

A ROLE OF CONSUMER AND FINANCIAL LITERACY CONTEXT IN NUMERACY EDUCATION FOR JUNIOR HIGH SCHOOL STUDENTS

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Abstract. Mathematical competency can be referred to one of the most essential competencies in the context of the exponential development of the knowledge-based economy and globalization, especially when people make financial decisions based on their mathematical literacy. Numeracy is considered one of the critical skills of the people. To develop and evaluate numeracy, the national curricula of many countries across the world, such as Australia, Germany, Singapore, or Programme for International Student Assessment - PISA have selected Consumer and financial context as teaching and assessing content. In Vietnam, in the general education curriculum mandated by the Ministry of Education and Training in December 2018, numeracy, which originated and developed substantially in Mathematics, is one of the seven general capabilities. In this paper, we present a literature review of numeracy and several pedagogical recommendations to develop junior high school students' numeracy through the context of consumer and financial literacy.

Keywords: numeracy, mathematical competency, consumer and financial literacy, junior high school student.

1. Introduction

Finance is a commonly mentioned concept in life, but in fact, few Vietnamese are equipped with basic financial knowledge from a young age. Vietnam is also one of the countries that do not have a national financial education strategy for the citizens. The Organization for Economic Co-operation and Development (OECD) recommended that “Financial education should start in schools. People need to be educated about financial matters as soon as possible in their lives” [1]. To face with the manifold changes of the world, especially the financial issues that play a key role in the ability to engage the worldwide problems, in many countries around the world, there has concentrated on immersing financial educational content into the school syllabus, which encourages learners to cope with financial problems in everyday life [2-5]. As for Mathematics, the application of consumer and financial content, which refers to an attractive learning context, will help learners achieve the dual goal: developing financial and mathematical literacy.

According to the Mathematics General Education Curriculum mandated by the Ministry of Education and Training on December 26, 2018, “Mathematics has more and more applications in life. The mathematical foundation of knowledge and skills promote individuals' real-life problem

solving systematically and accurately, and contribute to social development” [6, 7]. Therefore, in junior high school Mathematics, it is necessary to develop numeracy - the ability to use Mathematics knowledge in many learning fields, contexts, and different scenes of life.

The inclusion of experiential activities accounting for 7% of the total duration of the entire Math curriculum along with the main mathematical content stands provides an opportunity for educators, schools, and teachers to integrate extra-mathematical worlds in lessons. In particular, there is much Mathematics knowledge in the junior high school program that is the foundation field for financial-related problems such as taxation, trade, currency, division of inheritance, analysis of economic indexes and so on. Therefore, in this article, we conduct research on the educational models based on the consumer and financial context to give out practical instructions for educators and teachers, in renovative teaching background based on the goal of equipping financial knowledge for junior high school students.

2. Content

2.1. Numeracy in international education curricula

In recent years, many international studies have used two terms "numeracy" and "mathematical literacy" to refer to the ability to apply mathematical knowledge and skills effectively in real life. To understand more clearly their meanings and implications in the research literature, the foundation of the terms "numeracy" and "mathematical literacy" would be explored.

According to the Oxford English Dictionary [8], the term "literacy" is mentioned as the ability to read - write, the crucial skill of each individual, and the goal of the educational development of many countries in the world. A literate person can acquire and show his/her personal understanding of many aspects of academic activities and real-life. From the definition of literacy, the ability to read - write in mathematics can be understood to be related to the ability to read - write numbers, mathematical symbols, or mathematical notations, etc. Therefore, the term "numeracy", created by the combination of the prefix "num" and "literacy" to refer to the literacy in mathematics - the mathematical literacy, was coined for the first time in Crowther's report [9], and was defined as a mirror image of literacy, but involving quantitative thinking. An individual with numeracy is not only capable of reading - writing numbers, notations, symbols, or more broadly, scientific documents, but also has the understanding and ability to apply, formulate that mathematical knowledge in real-life contexts. Numeracy or mathematical literacy has become a fundamental concept in mathematical education in general. Cockcroft [10] describes a person who accomplished numeracy by the term "being numerate" as possessing an 'at-homeness' with numbers and an ability to use mathematical skills to cope confidently with the practical demands of everyday life.

According to the Programme for International Student Assessment [11], mathematical literacy is an individual's capacity to identify and understand the role that mathematics plays in the world, to make well-founded judgments, and to use and engage with mathematics in ways that meet the life's needs as a constructive, concerned and reflective citizen. From 2012 to 2018, PISA provided a more specific definition of mathematical literacy as an individual's capacity to formulate, employ, and interpret mathematics in a variety of contexts. It includes reasoning mathematically and using mathematical concepts, procedures, facts, and tools to describe, explain, and predict phenomena [12-14]. It assists individuals to recognize the role that mathematics plays in the world and to make the well-founded judgments and decisions needed by constructive, engaged, and reflective citizens. One of the most common perceptions of mathematical literacy is the ability to apply mathematical knowledge and skills to solve problems fluently in real-life contexts. The essential factor in which a person can apply mathematics to

solve personal problems is mastering the components of mathematical competencies: Communication; Mathematising; Representation; Reasoning and argument; Devising strategies for solving problems; Using symbolic, formal, and technical language, and operations; Using mathematical tools.

In the Australian Curriculum [15], students become numerate as they develop the knowledge and skills to use mathematics confidently across other learning areas at school and in their lives more broadly. Numeracy encompasses the knowledge, skills, behaviors, and dispositions that students need to use mathematics in a wide range of situations. It involves students recognizing and understanding the role of mathematics in the world and having the dispositions and capacities to use mathematical knowledge and skills purposefully.

Also, there are many other studies on numeracy with different ways of calling, depending on the author's conception. For example, in Lange research [16], "Mathematical Literacy" is a common mathematical understanding of humans including Spatial Literacy - SL, Numeracy – N (which related only to the ability to analyze numbers and data), Quantitative Literacy (QL), including the ability to analyze the context logically based on many mathematical factors such as quantities, change, and relationships, uncertainty, etc.).

It is necessary to identify the components of numeracy to develop or evaluate the ability of a person. PISA has developed the assessment of numeracy for international students on the three following domains: the mathematical processes, the mathematical content, and the context to apply mathematical literacy.

Table 1. Domains of evaluating numeracy

Contexts	Mathematical content	Mathematical processes
- Personal. - Occupational. - Societal. - Scientific.	- Change and relationships. - Space and shape. - Quantity. - Uncertainty and data.	- Formulating situations mathematically. - Employing mathematical concepts, facts, procedures, and reasoning. - Interpreting, applying, and evaluating mathematical outcomes.

Because the subjects in the PISA assessment program are selected impartially from many countries around the world, there would be discrepancies in knowledge, mathematical skills in the educational curriculum, and the context of life related to learning in that country. Therefore, the definition of PISA's numeracy differs from that of Australia's general education curriculum. In Australia's education curriculum, numeracy is considered as one of 7 general capabilities and is determined by six elements based on mathematical strands taught in schools, including: Estimating and calculating with the whole number; Recognizing and using patterns and relationships; Using fractions, decimals, percentages, ratios, and rates; Using spatial reasoning; Interpreting statistical information; Using measurement.

Following the learning continuum, numeracy is divided into 6 levels corresponding to each different level of study. At level 10, corresponding to the end of Australia's secondary school, students can achieve as described in Table 2 [17].

**Table 2. Elements and behavioral indicators of numeracy
for junior high school students in Australia**

Elements	Components of element	Behavioral indicators
Estimating and calculating with whole numbers element.	To understand and use numbers in context.	To use different ways to represent very large and very small numbers including scientific notation.
	To estimate and calculate.	To solve and model problems involving complex data by estimating and calculating using a variety of efficient mental, written, and digital strategies.
	To use money.	To evaluate financial plans to support specific financial goals.
Recognizing and using patterns and relationships element.	To recognize and use patterns and relationships.	To explain how the practical application of patterns can be used to identify trends.
Using fractions, decimals, percentages, ratios and rates element.	To interpret proportional reasoning.	To illustrate and order relationships for fractions, decimals, percentages, ratios, and rates.
	To apply proportional reasoning.	To solve problems involving fractions, decimals, percentages, ratios, and rates.
Using spatial reasoning element.	To visualize 2D shapes and 3D objects.	To visualize, describe and analyze the way shapes and objects are combined and positioned in the environment for different purposes.
	To interpret maps and diagrams.	To create and interpret maps, models, and diagrams using a range of mapping tools.
Interpreting statistical information element.	To interpret data displays.	To evaluate media statistics and trends by linking claims to data displays, statistics, and representative data.
	To interpret chance events.	To explain the likelihood of multiple events occurring together by giving examples of situations when they might happen.
Using measurement element.	To estimate and measure with metric units.	To solve complex problems involving surface area and volume of prisms and cylinders and composite solids.
	To operate with clocks, calendars, and timetables.	To use 12- and 24- hour systems within a multiple time zone to solve time problems, use large and small timescales in complex contexts and place historical, and scientific events on an extended time scale.

2.2. Numeracy in Vietnam General Education Curriculum

In the Vietnam General Education Curriculum issued in December 2018 by the Ministry of Education and Training, numeracy is one of the domain-specific professional competencies formed and developed in many subjects and educational activities [6]. The most concentrated expression of numeracy is mathematical competence, which is established and promoted primarily in Mathematics, including mathematical thinking and argument competency, mathematical problem-solving competency, mathematical modeling competency, mathematical communication competency, competency of using mathematical tools and equipment [7]. The numeracy components of students are: Perception of mathematical knowledge; Mathematical thinking; and Applying mathematical knowledge and skills.

Through the one description, a similarity in the core determinations of numeracy has been found between the components of the mathematical competencies of the Ministry of Education and Training of Vietnam and mathematical literacy of PISA. According to the Ministry of Education and Training, the context of using numeracy is reflected throughout many subjects which are necessary to apply the mathematical knowledge, skills and thinking, such as Physics, Chemistry, Geography, etc., and many educational activities, for example, hands-on experiences, extra-curricular activities, etc. On the other hand, in order to develop students' numeracy, it is necessary to impact on components of mathematics competency and mainly through Mathematics.

Based on international studies and the Vietnam general education curriculum 2018, we aim to influence the components of numeracy (for junior high school student through consumer and financial context) to develop it as follows:

Component 1: Mathematical knowledge

Component 2: Mathematical competencies underpin the Vietnam general education curriculum 2018, such as mathematical thinking and argument competency, mathematical problem-solving competency, mathematical modeling competency, mathematical communication competency, using mathematical tools, and equipment competency.

Component 3: Applying mathematical knowledge and skills through personal, family contexts.

For the first component, the concentration of mathematical content strands is based on numerical calculation and algebra, and statistics and probability, which both strands have interwoven relationships with consumer and financial skills. Geometry and measurement, in addition, which strand has minute chance interconnecting with consumer and financial context.

2.3. Consumer and financial literacy

According to PISA [18], financial literacy is the knowledge and understanding of financial concepts and risks, and the skills, motivation, and confidence to apply such knowledge and understanding to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life. Thus, the three key factors that can assist an individual in making an effective decision in financial contexts are as follows:

- *Knowledge and understanding of financial concepts and risks:* Financial literacy is contingent on some knowledge and understanding of the fundamental elements of the financial world, including critical financial concepts as well as the purpose and basic features of financial products. This also includes risks that may threaten financial well-being as well as insurance policies and pensions.

- *Financial skills*: These skills include generic cognitive processes such as accessing information, comparing and contrasting, extrapolating, and evaluating, but applied in a financial context. They include necessary skills in mathematical literacy such as performing basic calculations, computing a percentage, or converting from one currency to another, and language skills such as the capacity to read and interpret advertising and contractual texts.

- *Motivation and confidence*: Financial literacy involves not only the knowledge, understanding, and skills to deal with financial issues but also non-cognitive attributes: the motivation to seek information and advice to engage in financial activities, the confidence to do so, and the ability to manage emotional and psychological factors that influence financial decision-making. These attributes are considered to be a goal of financial education, as well as being instrumental in building financial knowledge and skills.

According to Tran Thi Phuong Nam *et al.* [19], financial literacy consists of three components:

- *Financial knowledge and understanding*: financial environment; benefits and responsibilities of consumers, businesses; to understand the primary risks and confidence tricks in the financial context;

- *Financial skills*: to assess financial resources; financial calculations; to set up records and financial management; to create good value in identifying financial transactions, manage financial risks;

- *Financial responsibility and enterprise*: to confidently participate in financial activities; the sense of responsibility of consumers and businesspeople; to be responsible for personal financial activities to the community.

A financially literate person has knowledge and understanding about money (money maneuvering, how to make money and save money management and investing); to be able to apply knowledge to make effective and responsible financial decisions in everyday life, in different financial contexts, including in online and digital environments.

According to National Consumer and Financial Literacy Framework of Australia, individuals who are financially literate and also a consumer can apply knowledge, understanding, skills, and values in Consumer and financial contexts to make informed and effective decisions that have a positive impact on themselves, their families, the broader community and the environment.

According to OECD /INFE [4], the term "financial education in schools" is used to refer to the teaching of financial knowledge, understanding, skills, behaviors, attitudes, and values which will enable students to make savvy and effective financial decisions in their daily life and when they become adults.

For K-12 students, the goal of the financial education process is to develop the ability to make effective, responsible financial decisions in the daily life of individuals and the community. By the end of lower secondary school, the above purpose is reflected in the outputs of each component of financial literacy.

Table 3. Indicators of the behavior of consumer and financial literacy of secondary school students

Component	Behavioral indicators
<i>Financial knowledge and understanding</i>	- Explain how financial transactions are conducted through money.
	- Describe ways that can increase income.
	- Explain the value of unpaid work in the community.
	- Recognize the use of income to meet financial needs and desires.
	- Analyze the value of goods and services related to needs.

	- Identify several rights and responsibilities of consumers and businesses in a range of financial contexts.
	- Explain how to borrow money to adapt personal wishes and desires. - Recognize currencies of different values when it comes to Vietnamese currency.
<i>Financial skills</i>	- Use a variety of methods and tools for making financial records in a practical context.
	- Create simple budgets for purposes; explain the benefits of saving to future wishes and desires.
	- Explain the purposes of financial forms, including online transactions.
	- Assess the value of goods and services.
	- Arrange and interpret for personal spending choices.
	- Explain the benefits of each payment method and service: cash, debit, credit, direct debit, etc. - Explain information from financial invoices, graphics in electronic invoices.
<i>Financial responsibility and enterprise</i>	- Identify the main features of the advertisement.
	- Identify, describe the impact of personal consumption decisions on oneself, family, and community.
	- Examine and discuss external factors that influence consumer choices.
	- Apply financial knowledge and skills learned to school activities such as investigations, fundraising charities, business projects, product design, and development.
	- Practise business when participating in activities in class and school.
	- Explain ethics, financial responsibilities within consumer purchases when dealing online, digital.
	- Recognize that satisfaction stems from different ways of spending money on goods.
	- Recognize the importance of spending in accordance with income.
	- Explain the role of the community to help everyone's financial needs.
	- Demonstrate family, community, and cultural and social values affecting consumer behavior.

Based on the above studies, the term "Consumer and financial literacy context" used in this paper refers to the situation in which learners need to use their financial knowledge to solve the tasks set out in the exercise, problem, and so on.

2.4. Consumer and financial literacy context in Australian Mathematics Education Curriculum

According to the reports of OECD, ADBI, S&F, Australian financial literacy indicators are ranked high compared to other countries in Asia and in the world [20-23]. This result is achieved thanks to the continuous efforts of the Australian Government in the early implementation of financial education for the citizens in an increasingly complex, globalized, and rapidly changing world. It has brought out opportunities for young people to develop financial and enterprising capabilities that enable them to successfully and confidently operate in a complex, information-rich financial world. The Australian Government has been developing a national financial education strategy since 2011 and has carried it out in many ways, including the tendency to use Consumer and financial literacy to provide many engaging and authentic contexts from which to deliver the Australian Curriculum. The explicit subjects that best reflect the interdisciplinary

approaches that support the development of consumer and financial literacy in young Australians are Mathematics, Humanities, and Sociology. Within Mathematics, the number and algebra content strand include money and financial mathematics as a sub-strand. In other areas of the Mathematics curriculum, students learn to make computations and check results accurately; to interpret numerical, graphical, and other information; and to construct and use financial models to help make financial decisions.

By the school year, at each grade, based on the consumer and financial literacy context, students can develop and achieve general capabilities such as numeracy, information, and communication technology capability, critical and creative thinking, literacy, etc.

As such, there exists a strong link between numeracy and financial literacy in the Australian Mathematics curriculum. Firstly, consumer and financial literacy provide an engaging learning context to develop learners' numeracy. Secondly, thanks to Mathematics education in school, learners are equipped with basic mathematical literacy so that they can solve financial problems related to their life.



Figure 1. Representation of consumer and financial literacy in the Australian Curriculum

The goals of competencies and skills development in Mathematics described through consumer and financial literacy context as follows [24]:

Money and financial mathematics: Connect the compound interest formula to repeated applications of simple interest using appropriate digital technologies (ACMNA229).

Patterns and algebra: Substitute values into formulas to determine an unknown (ACMNA234).

Linear and non-linear relationships: Solve problems involving linear equations, including those derived from formulas (ACMNA235).

- Solve linear simultaneous equations, using algebraic and graphical techniques, including using digital technology (ACMNA237).

Data representation and interpretation: Construct and interpret box plots and use them to compare data sets (ACMSP249).

- Compare shapes of box plots to corresponding histograms and dot plots (ACMSP250).

- Use scatter plots to investigate and comment on relationships between two numerical variables (ACMSP251).

- Evaluate statistical reports in the media and other places by linking claims to displays, statistics, and representative data (ACMSP253).

- Calculate and interpret the mean and standard deviation of data and use these to compare data sets (ACMSP278).

In Australia's Math textbook [25], there are not only a number of individual tasks linked to consumer and financial literacy but also one particular chapter, "Consumer Arithmetic", that concretizes the goals shown in tables 4 and 5. This chapter includes the mathematical basis of the calculation (percentage and application of percentages, etc.) and specific concepts of consumer and finance such as Income; Income taxation; Budgeting; Simple interest rate; Compound interest rate; Investments and loans; Comparing interest using technology.

The procedure for a lesson in this chapter consists of the following steps:

Step 1: Define the lesson name and financial context

Based on general topics and learning outcomes, learners can identify the name of the lesson as a component of the integrated topic and, at the same time, explore the financial context surrounding the lesson's name.

Step 2: Identify a set of guiding questions

In the first section of the topic, the guiding questions are set to identify problems that require knowledge and skills learned from lessons to be solved. Learners can take on a variety of perspectives (roles) to be able to answer guiding questions to suit individual circumstances.

Step 3: Identify the leading knowledge and skills

The primary knowledge and skills of the lesson are determined by the contribution of the knowledge and skills required in Math and finance and are presented in the form of the general course of the lesson.

Step 4: Design examples/learning tasks corresponding to the knowledge and skills required of the lesson

Based on the knowledge and skills required of the lesson, examples/learning tasks are designed accordingly to help students practice and develop such knowledge and skills. These learning examples/tasks are only geared towards practicing Math skills. Also, instructions can be added to suggest or expand the range of learners' knowledge and skills.

Step 5: Summary of lessons

A task is designed to summarize the lesson, which requires students to apply their combination of numeracy and financial literacy to solve the problem posed.

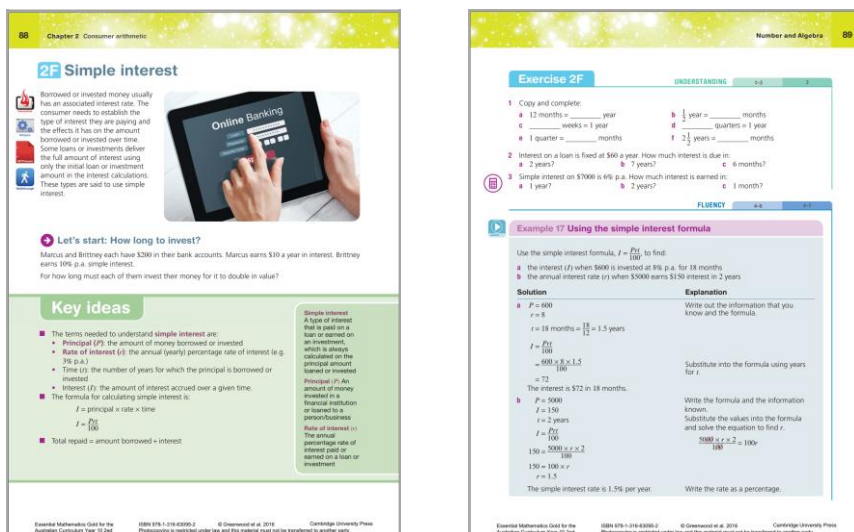


Figure 2. Two pages of the Simple Interest lesson in Australia's Maths textbook

In this chapter, four different groups of task types are utilized:

Group 1: Types of "pure" mathematical tasks - students apply mathematical knowledge and skills to solve "pure" mathematical tasks. Example: Convert the following percentages to decimals.

Group 2: Types of tasks only contain the terms of consumer and finance context - students apply mathematical knowledge and skills to solve calculation tasks without consumer and financial literacy. Example: Use a calculator to find: 10% of \$250.

Group 3: Types of tasks with consumer and financial literacy context - students simultaneously apply numeracy and Consumer and financial literacy to solve tasks. For example:

(a) Choose an occupation or career in which you are interested. Assume that you are working that job. During the year you will need to keep receipts for items you have bought that are legitimate work-related expenses. Do some research on the internet and write down some of the things that you will be able to claim as work-related expenses in your chosen occupation.

(b) i) Assume that your taxable income is \$80 000. What is your tax payable amount?

ii) You just found a receipt for a \$100 donation to a registered charity. This decreases your taxable income by \$100. By how much does it decrease your tax payable amount?

Group 4: Other types of tasks with different context - students apply numeracy to solve tasks with context not related to consumer and financial literacy. Example: Malcolm lost 8 kg, and now his weight is 64kg. What was the percentage of weight he lost?

After categorizing task types, the percentage for different task types in the chapter "Consumer Arithmetic" are listed in Table 4.

Table 4. Percentage of task types in the chapter "Consumer Arithmetic"

Group	Number of tasks	Percentage (%)
Group 1	11	6.25
Group 2	28	15.92
Group 3	130	73.86
Group 4	7	3.97
Sum	176	100

Thus, the number of tasks in group 3 accounts for a significant portion of the total in the chapter. Group 1 and Group 2 task types are included to ensure that necessary calculation skills would be used throughout the tasks in that lesson.

Based on the process outlined above and the prepared material, the procedure of designing mathematical content through the context of consumer and financial literacy to develop numeracy of secondary school will be presented, as well as an example for the adapted procedure.

2.5. Consumer and financial literacy context in Vietnamese Mathematics Education Curriculum

Not only developed countries face risks when the world's general economy is experiencing complex developments, but also in developing countries, including Vietnam. Each citizen's financial understanding will affect the health of the national economy. According to the S&F Global Finlit Survey [21], only 24% of adults in Vietnam have financial literacy. The Financial Awareness Survey conducted by Master Card [22] shows that Vietnamese young people have limited money management skills (52 points) and the weakest financial investment skills (51 points). Vietnam ranked 14/16. These figures have raised alarms about the state of Vietnamese

financial literacy. Therefore, financial education should be implemented as early as possible and start at school.

According to the OECD and ADBI [20, 23], Vietnam is one of the countries without a national strategy to enhance Consumer and financial understanding. According to Tran Thi Phuong Nam et al., in Vietnam, the educational curriculum before 2018 has not explicitly expressed the financial education goals at all educational levels, leading to the lack of the content and method of financial teaching for students [19]. The financial concepts included in the lesson only stop at the level of integration, do not form a context that has practical relationships with life, nor arouses students' needs to learn and practice. Activities to enhance financial understanding are mainly carried out in schools through vocational education activities, extra-curricular activities of educational institutions with a very low duration of participation (105 periods per year for high school, 75 periods per year for secondary school).

As for Mathematics, in the current textbook of the whole secondary school level, only about 36 tasks are in group 2 (types of tasks with contains the terms of consumer and financial literacy) and group 3 (task types with consumer and financial literacy context) on the total of more than 2500 tasks (approximately 1.3%). In the textbook of Math Grade 9 (at the end of secondary school in Vietnam), the number of task types according to 4 groups are statistically counted in Table 5.

Table 5. Percentage of task types in the textbook of Maths Grade 9 in Vietnam [26]

Group	Number of tasks	Percentage (%)
Group 1	247	85.76
Group 2	1	0.03
Group 3	2	0.06
Group 4	38	14.15
Sum	288	100

Thus, the number of task type 1 accounts for the majority of the total tasks (more than 85%), the types of tasks related to financial literacy education are not focused at all on the Mathematics program at secondary school (only nearly 0.1%). In order to ensure the goal of developing numeracy through the financial literacy context of K-12 students in general and junior high school students in particular, it is recommended to increase the tasks in group 2 and group 3 in textbooks and lessons of Mathematics at Vietnamese schools.

2.6. The potential to apply the consumer and financial context in the Vietnamese mathematics curriculum to develop numeracy of junior high school students

To create opportunities for students to experience and apply mathematics in real-life, the Mathematical general education curriculum in 2018 has changed accordingly to the appropriate domestic and international context. In particular, the content of financial education is included as a suggestion for hands-on experiential practice throughout the school level, which accounts for 7% of the Secondary Math curriculum. In the common core standard, the context of consumption and finance appears explicitly and primarily in the number and algebra strand at grade 6 and in the probability and statistics strand in grades 6 and 8 [6, 7].

Thus, in the first steps of the new Curriculum, the content of financial education has been organized into one of the learning contexts in Secondary Math to help students gain insights into mathematical applications in real-world; to be aware and confident enough to learn and solve problems related to mathematics throughout their life.

In line with the above objective, within the scope of this paper, this paper proposes the process of designing lesson content for some types of tasks in order to develop numeracy through the context of consumption and finance for junior high school students, as the following steps:

Step 1: Define goals for developing numeracy and financial literacy

The goal of the lesson is addressed by the behavioral indicators of numeracy and financial literacy. The behaviors of numeracy are determined based on the common core standard of Mathematics in the New General Education Program, and the behavioral indicators of financial literacy set out in Table 3.

Step 2: Select the financial context in the lesson or topic

The financial context used is closely related to the student's personal and family life, such as personal spending, family spending, savings, shopping for discounted goods, etc.

Step 3: Design the task types

Tasks will be designed based on the behavioral indicators of numeracy, financial literacy, and the learning context selected.

Step 4: Re-evaluate the type of task

Tasks will be evaluated to ensure conformity with the set goals, accuracy, and updates of data, connection, and reasonableness of context with the age of learners.

In the following section, we give an illustrative example of a task type built on the proposed steps. Firstly, we identify the aims of this task type.

Table 6. Objectives of task based on the components of Numeracy and Financial literacy

Behavioral indicators	Component	Behavioral indicators
Numeracy	<i>Mathematical knowledge:</i> Percentage, First degree equations, First degree inequalities and Handling data <i>Mathematical competencies:</i> Mathematical problem-solving, Mathematical modelling competency and Using mathematical tools and equipment competency <i>Applying mathematical knowledge and skills through the Personal Saving Context</i>	N1. Use the percentage to calculate the percentage value of a given number. N2. Solve first degree equations in one variable. N3. Solve first degree inequalities in one variable. N4. Collect, interpret, and set up the information in the statistics table appropriately. N5. Using a variety of methods and tools for making financial records in a practical context.
Financial literacy	<i>Financial knowledge and understanding</i> Interest rates, online saving, the terms, the periods, initial deposit <i>Financial skills</i> Planning, decision-making, collecting information, creating budget <i>Financial responsibility and enterprise</i> Confidently participating in financial activities	F1. Perception of how to use the income to adapt financial needs and desires. F2. Recognize the importance of spending in accordance with income. F3. Assess the value of goods and services. F4. Arrange and interpret for personal consuming choices. F5. Explain the information from financial invoices, graphics in electronic invoices.

Secondly, based on the table above, we give an illustrative example with the context of the "Savings deposit" of a friend named Lan and his family, the selected financial form is saving money online through a specific bank. If she achieves her personal financial goals, Lan will have enough money to go to college.

Table 7. Step-by-step tasks in accordance with objectives of task

No.	Task	Behavioral indicators
1	Search interest rates of online saving information of some banks and explain how to calculate interest rates for a one-month term.	F1, F6, N4
2	Calculate the interest in one month for the terms of one month, three months term, six months, nine months, 12 months, and 24 months. If the initial deposit of Lan's family is VND 50,000,000 (Five million VND) then calculate the total amount at the end of the period according to the periods above.	F1, F2, N1
	What term of the deposit that Lan and her family should choose? If they want to maximize the amount of savings received after two years and the initial deposit of the Lan family is 5000000 VND (Five million VND)?	F4, F5, N1
3	Calculate the initial deposit of Lan family with a term of six months, so after one year, the total amount for the end of the period is 8 million VND.	F1, N2
	Calculate the minimum initial deposit of Lan family with a term of 6 months, so after three years, the total amount of the end of the term is enough to pay tuition for the first two years of university. If there are two terms in a year, and the average tuition is 6 million VND each term.	F1, F4, F5, N3
4	Use the appropriate tool to calculate the interest and total amount at the end of the period if the initial amount of money that Lan's family saving is 3 million VND with a term of 6 months.	F3, F6, N1
	Use the appropriate tool to calculate the number of term deposits and the amount to be paid monthly with a term of 1 month, so after 18 months, Lan and his family have accumulated an amount of VND 40 million.	F3, F6, N1

Mathematical knowledge applied in these tasks is percentage, first degree equations, first degree inequalities, handling data. Problem-solving, modeling competency, and using mathematical tools and equipment competency are highlighted through the tasks. Following these tasks step-by-step, learners take advantage of developing mathematical and financial literacy in accordance with behavioral indicators shown in the third column.

3. Conclusions

It is essential to understand the vital role of consumer and financial literacy to utilized and design appropriate educational content. Especially in Mathematics, to develop numeracy, educators can use the Consumer and financial literacy context, which has a close relationship with students such as saving, purchasing, simple statistics of daily spending to manage money, etc. to create a corpus for appropriate situations. The four steps of designing mathematical tasks based on the financial context and the corresponding example would be a pedagogical hint to design similar types of tasks in developing mathematical and financial literacy, to meet the competency development trend along with the general educational curriculum after 2018.

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