowles, 2016; Yildirim&Sevi, 2016) advocated the integration of STEAM in all school subjects including English since the five domains can be incorporated within the English curriculum. This would promote better language skills without which it is impossible to use STEAM (Sanders, 2009). STEAM plays an essential role in increasing creativity in science, technology, engineering, and mathematics and promotes critical thinking, creativity, problem-solving, and collaboration skills (NRC, 2012).

In Jordan, education is advancing in leaps and bounds, and teaching EFL is a core issue especially since fostering productive and qualified English speakers both nationally and internationally is crucial as His Majesty King Abdullah II stressed in his 2017 seventh discussion paper on developing human resources and education. The Ministry of Education, or MOE, presented its 2018- 2020 strategic plan stressing equal opportunities for high-quality education which provides learners with scientific creative thinking, teamwork, and life-long skills to become active citizens, belonging to their homeland and contributing to the world (Ministry of Education, 2006)

Designing a curriculum that fully addresses students' requirements, motivation, desires, and culture is a top priority for MOE decision-makers and stakeholders, especially one which covers grades one through twelve (Ministry of Education, 2006). Some private schools use the English World Series which aims at effective communication in English (Wren, Hocking, &Bowen, 2012).

Statement of the Problem
In Jordan, English is considered a foreign language that is taught to students at basic and secondary stages as a compulsory school subject. They begin studying it from the first grade and continue to the twelfth grade an average of five classes per week. After graduating from high school, the majority of students enroll in universities where mostly all courses are taught in English as in the sciences, medicine, engineering, administration, economics, mathematics, translation, and information technology, and English departments. Regardless of students' educational proficiency level, the issue of mastering English for them in university education becomes more significant than it was before.

Therefore, Jordanian university students' difficulties in acquiring English (Wardat, &Wardat, 2020) may be attributed to the reason that the EFL school curriculum did not equip them with the language they need for the courses in science, technology, engineering, mathematics, and arts. Integrating STEAM in these textbooks, to the best of this researcher's knowledge, may be the way out of such a dilemma for this prepares students for what is ahead.

In addition, to the best of this researcher's knowledge, few studies have evaluated school textbooks in light of STEM/ STEAM concepts (e.g., Alahmadi, 2020; Almomani, 2019; Alyusuf, 2018), though none on EFL textbooks. This study attempts to fill this gap in research as it investigates the integration of STEAM concepts in English World 10, the textbook taught in some private schools in Irbid, Jordan.

Purpose of the Study
The purpose of the current study is to investigate the extent to which the STEAM concepts were included in English World10 through content analysis.

Question of the Study
The study aims to answer the following question:
-To what extent does English World 10include STEAM concepts?

Significance of the Study
Previous studies, although few, investigated different subject matters such as science, physics, and pre-vocational education but not EFL. This lends importance to this study which is, to the best of the researcher's knowledge, the first to target EFL school textbook in light of STEAM in Jordan, namely English World 10. Furthermore, curriculum reform is a social requirement to cope with the new trends in education which aim at shaping the personalities of future generations to help them cope with the challenging and ever-changing world

(Beach, Bagley, Eriksson, & Player-Koro, 2014). This study hoped to help policymakers and curriculum designers modify and design curricula to reflect STEAM which, in turn, brings closer graduates' skill levels and market needs.

Operational Definition of Terms

This study consists of several terms defined operationally as follows:

The STEAM approach is an educational approach that combines Science, technology, engineering, arts, and math into a cross-disciplinary curriculum that relies on inquiry techniques and problem-solving skills for real-world issues (Park, Byun, Sim, Han, &Baek, 2016). In this study, STEAM refers to an educational approach to curriculum reform that uses the knowledge of and skills in science, technology, engineering, arts, and mathematics as access points for guiding student inquiry, innovation, and critical thinking.

Content analysis is a systematic, objective technique that can be used to quantitatively and qualitatively analyze content by defining meanings, classifying and coding them, and describing their specific characteristics (Krippendorff, 1989). The researcher used a content analysis checklist to measure the contextualization and integration of STEAM concepts in English World 10.

English World is a10-level textbook series authored by Liz Hocking, Wendy Wren, and Mary Bowen which includes a student book, a workbook, a teacher's guidebook, two tales, a dictionary, a DVD, and a CD. It was published by Macmillan Education in 2012.

Limitations of the Study

The analysis only covered the reading passages and their activities, not the whole textbook. Other skills and activities were left out which may affect the generalizability of the study findings.

Literature Review

After reviewing educational research, the researcher collected studies relevant to this study:

Alyusuf (2018) investigated the first four chapters of the secondary-stage physics textbooks in Jordan for STEM using a content analysis checklist with thirty indicators in seven domains. The findings revealed low STEM integration in physics textbooks with the criterion of strategically using technology being the lowest and collaboration as a STEM team the highest in first-secondary grade textbooks. As for the second-secondary grade textbooks, inclusion was the lowest in the criterion of engaging in inquiry and highest for the collaboration as a STEM team.

Almomani (2019) examined the contextualization of STEAM standards in the Metal Works Unit of the tenth-grade pre-vocational education textbook using a checklist of four domains and twenty items. The findings showed that mathematics ranked first, followed by technology and science in second place, and engineering ranked last.

Kanadli (2019), using a qualitative meta-summary method, investigated the contributions of the STEM approach to the dimensions of the science curriculum and the learning-teaching process. The sample was twenty-two research reports on education and STEM. The study concluded that three requirements were met to support STEM implementation: skill requirements (e.g., life, critical thinking, problem-solving, and investigation), professional requirements, like professional and vocational awareness, and instructional requirements, such as working in groups and learning with work.

Alahmadi (2020) examined how Saudi intermediate science textbooks reflected STEM integration through an analysis card and a questionnaire. Results showed that the content of the curriculum did not generally meet the standards for integrated knowledge and integrated skills. Engineering, science, and technology, as well as future occupation and professional awareness, were barely reflected although the prerequisites for integrated knowledge, integrated skills, and practices in science, technology, and engineering were partially met.

Ormancı (2020) examined thirty doctoral theses on STEM education published in the CoHE National Thesis Center in Turkey prior to 2020 using descriptive and content analysis. This thematic analysis showed that studies examined the impact of STEM on academic accomplishment, comprehension, scientific process abilities, and attitudes and that research had been done on how STEM affected the cognitive, affective, and skill fields. The literature lacks focus on particular contemporary STEM education competencies.

Hashmi, Javed, Tahira, Shahzad, and Amin (2021) investigated the extent STEAM knowledge was incorporated into the Punjabi pre-primary first-, second-, and third-grade general knowledge textbooks in (2019) using content analysis. The study concluded that STEAM is not taught at pre-primary levels since the textbooks lacked content and materials for STEAM-related principles. Against the recommendations put forward before creating the books, only a small portion of the elementary level in the arts and sciences was covered, and subjects on technology, engineering, and arithmetic were ignored.

Irgasheva (2021) examined the STEAM effectiveness in helping randomly selected 94 future teachers to improve their English language skills. The experimental group was divided into teams to develop socially significant projects communicating in English and focusing on mistakes for further improvement. Sessions were video-recorded for analysis and identifying mistakes for future correction. Problems were related to integrating academic topics into the planning curricula, organizing and coordinating timetables, and explaining to students the nature, substance, and method of this approach. The study concluded with the need for further research on the prerequisites and chances for development of communication, critical thinking, creativity, and cooperation soft skills along with English language proficiency.

Abueita, Al Fayez, Alsabeelah, and Humaidat (2022) aimed to determine the impact of a STEAM-based learning approach on academic success and creative thinking among Jordanian eighth-grade students at Khadeeja Um AlMumineen Basic School in Zarqa, Jordan, in the second semester of 2018/ 2019. Both the

control and experimental groups were given a pre-/ post-test. The findings revealed statistically significant differences in academic achievement and creative thinking between the experimental and control groups in favor of the former, and STEAM-based learning significantly enhanced students' academic achievement and ability for creative thought.

Concluding Remarks

According to the researcher's knowledge and literature review, this study is considered one of the pioneering studies in Jordan in the area of the integration requirements between science, engineering, technology, arts, and mathematics within English textbooks. Some studies have been conducted on different disciplines such as science (Alahmadi, 2020), physics (Alyusuf, 2018), pre-vocational education (Almomani, 2019), and general knowledge textbooks (Hashmi, et.al. 2021).

It is hoped to contribute to the literature on the topic and help policy-makers approve STEAM integration in the EFL classroom and curriculum designers appropriately amend textbooks. Additionally, the current study aims to add to the existing literature by providing empirical information that may help to spread the value of the STEAM approach in the EFL educational context in Jordan.

Method and procedures
Design of the study

The current study followed the descriptive quantitative approach in which a content analysis checklist was used to investigate the extent of including STEAM approach criteria in English World 10.

Material of the Study

The present study entailed one EFL textbook taught in some private schools in Qasabat Irbid Directorate English World 10. All reading texts and activities of this textbook were analyzed.

Criterion, Unit, and Categories of Content Analysis

The criterion of the content analysis was the inclusion and frequency of the 64 sub-requirements of the four STEAM concepts in the reading texts and activities in English World 10. The unit of analysis was the concept and theme behind a picture, question, sentence, paragraph, or group of paragraphs in the reading texts and activities. The analysis categories were the four main concepts or domains of the STEAM approach, i.e. integrative knowledge, integrative skills, STEAM practices, and future professions and professional awareness in English World 10.

Research Instruments
Content Analysis Checklist
The content analysis checklist was used to determine the extent to which the content of 10[th]English World textbooks integrates STEAM concepts. The checklist consists of (64) sub-requirements distributed under four main domains of the STEAM concepts as shown in Table (1).

Table (1): Main and Secondary STEAM Concepts

No.	Domain	Sub-Requirements
1	Integrative knowledge requirements	11
2	Integrative skills requirements	21
3	Science, technology, engineering, art, and mathematic practices	20
4	Future professions and professional awareness requirements	12
	Total	64

Validity and Reliability of the Content Analysis Checklist
To ensure the validity of the content analysis checklist, it was presented to a jury of thirteen English curriculum and instruction experts. The researcher asked them kindly to give any comments or suggestions about the clarity and comprehensiveness of the content of the checklist. Their feedback was taken seriously to develop the quality of the content analysis checklist such as combining two or three items to create one paragraph, as in the case of combining the following items (Basic concepts of biology, Basic concepts of chemistry, Basic concepts of physics, Basic concepts of Geology, and Basic concepts of Ecology) to create the item (Basic concepts of science and its branches). In addition, adding items related to the arts discipline that was not included in the previous studies instrument (Basic concepts related to arts and its branches). After minor modifications, the jury accepted the checklist.
To establish inter-rater reliability, the researcher and a supervisor with a master's degree in curricula and EFL teaching methods analyzed the textbook using the same criteria. The agreement coefficients between the two were calculated using the Holsti equation, as shown in Table (2).

Table (2): Results of Agreement and stability coefficients for analysis criteria per the Holsti equation

Book	Analyst	STEAM Concepts				Total
		Integrative Knowledge	Integrative Skills	Science, Technology, Engineering, Mathematics, &Art Practices	Future Professions & Professional Awareness	
English World 10	Analyst 1	457	614	551	285	1907
	Analyst 2	420	540	490	243	1693
	Agreement	420	540	490	243	1693
	Stability Coefficient	91.9%	87.9%	88.9%	85.3%	88.8%

As shown in Table (2), the inter-rater coefficient agreement between the two analysts on the four STEAM domains was 88.8% for English World 10. This indicated acceptable coefficients of inter-rater agreement

Results

The question of the study was: "To what extent does English World 10 include STEAM concepts? To answer this question, a content analysis was conducted for the reading texts and their activities of the textbook under study that is taught in private schools English World 10 followingAlahmadi (2020) STEAM concepts, namely, integrative knowledge, integrative skills, the science, technology, engineering, art, and mathematic practices, and future professions and professional awareness. Tables (3 to 8) illustrate the content analysis of English World 8, English World 9, and English World 10. Table (5) illustrates the summary results of STEAM domain concepts in the three books together.

Table (3): The STEAM Domain Concepts Altogether in English World 10

Criterion	F	%	Rank	Degree of verification
Integrative knowledge	457	23.96	3	Very low
Integrative skills	614	32.2	1	Low
Science, technology, engineering, mathematics, and art practices	551	28.89	2	Low
Future professions and professional awareness	285	14.94	4	Very low
Total	1907	46.52		

* Percentages= The sum of the frequencies of the criterion indicators/The sum of the frequencies of the criteria as a whole

As shown in Table (3), the integrative skills domain came in the first rank with a percentage of (32.2), followed by the science, technology, engineering, mathematics, and art practices domain in the second rank with a percentage of (28.89), the integrative knowledge domain is in the third rank with a percentage of (23.96), and the future professions and professional awareness domain came in the fourth rank with a percentage of (14.94).

Furthermore, the frequencies, percentages, and validation scores for each requirement along the domains of the STEAM concepts were calculated separately for the English World 10. Tables (4 to 8) show the results. Table (4) illustrates the frequencies, percentages, and degree of verification of the sub-requirements along the integrative knowledge domain in the English World 10.

Table (4): Sub-Requirements along the Integrative Knowledge Domain in the English World 10

No.	Requirements	F	%	Rank	Degree of verification
1	Basic concepts of science and its branches	97	21.23	2	Very low
2	Basic concepts of Mathematics	7	1.53	11	Very low
3	Basic concepts of engineering design	17	3.72	7	Very low
4	Basic concepts of Technology and its applications	41	8.97	3	Very low
5	Basic concepts of arts and its branches	175	38.29	1	Low
6	Integrative concepts that include one or more STEAM domains	32	7	5	Very low
7	Scientific concepts and terms in the English language	34	7.44	4	Very low
8	Sustainable development concepts	10	2.19	9	Very low
9	Learning experiences within the student's environment	23	5.03	6	Very low
10	Social scientific issues related to STEAM	13	2.84	8	Very low
11	Cognitive experiences in a real-world context	8	1.75	10	Very low
	Total	457	23.96		Very low

The results of Table 4 show that the sub-requirement "Basic concepts of arts and its branches" came in first place in terms of inclusion in the English World 10 with a total frequency of (175) and a percentage of (38.29), followed by the item "Basic concepts of science and its branches" with a total frequency of (97) and a percentage of (21.23). The third place was for the item "Basic concepts of Technology and its applications" with a frequency of (41) and a percentage of (8.97). The item "Basic concepts of Mathematics" came in the last place with a frequency of (7) of and a percentage of (1.53%), and the degree of verification of all these requirements was very low. Table (5) illustrates the frequencies, percentages, and degree of verification of sub-requirements along the integrative skills domain in the English World 10.

Table (5): Sub-Requirements Along the Integrative Skills Domain in the English World 10

No	Requirements	F	%	Rank	Degree of verification
1	Critical thinking	79	12.87	1	Very low
2	Creative thinking	41	6.68	6	Very low
3	Reflective thinking	8	1.3	15	Very low
4	Effective communication	20	3.26	12	Very low
5	Debate and argument	69	11.24	2	Very low
6	Problem- solving	42	6.84	5	Very low
7	Decision-making and evaluating	60	9.77	3	Very low
8	Observation and monitoring	21	3.42	11	Very low
9	Time management	9	1.47	14	Very low
10	Planning, carrying, and investigations	18	2.93	13	Very low
11	Collaboration and teamwork	23	3.75	10	Very low
12	Understanding phenomena in local	28	4.56	7	Very low
13	Engineering design and modeling	1	0.16	18	Very low
14	Discovery learning and self-learning	26	4.23	8	Very low
15	Learning by doing	41	6.68	6	Very low
16	Lifelong learning	41	6.68	6	Very low
17	Research and survey	25	4.07	9	Very low
18	System analysis	5	0.81	16	Very low
19	scientific writing	9	1.47	14	Very low
20	cause-effect association	4	0.65	17	Very low
	Brainstorming skill	44	7.17	4	Very low
	Total	614	32.2		Low

It is observed from Table (5) that the item "Critical thinking" came in the first rank in terms of contextualizing in the English World 10 with a frequency of 79 and a percentage of (12.87), followed by the items "Debate and argument" in the second rank with a frequency of (69) and a percentage of (11.24). The item "Decision-making and evaluating" came in the third place with a frequency of (60) and a percentage of (9.77). The item "Engineering design and modeling" was in the last rank with a frequency of 1 and a percentage of (0.16). The degree of verification of all these requirements was low. Table (6) shows the frequencies and percentages of the sub-requirements included in the main STEAM domain "the Science, technology, engineering, mathematics, and art practices domain" for the English World 10.

Table (6): Sub-Requirements of the Science, Technology, Engineering, Mathematics, and Art Practices Domain in the English World 10

No	Requirements	F	%	Rank	Degree of verification
1	Activities that enrich critical thinking skills	102	18.51	1	Very low
2	Activities that promote creative thinking skills	40	7.26	4	Very low
3	Activities that support problem-solving learning	50	9.07	2	Very low
4	Activities that support project-based learning	4	0.73	15	Very low
5	Activities that promote inquiry-based learning	32	5.81	6	Very low
6	Technology-based activities	44	7.99	3	Very low
7	Designing and modeling activities	1	0.18	16	Very low
8	Activities that require students to collect, and analyze data before arriving at a solution	34	6.17	5	Very low
9	Activities that present authentic problems	25	4.54	10	Very low
10	Searching for Information activities	31	5.63	7	Very low
11	Activities that arouse curiosity and ask questions	30	5.44	8	Very low
12	Team work- based activities	29	5.26	9	Very low
13	Activities that link scientific issues and future careers.	20	3.63	11	Very low
14	Activities that transfer theoretical knowledge into practice	18	3.27	12	Very low
15	Activities that promote competition between students	32	5.81	6	Very low
16	Hands-on activities	13	2.36	14	Very low
17	Activities that make a real connection between STEAM domains	13	2.36	14	Very low
18	Activities that require multi-source knowledge	16	2.9	13	Very low
19	Activities that deal with global issues	16	2.9	13	Very low
20	Activities that used charts and diagrams to illustrate concepts	1	0.18	16	Very low
	Total	551	28.89		Low

It is observed from Table (6) that the item "Activities that enrich critical thinking skills" came in the first rank in terms of contextualizing in the English World 10 with a frequency of (102) and a percentage of (18.51), followed by the item "Activities that support problem-solving learning" in the second rank with a frequency of (50) and a percentage of (9.07). The item "Technology-based activities" came in third place with a frequency of (44) and a percentage of

(7.99). The two items "Designing and modeling activities" and "Activities that used charts and diagrams to illustrate concepts" were in the last rank with a frequency of (1) and a percentage of (0.18). The degree of verification of all these requirements is low. Table (7) illustrates the frequencies and percentages of the sub-requirements included in the main STEAM domain "Future professions concepts and professional awareness" for the English World 10.

Table (7): Sub-Requirements of the Future Professions Concepts and Professional Awareness Domain in the English World 10

No.	Requirements	F	%	Rank	Degree of verification
1	Concepts about future scientific professions	25	8.77	4	Very low
2	Concepts about the nature of engineering professions	111	38.95	1	Very low
3	Concepts about the nature of digital professions	8	2.81	6	Very low
4	Concepts about future professions	63	22.11	2	Very low
5	Concepts in professional management	4	1.4	8	Very low
6	Concepts in vocational training	7	2.46	7	Very low
7	Concepts in the knowledge of the economy	22	7.72	5	Very low
8	Professional work skills	31	10.88	3	Very low
9	Professional work ethics and values	8	2.81	6	Very low
10	Activities of real visits to professional work sites	`2	0.7	9	Very low
11	The relationship of professions to the economic growth of society	2	0.7	9	Very low
12	Developing professional tendencies and trends	2	0.7	9	Very low
13	Total	285	14.94		Very low

It is observed from Table (7) that the item "Concepts about the nature of engineering professions" came in the first rank in terms of contextualizing in the English World 10 with a frequency of (111) and a percentage of (38.95), followed by the item "Concepts about future professions" in the second rank with a frequency of (63) and a percentage of (22.11). The item "Professional work skills" came in third place with a frequency of (31) and a percentage of (10.88). The items "Activities of real visits to professional work sites" "Activities of real visits to professional work sites" "The relationship of professions to the economic growth of society" and "Developing professional tendencies and trends" were in the last rank with a frequency of (2) and a percentage of (0.7). The degree of verification of all these requirements is very low.

Discussion

The study found that the requirements of the STEAM approach concepts included within the content of the English World10 were generally poor. The integrative skills domain came in the first rank with a percentage of (32.2), followed by the STEAM practices domain in the second rank with a percentage of (28.89), the integrative knowledge domain is in the third rank with a percentage of (23.96), and the future professions and professional awareness domain came in the fourth rank with a percentage of (14.94).

The researcher explains the low rates of inclusion of STEAM concepts is that the English World 10 has not been designed exclusively according to the STEAM approach but rather came in the light of the principles of modern global trends. Building a STEAM-based textbook requires a review of the education system vision and its objectives, and changing them to achieve an understanding of the English language in a way that shows the close functional relationship between science, art, engineering, and mathematics, and their technological applications, and also considers the need to change the teaching strategies to achieve this objective.

Another possible reason is that English World10 typically focuses on language arts skills such as reading, writing, grammar, and literature analysis. The primary goal is to develop language proficiency and literacy skills. As a result, there may be a limited emphasis on integrating STEAM concepts, which are more aligned with science, technology, engineering, and math subjects.

Incorporating STEAM in language teaching develops EFL learners' twenty-first-century skills like collaboration, problem-solving skills, creativity, motivation, and critical thinking (Abueitaet al., 2022; Ormancı, 2020). Although STEAM activities are applicable to the real world as they reflect real-life issues, which causes a STEAM-integrated approach to boost learners' motivation and excitement for involvement in English language classrooms, textbooks vary in their integration of STEAM concepts. These findings are pertinent to the results of Alahmadi (2020); Almomani (2019); Alyusuf (2018); and Hashmi et.al, (2021). Nevertheless, there are no studies show contradicting results in their research studies.

Conclusion

In conclusion, the results of the study revealed a weakness in integrating STEAM concepts in the content of the English World10. This is because the content of the textbook lacks what motivates students to engage in the investigation of global issues to learn about how the world is facing problems and challenges.

Therefore, it is necessary to reconsider the content of the English world curriculum, to enrich it with concepts that make the book more flexible and comprehensive in terms of different fields, so that students are guaranteed to receive an education that provides them with experiences and skills for their practices in daily life.

Recommendations

In light of the findings of the researcher in this study, she recommended further content analysis research be attempted to analyze all skills activities including the English World Textbooks.

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