Economic Education Concepts in School Mathematics Textbooks for Middle Stage in Saudi Arabia

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Abstract

The world faces some economic challenges, which may cause a financial crisis. The school curricula must pay attention to its role in the field of economic education for students, to prepare them to deal with current and future economic challenges. By using descriptive analysis method, the research aimed to identify the contributions of school mathematics textbooks to economic education, through the economic concepts, for middle stage students in Saudi Arabia. The researcher identified five areas of concepts that contribute to denoting and promoting economic education: financial transactions, consumption, investment, savings, and rationalization. According to the methodological steps of the content analysis method, the results showed that the school mathematics textbooks highly contribute to promoting economic education in concepts related to the field of financial transactions (65.88%), with very large percentage. Promoting the concepts of consumption came in second place (18.83%), while the prompting economic education for students was very low at three concepts, investment, saving, and rationalization (7.08%, 6.03%, 2.18%).

The research recommended the need to pay attention to all areas and concepts of economic education in mathematics textbooks at the middle stage, in balanced proportions, and to reconsider the frequency and percentages of economic education concepts included in the current mathematics textbooks, and mathematics textbooks should be developed to promote the economic education for students.

Keywords: economic education, middle stage, mathematics textbooks, students

1. Introduction

Education has an important role in the process of education and social adaptation for current and future generations. School textbooks, including mathematics textbooks, contribute at different stages to instilling various educational concepts for students, the most important of which are economic concepts to support the economic education that accompanies students during their public and social lives. Some studies pay attention to economic education (Awad, 2015; Johnson & Sherraden, 2017), and other studies emphasized the importance of including the concepts of economic education in school curricula, because of the significant impact on life behavior in general (Al-Sulaimi, 2016; Al-Sharari, 2010). Further studies have recommended re-analyzing the textbooks to determine the adequacy of the educational and economic concepts they contain (Hassan, 2019; Al-Sharari, 2010), while some studies have found that offering a short program in economic education to students results in gains in knowledge that last after one year (Batty, Michael, & Odders, 2015). Some studies indicated the need to develop a special curriculum in economic education for students (Cochran, 2010; Moten, 2011; Harrelson, 2011).

Considering the recent developments of the curricula in Saudi Arabia, the implementation of the comprehensive national project for curricula development in 2012, and the electronic curricula linking in 2018, however, to the knowledge of the researcher, there was not enough attention to the areas of economic education in developing curricula. In light of global precautionary measures to deal with the emerging Covid-19 virus, since the end of 2019, and the resulting global economic crisis, 97 million people will be pushed into poverty in 2020, and 205 million people will be unemployed by 2022 (https://www.undp.org/coronavirus). It makes imperative for officials and researcher to reconsider the school curricula to enhance the economic education of students, to better manage their financial resources to face the current and future financial crises. Hence, the current research came to get acquainted with the

role of mathematics textbooks in promoting economic education by analyzing the economic concepts addressed in mathematics textbooks at middle stage. Concepts are the basis of knowledge and are one of the most important outcomes of science by which knowledge is organized (Mustafa, 2014, p.89). One of the most important challenges faced by the researcher when analyzing textbooks is to identify and extract concepts related to economic education from the context of the study topics, and categorize them into similar groups, as mathematics textbooks deal with many issues and activities that regarding the various economic transactions practiced by students during their current and future age stages. From here the research problem arose which deals with the contribution of mathematics textbooks at middle stage in Saudi Arabia in promoting the economic education of students. The research aimed to identify the contributions of school mathematics textbooks to economic education, through the economic concepts, for middle stage students.

1.1 Literature Review

Education received great importance from economic thinkers such as A. Smith, A. Marshal, and JS Mill, whom pointed out the importance of education in the economic development of society, and economic education became a branch of pedagogy in the seventh decade of the twentieth century because of its great importance in forming positive behavior in the economic situations experienced by the individual, meeting their personal and societal requirements, contributing to increasing students' economic awareness, improving consumption patterns of goods and services, preserving private and public properties, and achieving sustainable development. Therefore, it is an imperative, especially for students of educational levels. (Fouda, 2015). The concept of human capital began to spread among economists interested in education, and views of spending on education changed from consumption to it being an investment, and interest in education began to increase to prepare human capital capable of meeting the needs of societies.

Economic education for students is based on several principles that distinguish it from other fields, the most important of which is the development of awareness of the importance of work among students, the development of planning awareness, the development of cooperative behavior, and the development of the cultural and economic level (Ahmed & Abdel Gawad, 2016), as these principles contribute to reaching a lower level of unemployment, increasing wealth and production in society, and eliminating class differences.

Objectives of economic education: economic education aims to achieve economic awareness for students by simplifying economic concepts, increasing their awareness of societal economic issues, fostering positive interaction with the economic system, aiding in the making of sound decisions, guiding them in the investing of their time in a beneficial manner, and helping them to exploit their energies in work and production, as well as gaining for the individual economic values and methods of rational economic behavior from the individual and societal points of view, educating the individual to conduct sound economic behaviors in dealings with others (Bilbakai, 2014), helping the learner to understand the economic relations on which contemporary society is based, and developing economic awareness and rationalizing consumption. Additionally, objectives include achieving the economic growth of the community, enabling the learner to face economic problems in his daily life, and developing his ability to play his role as an effective citizen of his community as a producer, a rational consumer, a saver, and a participant in achieving the economic development of his community (Abdul-Halim, 2014). Economic education can be carried out through mathematics which develop many different life skills for students, Al-Khateeb (2019) stresses the importance of developing mathematics textbooks to meet students' skills.

Characteristics of economic education: economic education is a human process in the first place, with several characteristics, the most important of which are educational, awareness, environmental, productive, legal, religious, saving and development, related to thought, matter, individual, and society (Ahmed & Abdel Gawad, 2016).

Some previous studies dealt with the economic education concepts such as scarcity and cost, trade, consumption, production, consumption, supply and demand, natural resources, human capital, private goods, public goods, savings, investment, and tax money. Abdullah (2002) concluded the importance of realizing the nature of the production and consumption processes and the relationship between them, and rationalization of consumption. Abu Zaid (2009) presented a proposed conception for the development of financial culture in light of its reality in the basic education curricula in Bahrain, Al-Sharari (2010) dealt with the importance of the concepts of economic education in the field of contemporary economic systems, economic development, markets, and international trade. Harrelson (2011) aimed to identify knowledge of the economic and financial aspects of secondary school students and the role of the current economic curricula in preparing students to make sound financial decisions in the future. Supon (2012) concerned creating methods and strategies for educating students and enhancing their abilities in economic education. Bilal, Shalaby, & Mahmoud (2013) dealt with the effectiveness of a proposed program to develop the savings

awareness among basic education students, Awad (2015) dealt with the effectiveness of a proposed unit in banking financial culture in developing the achievements and attitudes of secondary students in the light of international standards, Ahmed and Abdel Gawad (2016) examined suggested mechanisms for activating the role of pre-university education in Egypt in supporting economic education for students. Al-Dossary's (2016) dealt with the role of secondary school in the development of the economic awareness of its students from the teachers' point of view. Johnson and Sherraden's (2017) dealt with the promotion of economic education for boys in the family and school. Abu Draz's (2017) aimed to prepare a list of economic education concepts that should be included in Islamic education courses for middle stage in four areas (investment, production, sales, and economic transactions). Kariem (2018) studied the impact of a narrative program in developing the financial culture of kindergarten. Hassan (2019) aimed to verify a proposed unit in financial culture to develop economic concepts for second-grade intermediate students in Egypt. Hassan (2019) verified the effectiveness of a proposed unit in financial culture to develop some economic concepts and functional value estimation of mathematics learning for intermediate students. Ghandora (2020) studied the impact of a proposed unit based on the Kingdom's 2030 vision to provide kindergarten children with some concepts and skills of economic education. Al-Khidr (2021) identified the role of the Saudi family in the economic education of children considering the challenges of globalization. Al-Shamaileh and Alsoub (2022) studied the degree of include the concepts of cognitive economy in social studies textbooks for elementary stage.

while none of the previous studies, within the limits of the researcher' knowledge, analyses the economic concepts in mathematics textbooks at middle stage in Saudi Arabia, to enhance the economic education of students, according to five areas of economic concepts (financial transactions, consumption, investment, saving and rationalization), which distinguishes the current study from previous studies.

1.2 Research Problem and Questions

Since the end of 2019, the world has faced an economic and health challenge due to the Covid-19 crisis, causing a financial crisis that differs in nature from previous financial crises, and the technological development resulting from the Fourth Industrial Revolution may affect the disappearance of some jobs in the future (Bakhshi, Downing, Osborne, & Schneider, 2017). Considering the state of anticipation, the world is witnessing, the need to reconsider the school curricula has emerged, to pay attention to its role in the field of economic education for students, to prepare them to deal with current and future economic challenges.

Through the researcher' work, and his desire to further activate the role of the school curriculum in promoting economic education for students and given the diversity of economic education fields (concepts, principles, values, trends), the current research deals with the role of economic concepts in promoting economic education for students in mathematics textbooks. The main question of the research problem is: What concepts of economic education are presented in the various mathematics textbooks for middle stage?

The following sub-questions are derived from the main question:

1. What are the concepts of economic education related to financial transactions in mathematics textbooks at middle stage in Saudi Arabia?

2. What are the concepts of economic education related to consumption in mathematics textbooks at middle stage in Saudi Arabia?

3. What are the concepts of economic education related to investment in mathematics textbooks at middle stage in Saudi Arabia?

4. What are the concepts of economic education related to saving in mathematics textbooks at middle stage in Saudi Arabia?

5. What are the concepts of economic education related to rationalization in mathematics textbooks at middle stage in Saudi Arabia?

1.3 Research Aims

- Identifying whether mathematics textbooks for middle stage enhance the economic education of students in terms of concepts related to financial transactions, consumption, investment, saving and rationalization.

- Presenting recommendations to enhance economic education for middle stage students through mathematics textbooks.

1.4 Research Importance

The importance of this research are:

- It deals with an important aspect of student preparation, which is economic education through mathematics textbooks.

- Officials may benefit in developing mathematics textbooks at middle stage with consideration to the concepts of economic education.

- It analyzes school mathematics textbooks for middle stage considering the concepts of economic education.

- It helps researchers to conduct more research and studies in the field of economic education.

1.5 Research limits

The research is limited by the following:

1) Objective limits, including:

- Concepts of economic education included in mathematics textbooks at middle stage in Saudi Arabia.

-Determining the fields of economic education in five areas: financial transactions, consumption, investment, saving, and rationalization.

2) Time Limits: middle stage Mathematics Textbooks (Year 2021).

1.6 Research Terms

Economy: is defined as the study of human behavior in managing and developing scarce resources to satisfy needs (Terkawi, 2010, p.13).

Economic education: is defined as the educational process that focuses on providing individuals with knowledge, concepts, skills, attitudes, and values to help them fulfill the requirements of their roles as good citizens, effective members of their society, efficient producers of goods and services, and as adult consumers (Abdullah, 2002, p.46). Abboud (2004, p.153) defines it as "directing the growth of the individual and a direction that is acceptable to the group, people get to know, and approved by the prevailing system, especially with regard to the two aspects of production and consumption." Ali (2012, p.5) defines it as "the appropriate amount of economic expertise that contributes to preparing a good citizen with an economic understanding who is able to participate positively in achieving the comprehensive development of society." Al-Sherbiny and Al-Tanawi (2011, p.360) define it as education that helps the individual to improve consumption patterns, create economic awareness, and acquire productive work skills that help him increase production and maintain and develop economic knowledge and practical skills. Economic education is concerned with educating the individual to deal with the affairs of money and the economy in terms of earnings and spending. Economic education means directing the growth of the individual human being, a destination that is accepted by the group and recognized by the people and approved by the prevailing system in the economic dealings of individuals, especially about the two aspects of production and consumption, as they are the main pillars of the economic life of individuals and societies since the beginning of human life on earth (Bilbakai, 2014). The concepts of education in schools' curricula aimed at educating students about economic issues related to their daily dealings and educating them for the proper management of their financial resources, which are related to current and future lifestyles.

The researcher defines economic education as "the organized guidance of the individual towards dealing with financial and material issues, and the preservation of environmental resources, in accordance with the economic changes that society is going through."

Concepts of economic education: the concept is the abstract or total perceivable meaning of the material or the purposes necessary for it (Hafez, 2002, p.146), or it is a mental formation or a kind of generalization that arises from the abstraction of one or more characteristics of partial states (Zaytoun, 2001, p.112). Fouda (2015, p.5) defines the economic concept as "a mental perception that is built by distinguishing the relationships and common characteristics between economic phenomena and events and classifying them to be given an economic name or term". Al-Madkhali (2015, p.306) defines the concepts of economic education as the concepts that work on shaping the individual on the foundations of correct economic education, especially regarding production, consumption, and disposition in different situations.

The researcher defines the concepts of economic education as the words that express the meanings that are related to financial and economic transactions in their various fields, and that are taught in the academic courses.

The concepts of economic education in the academic curricula are characterized by several advantages, including that there are tangible and relatively stable concepts that can be developed through observation, such as money and securities, and that there are abstract concepts that need explanations such as production, profit, national output, and

production forces, and that there are categorical concepts that clarify the thing in the context of the total, such as demand, saving and investment, and consumption, and that there are relational concepts that show the existence of relationships between two or more states such as savings, national income, the law of demand, the law of supply and the equilibrium price, and finally that there are theoretical concepts based on scientific theories such as economic development, economic planning, and capitalist economy (Zaytoun, 2001) and (Abdul-Jalil, 2000).

2. Methodology

The research was interested in studying the reality of the concepts of economic education in mathematics textbooks in middle stage in Saudi Arabia (Cohen, Manion, & Morrison, 2018, p.765). The research depends on descriptive analysis method. The researcher adhered to the following methodology:

2.1 Community and Sample Research

The research community consists of all mathematics textbooks for the year 2021 edition, (student textbook and activity textbook) for middle stage in Saudi Arabia. The number of pages of the student's textbook in the first semester of the three grades was (184, 216, 194) respectively, and (40, 36, 30) in activity books, and the issues including (Algebra and Functions, Add and Subtract Integers, Linear Equations and Functions; Proportion, Real Numbers and Pythagorean Theorem, Dimension; Proportionality and Similarity, plan Functions, Linear Inequalities) in both textbooks and activity books. The second semester pages of textbook were (192, 212, 222) respectively, and (38, 40, 35) in activity books, and the issues including (Statistical, Graphic Representation, Geometric Shapes; Area and volume measurement, equations and inequalities, linear Functions; Quadratic Functions, Radical and Trigonometric Equations) in both textbooks and activity books (All books' data are available at: https://moe.gov.sa).

2.2 Data Collection and Analysis Procedures

To analyze the content of mathematics textbooks at middle stage in Saudi Arabia, the following procedures were carried out:

- Determining the objective of the analysis: it is the availability of economic education concepts in mathematics textbooks.
- Selection of the sample: carried out according to three stages: the selection of the source sample, which is all mathematics textbooks in middle stage (student textbooks and activity textbooks), the selection of the time sample, and it the year of the textbook's edition, which is 2021.
- Defining the units of analysis, which are the concepts of economic education.
- Defining the categories of analysis, which are determined in the following categories: concepts of economic education related to financial transactions, concepts of economic education related to consumption, concepts of economic education related to investment, concepts of economic education related to saving, and concepts of economic education related to rationalization. Where the analysis form was prepared based on the results of previous studies, and the researcher' readings and experiences.
- Determining the unit of measurement or counting: the frequencies and percentages of the concepts were used.
- To determine the stability of the analysis, the researcher analyzed the content of the first intermediate grade textbooks for the first semester by preparing a form to list the economic concepts that are contained in the textbooks. After Three weeks, the researcher analyzed again the content of the first semester intermediate grade textbooks (same books) to calculate the stability coefficient of the analysis. The researcher depends on the idea (word, sentence, picture) in the analyzation prosses, using the Holisti equation (Taima, 1987):

$$\{stability\ coefficient = Number\ of\ Agreement\ /\ (Agreement + Difference)\ X\ 100\}..$$

- The researcher analyzed all twelve intermediate school mathematics textbooks (6 student textbooks and 6 activity textbooks). Where the researcher read all the contents of the textbooks carefully and allocated an analysis card to each textbook to record the repetitions, according to the categories of analysis (the five areas of economic education), and the concepts associated with each field.

3. Results

Table 1. Stability Coefficient of the Concepts Analysis of the First Semester Intermediate Grade Textbooks

Domain	Concepts Number	First Analysis	Second Analysis	Number of Agreement	Number of Difference	Agreement + Difference	% Stability Coefficient
Financial transactions	12	549	565	549	16	565	97.17
Consumption	10	238	229	229	9	238	96.22
Investment	5	38	40	38	2	40	95.00
Saving	4	68	65	65	3	68	95.59
Rationalization	3	10	10	10	0	10	100.00
Total	34	903	909	891	30	921	96.74

Table 1 shows that the stability coefficient of agreement of the concepts analysis (96.74%), and it is acceptable for this study.

Table 2. Economic Education Concepts for Each of the Five Fields Adopted by Researcher and Their Frequency in the Content of Mathematics Textbooks at Middle Stage

Domain	Concepts Number	First Grade		Second Grade		Third Grade		Total		Ranking
		N	%	N	%	N	%	N	%	
Financial transactions	12	559	61.16	601	69.40	348	68.37	1508	65.88	1
Consumption	10	238	26.04	142	16.40	51	10.02	431	18.83	2
Investment	5	39	4.27	65	7.51	58	11.39	162	7.08	3
Saving	4	68	7.44	39	4.50	31	6.09	138	6.03	4
Rationalization	3	10	1.09	19	2.19	21	4.13	50	2.18	5
Total	34	914	100	866	100	509	100	2289	100	-

(*) N= Number of repetitions of the concepts.

Table 2 shows that the concepts of economic education related to financial transactions are the most frequently occurring concepts, as they ranked first in all grades as well as at the stage level with percentages of 61.16%, 69.40%, 68.37%, and 65.88%, respectively. The economic concepts related to consumption came in second place in the first and second grades and at the stage level with percentages of 26.04%, 16.4%, 18.83%, respectively. The economic concepts related to investment came in third place in the second grade and at the stage level with percentages of 7.51% and 7.08%, respectively, while in the first grade it came in fourth place with a percentage of 4.27%, and in the third grade came in second place with a percentage of 11.39%. The economic concepts related to saving ranked fourth in each of the second and third grades and at the stage level with percentages of 4.5%, 6.09%, 6.03%, respectively, while in the first grade they came in third place with a percentage of 7.44%. Finally, the concepts related to rationalization ranked fifth and last in all grades and at the stage level with percentages of 1.09%, 2.19%, 4.13%, 2.18%, respectively.

Below is a detailed presentation of the economic concepts according to the five areas:

3.1 Results Related to the First Question: What are the Concepts of Economic Education Related to Financial Transactions in Mathematics Textbooks at Middle Stage in Saudi Arabia? Table 3 Shows the Results Related to The First Question:

Table 3 shows that the number of economic education concepts related to financial transactions resulting from the analysis of mathematics textbooks is twelve, and the most frequent of these concepts at the level of the stage is the price with a percentage of 51.26%, followed by the concepts of purchase and selling with percentages of 24.67% and 15.32 %, respectively, then the concept of the wages at a percentage of 6.37%, then the gain, loan, loss, commission, bank account, check, the rest, and presenter, with very small percentages that ranged between 0.07% and 0.60%.

Table 3. The Concepts of Economic Education Related to Financial Transactions in Mathematics Textbooks at Middle Stage in Saudi Arabia

Domain	First Grade		Second Grade		Third Grade		Total		Ranking
	N	%	N	%	N	%	N	%	
Price	322	57.60	300	49.92	151	43.39	773	51.26	1
Purchase	146	26.12	141	23.46	85	24.43	372	24.67	2
Selling	50	8.94	106	17.64	75	21.55	231	15.32	3
Wages	21	3.76	42	6.99	33	9.48	96	6.37	4
Gain	5	0.89	3	0.50	1	0.29	9	0.60	5
Loan	5	0.89	3	0.50	0	0.00	8	0.53	6
Loss	6	1.07	1	0.17	0	0.00	7	0.46	7
Commission	0	0.00	2	0.33	3	0.86	5	0.33	8
Bank Account	2	0.36	0	0.00	0	0.00	2	0.13	9
Check	2	0.36	0	0.00	0	0.00	2	0.13	9
The Rest	0	0.00	2	0.33	0	0.00	2	0.13	9
Presenter	0	0.00	1	0.17	0	0.00	1	0.07	10
Total	559	100.0	601	100.0	348	100.0	1508	100.0	-

3.2 Results Related to the Second Question: What are the Concepts of Economic Education Related to Consumption in the Mathematics Textbooks of Middle Stage in Saudi Arabia? Table 4 Shows the Results Related to the Second Question

Table 4. Concepts of Economic Education Related to Consumption in Mathematics Textbooks at Middle Stage in Saudi Arabia

Domain	First Grade		Second Grade		Third Grade		Total		Rankin
	N	%	N	%	N	%	N	%	g
Discounts	71	29.83	46	32.39	15	29.41	132	30.63	1
Price Increase	55	23.11	16	11.27	12	23.53	83	19.26	2
Expenses	42	17.65	23	16.20	14	27.45	79	18.33	3
Rent	23	9.66	29	20.42	0	0.00	52	12.06	4
Donation	27	11.34	12	8.45	1	1.96	40	9.28	5
Entry Fee	8	3.36	7	4.93	0	0.00	15	3.48	6
The Gift	1	0.42	5	3.52	4	7.84	10	2.32	7
Withdrawal	9	3.78	0	0.00	1	1.96	10	2.32	7
Invoice	1	0.42	4	2.82	4	7.84	9	2.09	8
Repayment	1	0.42	0	0.00	0	0.00	1	0.23	9
Total	238	100.0	142	100.0	51	100.0	431	100.0	-

Table 4 shows that the number of economic education concepts related to consumption resulting from the analysis of mathematics textbooks is ten, and the most frequent of these concepts at the stage level is the discounts with a percentage of 30.63%, followed by the concepts of price increase, expenses, and rent with percentages of 19.26 %, 18.33%, and 12.06%, respectively, and followed by the concept of donation with a percentage of 9.28%, then the entry fee, the gift, the withdrawal, and the invoice with small percentages of 3.48%, 2.32%, 2.32%, and 2.09%, respectively, and finally the concept of repayment with a very small percentage of 0.23%.

3.3 Results Related to the Third Question: What are the Concepts of Economic Education Related to Investment in Mathematics Textbooks at Middle Stage in Saudi Arabia? Table 5 Shows the Results Related to the Third Question

Table 5 shows that the number of economic education concepts related to investment resulting from the analysis of mathematics textbooks is five, and that the most frequent of these concepts at the stage level is profit with a percentage of 43.83%, followed by the concepts of production and income, with a percentage of 22.22% and 19.76, followed by stock, with a percentage of 13.58%, and finally the concept of capital, with a very small percentage of 0.62%.

Table 5. Concepts of Economic Education Related to Investment in Mathematics Textbooks at Middle Stage in Saudi Arabia

Domain	First Grade		Second Grade		Third Grade		Total		Rankin
	N	%	N	%	N	%	N	%	g
Profit	13	33.33	33	50.77	25	43.10	71	43.83	1
Production	2	5.13	20	30.77	14	24.14	36	22.22	2
Income	15	38.46	12	18.46	5	8.62	32	19.76	3
Stock	8	20.51	0	0.00	14	24.14	22	13.58	4
Capital	1	2.56	0	0.00	0	0.00	1	0.62	5
Total	39	100.0	65	100.0	58	100.0	162	100.0	-

3.4 Results Related to the Fourth Question: What are the Concepts of Economic Education Related to Saving in the Mathematics Textbooks of Middle Stage in Saudi Arabia? Table 6 Shows The Results Related to the Fourth Question:

Table 6. Concepts of Economic Education Related to Saving in Mathematics Textbooks at Middle Stage in Saudi Arabia

Domain	First Grade		Second Grade		Third Grade		Total		Ranking
	N	%	N	%	N	%	N	%	
Saving	46	67.65	30	76.92	27	87.10	103	74.63	1
Balance	17	25.00	0	0.00	2	6.45	19	13.77	2
Piggy Bank	0	0.00	9	23.08	2	6.45	11	7.97	3
Deposit	5	7.35	0	0.00	0	0.00	5	3.62	4
Total	68	100.0	39	100.0	31	100.0	138	100.0	-

Table 6 shows that the number of economic education concepts related to saving resulting from the analysis of mathematics textbooks is four, and the most frequent of these concepts at the level of the stage is saving with a percentage of 74.63%, followed by the concept of balance with a percentage of 13.77%, then the concepts of a piggy bank and deposit with percentages of 7.97% and 3.62%, respectively.

3.5 Results Related to the Fifth Question: What are the Concepts of Economic Education Related to Rationalization in the Mathematics Textbooks of Middle Stage in Saudi Arabia? Table 7 Shows the Results Related to the Fifth Question:

Table 7. Concepts of Economic Education Related to Rationalization in Mathematics Textbooks at Middle Stage in Saudi Arabia

Domain	First Grade		Second Grade		Third Grade		Total		Ranking
	N	%	N	%	N	%	N	%	
Recycling	0	0.00	15	78.95	7	33.33	22	44.00	1
Discounted Subscriptions	7	70.00	0	0.00	13	61.90	20	40.00	2
Installment	3	30.00	4	21.05	1	4.76	8	16.00	3
Total	10	100.0	19	100.0	21	100.0	50	100.0	-

Table 7 shows that the number of economic education concepts related to rationalization resulting from the analysis of mathematics textbooks are three, and the most frequent of these concepts at the stage level is recycling with a percentage of 44.00%, followed by the concept of discounted subscriptions with a percentage of 40.00%, and after them the concept of installment with a percentage of 16.00%.

4. Discussion

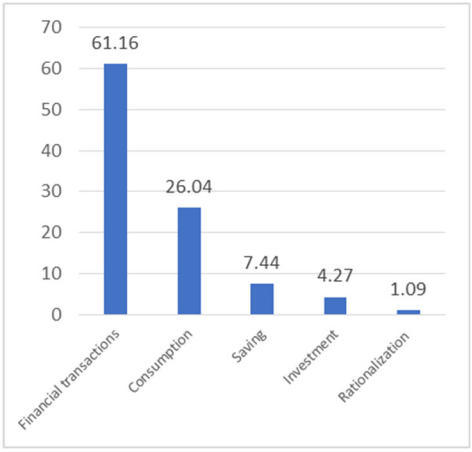

Figure 1. Percentages of the Frequency of Economic Education Concepts in Mathematics Textbooks for the First Grade at Middle Stage

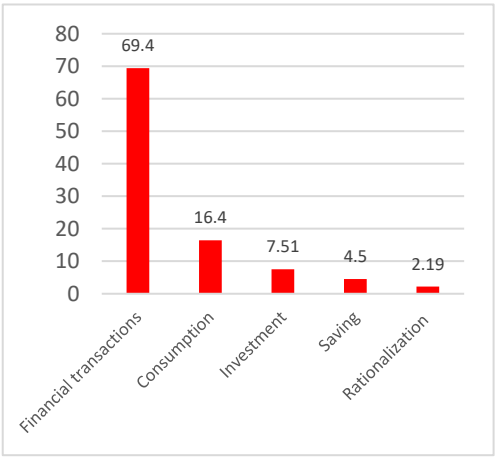

Figure 2. Percentages of the Frequency of Economic Education Concepts in Mathematics Textbooks for the Second Grade at Middle Stage

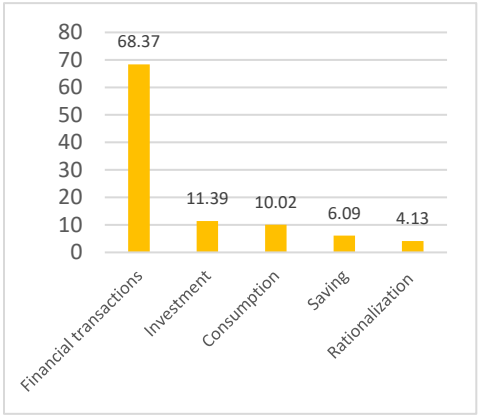

Figure 3. Percentages of Recurrence of Economic Education Concepts in Mathematics Textbooks for the Third Grade at Middle Stage

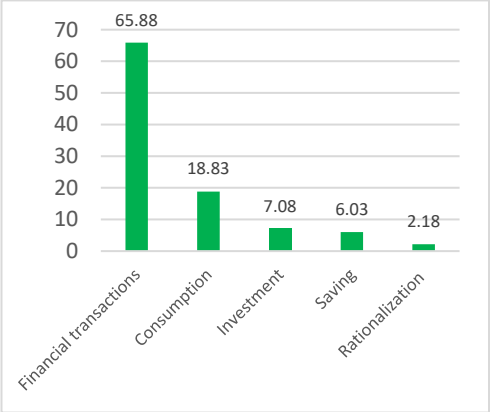

Figure 4. Percentages of Recurrence of Economic Education Concepts in Mathematics Textbooks for Middle Stage

It is clear from Figures 1, 2, 3, and 4, as well as from Table 2 that the concepts of financial transactions came in the first rank at the level of the stage, with a total rate of 65.88%, and came in the first rank in all three grades of middle stage. Perhaps this is due to the belief that financial transactions have priority in the attention of middle stage students, and that economic education for students at this stage requires increased clarification and emphasis on these concepts. The most commonly included concepts of financial transactions in mathematics textbooks at that stage are price, purchase, sale, and wages, as they came in the first four places, according to Table 3, which enhances the economic education of students. (Abdul-Halim, 2014; Bilal et al., 2013; Kariem, 2018) emphasized the importance of these concepts, while the remaining concepts of economic education in the field of financial transactions (gain, loan, loss, commission, bank account, check, the rest, and presenter) did not receive attention in mathematics textbooks, as they came in rates of less than 1.00%, despite their importance for students according to what was confirmed by (Awad, 2015) regarding the necessity of developing the financial banking culture among students.

It is also clear from Figures 1, 2, 3, 4, and Table 2 that the concepts of consumption came in second place with a total rate of 18.83% at the level of middle stage, and the percentage of these concepts decreases with the progression in the grades. Perhaps this is appropriate for enhancing the economic education of students, due to the growth of the concepts of economic education related to consumption among students and considering that most concepts of consumption included in the mathematics textbooks are discounts, price increases, expenses, rent, and donation, as they came in the first five places, respectively, according to Table 4. (Abu Zaid, 2009; Al-Sharari, 2010), stressed the importance of teaching these concepts to students, while the rest of the concepts of economic education in the field of consumption (entry fee, gift, withdrawal, invoice, and repayment) did not receive attention in mathematics textbooks, with scores of less than 4.00%, despite their importance to students.

It is clear from Figures 1, 2, 3, 4, and Table 2 that investment concepts came in third place with a total percentage of 7.08%, which is a small percentage for enhancing the economic education of students, despite the importance of investment concepts for students, especially in the current era. This is consistent with the study of Abdullah (2002), and Table 2, which also shows that the proportions of investment concepts increase with the student's transition to the higher grade, as this is commensurate with the age stages of students' growth, and their ability to understand and assimilate the concepts of economic education related to investment. The investment concepts most included in the mathematics textbooks are profit, production, income, and stock, which came in the first four places, respectively, according to Table 5. (Abdul-Halim, 2014) emphasized the importance of these concepts, while the concept of capital did not receive attention in mathematics textbooks, as it came in at 0.62% despite its importance to students, according to what was confirmed by (Bilbakai, 2014).

As is clear from Figures 1, 2, 3, 4, and Table 2, saving concepts came in fourth place with a total rate of 6.03%, which is a small percentage, for enhancing the economic education of students, despite the importance of saving concepts for students in this age group, and this is consistent with the study of (Terkawi, 2010; Bilal et al., 2013), and it is clear from Table 6 that the concepts of savings most included in mathematics textbooks are savings and balance, as they came in the first and second places, respectively, both confirmed in importance by Awad (2015), regarding saving concepts for students, while the concept of the piggy bank came in third place with a rate of 7.97%, which is a small percentage despite the importance of the concept for students at this age, as it is one of the most appropriate saving concepts for them, consistent with the results of (Abdul-Halim, 2014). The concept of deposit did not receive attention, as it came at a rate of 3.62%, and this percentage may be suitable for students at this stage as

they are not qualified to deal with banking institutions, which is consistent with (Awad, 2015), which suggested an educational unit in financial culture banking for secondary students to suit their age.

As it is clear from Figures 1, 2, 3, 4, and Table 2 the concepts of rationalization came in the last rank with a total percentage of 2.18%, which is a very small percentage, for enhancing the economic education of students, despite the importance of rationalization concepts for students in general, and for students of this age stage, and according to the study of (Terkawi, 2010; Harrelson, 2011). Table 7 shows that the concepts of rationalization that were addressed in mathematics textbooks were few, and the rationalization concepts most mentioned are recycling and discounted subscriptions, where they came in first and second places respectively. (Abboud, 2004) stressed the importance of recycling as one of the rationalization concepts. The concept of installment came in third place with a rate of 16.00%, which is an acceptable percentage according to the age group of students.

In general, it is clear from Figures 1, 2, 3, 4, and Table 2 that the mathematics textbooks in middle stage contributed to the promotion of economic education for students by addressing the concepts of financial transactions and the concepts of consumption, where was the percentage of financial transactions concepts in mathematics textbooks is very large (65.88%) compared to the percentages of other concepts, and perhaps this is due to the perception of some that economic education for students is limited to the field of financial transactions. While the percentage of consumption concepts in mathematics textbooks are acceptable, while mathematics textbooks in middle stage contributed to the promotion of economic education by a small percentage in the field of investment, saving, and rationalization, (7.08%, 6.03%, 2.18) respectively, even though they are important concepts for economic education for students at that stage. The requirements of economic education for students includes concepts in various economic fields, in a balanced manner and compatible with the age stage of the students, as was confirmed by (Supon, 2012; Al Madkhali, 2015; Ahmed & Abdel Gawad, 2016; Johnson & Sherraden, 2017; Abu Draz, 2017; Hassan, 2019).

5. Recommendations and Future Studies

The research result may help to produces more research in the field and will help schools to improve its role in promoting economic education for students, and this will help them to moderate their economic behaviors in the future. The research produces some important recommendations to the ministry of education, Curriculum planners, teachers, to promote the economic education for students.

- The necessity of paying attention to all concepts of economic education, and in balanced proportions, at all student books.
- Paying attention for enhancing all areas of economic education for students, to include all principles, values, trends, and concepts, in mathematics textbooks and other courses.
- Developing the content of mathematics textbooks for middle stage according to the fields of economic education that appropriate for students.
- Conducting similar studies to analyze mathematics textbooks for different school stages and academic levels.

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