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**QUARTA: An App Promoting Financial Literacy for Ordinary Filipinos**

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**A Research Paper Presented to the Faculty of the Senior High School Department  
of the Valenzuela City School of Mathematics and Science  
Valenzuela City**

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**In Partial Fulfillment of the Requirements for the Subject  
Capstone**

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## **APPROVAL SHEET**

In partial fulfillment of the requirements for Capstone, this research paper entitled **QUARTA: An App Promoting Financial Literacy for Ordinary Filipinos** has been prepared and submitted by Catherine G. Dalusung, Iver John C. Delos Santos, Adrian Mendoza, Faith Anne Mier, Kimberly A. Padilla, and Lorin Angela C. Velasco, who are hereby recommended for oral examination.

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## **DEDICATION**

The researchers would like to dedicate this study, first and foremost, to our Almighty God, who supplied us with the energy, willpower, and wisdom throughout the duration of the study. To various people who have been part of our journey as we did this study. To our ever-loving and supportive parents, Mr. and Mrs. Mier, Dalusung, Padilla, Delos Santos, Velasco, Mendoza, as well as friends who have been there for us throughout our sleepless nights.

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## ABSTRACT

In today's modern day, most Filipinos, especially adults, are financially illiterate, making them prone to investment scams and at risk of mismanaging finances. To help solve the problem, the researchers aimed to develop a Filipino language desktop application that aimed to improve the financial literacy of ordinary Filipinos. The QUARTA application consists of three main tabs or categories that discuss related information about financial literacy, such as: calculators, financial lessons, and relevant concepts. This app is made possible through coding and programming using Java. In order to gather data regarding feedback and improvement of the application, the researchers searched for 30 student-respondents to participate in the study, wherein they were given validated Likert scale evaluation forms together with 10-item pre-test and post-test assessments. After collecting information from the tests conducted, the researchers came up with three conclusions. It was found that the student-respondents strongly agree that the QUARTA application is functional, useful, unique, organized, pleasing, easily accessible, easily downloaded, and gives users adequate satisfaction. It was also concluded that there was a significant difference between the financial literacy of the student-respondents before and after using the QUARTA application. Meanwhile, the vast majority of student-respondents suggested improvements to the QUARTA application.

**Keywords:** *Calculator, filipino, finance, financial literacy, students, Tagalog, QUARTA application*

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# **CHAPTER I**

## **THE PROBLEM AND ITS BACKGROUND**

### **Introduction**

Financial literacy is the capacity to comprehend and effectively employ one's financial skills, including personal financial management, budgeting, and investing (Fernando, 2021). Being financially literate implies that a person is familiar with personal finance capable of applying such knowledge in dealing with their finances; as such, it is an essential skill in today's modern economy (NEDA-CARAGA, 2018). A local study also found a significant relationship between financial literacy and financial behavior, indicating that those who have inadequate financial literacy are more likely to commit bad and risky financial decisions (Castro, Salamat & Tabor, 2020). As investors and financial managers say, ignorance is the greatest risk in managing one's finances (Tilan & Cabal, 2021).

Despite its necessity, a study by the World Bank in 2015 found that only 25% of Filipino adults are financially literate, a far cry from 59 percent in Singapore, 52 percent in Myanmar, and 36 percent in Malaysia (Villanueva, 2021). Out of seven financial literacy questions, the average Filipino only managed to correctly answer three. Most also have little knowledge of financial concepts like inflation, investment risks, and returns (Agcaoili, 2021). This lack of financial literacy has made Filipinos more susceptible to investment scams and at risk of mismanaging credit. For example, data from the *Bangko Sentral* suggest that 1 in every 100 Filipinos has been a victim of investment scams leading to an economic loss of PhP 25 billion (Villanueva, 2021). The World Bank's findings are also supported by local research into the topic of financial literacy. A study

by Castro, Salamat, and Tabor (2020) found that among young professionals, only 35% have adequate financial literacy. The country's financial indicators also reinforce these findings. For example, a study by the Bangko Sentral ng Pilipinas (2019) found that although formal account ownership increased, it remained at a relatively low 29%. The report also found that only 47% of Filipinos have enough savings.

The lackluster level of national financial literacy has led the government to push to improve it by introducing a range of programs and policies (Hani, 2021). For example, the Department of Education has embarked upon a program to expand financial education in the country's educational curriculum. This program entails the inclusion of key financial skills such as earning, saving, spending, budgeting, donating, investing, planning, consumer protection, and entrepreneurship into the curriculum (Department of Education, 2021). However, this effort is hampered by the inadequacy of financial literacy among Filipino teachers as suggested by multiple local studies (Tilan & Cabal, 2021; Jabar & Delayco, 2021).

To help meet the problem, the researchers aimed to develop a Filipino language desktop application that aimed to improve the financial literacy of ordinary Filipinos. It served as a supplementary learning material in the Department of Education's drive to improve financial literacy among Filipino students. The app contained various pieces of information essential for financial literacy, such as tips on how to save money, financial institutions in the country, etc. It featured helpful financial tools such as a basic calculator, tax calculator, currency converter, interest calculator, real-time stock prices, among others. The study used a mixed-method, utilizing qualitative feedback and quantitative data to evaluate the app's usefulness.

## **Statement of the Problem**

The main purpose of this study was to develop a Filipino language desktop application to improve financial literacy for ordinary Filipinos. It aimed to answer these research questions:

1. How may the validity of the Quarta app be described based on the following criteria; as evaluated by respondents as regard to its:
  - 1.1. Functionality
  - 1.2. Usefulness
  - 1.3. User Interface
  - 1.4. Ease of Access
  - 1.5. User Satisfaction
2. Is there a significant difference between the financial literacy of the respondents before and after using Quarta?
3. What other interventions and improvements to the app may be proposed based on the findings of the study?

## **Significance of the Study**

This study aimed to develop a Filipino-language desktop application that helped ordinary Filipinos to improve their financial literacy. This research specifically aimed to benefit the following:

**Local Consumers.** Ordinary Filipino residents benefited from the application in terms of budgeting, spending control, and making smarter lending and investment selections.

**Entrepreneurs.** This was beneficial to local vendors and merchants who are just getting started with their business and commercial financing.

**Students.** As a starting point, the study expanded their perspective about finances and broadened the learners' understanding of economic principles as it prepared them to be financially literate.

**Teachers.** This research could be utilized as a supplementary learning material for financial education and enhance knowledge.

**Financial Advocates and Social Welfare System.** Quarta helped financial organizations to lessen their financial stress and anxiety in terms of budget structuring and money allotment.

**Future Researchers.** This study may be used by future researchers in the same field because it provides data that can serve as a framework for research-related studies.

### **Scope and Limitations**

This study covered the design and development of a Filipino-language desktop application for financial skill improvement and smart money management purposes that was tested by employing the computer. The program included three main categories or tabs. Each tab provided organized contents and information in relevance to its functions such as various pointers on how to manage a budget, handle finances right, etc. The calculator was subcategorized according to purpose in order to provide a well-rounded application.

The researchers aimed to test the application through Windows desktop/laptops only because of limited resources. The application was limited to people who know the Filipino language considering that Quarta is a Filipino-language desktop application. Additionally, the researchers were in contact virtually due to the pandemic, limiting various strategies to be performed in conducting the study.

## **Definition of Terms**

This part of the research paper contains relevant terms used by the researchers in the study. For the readers of this paper to understand better, the conceptual and operational contexts specified show the use and purpose of the words.

**Filipinos.** According to Merriam-Webster, Filipinos are the citizens of the Republic of the Philippines. Filipinos are the only qualified respondents and their financial literacy is the main focus of this study.

**Finance.** Corporate Finance Institute defines finance as the management of money and is composed of investing, borrowing, lending, budgeting, saving, and forecasting. Finances of Filipinos will also be observed when conducting this study.

**Financial Education.** According to Sudheer (2018), it is the ability to understand how money works. The application that will be developed by the researchers can serve as a supplementary learning material to expand the financial education among Filipino students.

**Financial Literacy.** It refers to the knowledge about finances and financial behavior (Lusardi, 2019). One of the aims of this study is to improve the financial literacy of Filipinos by using this application.

**Quarta.** Philippine Languages translates kwarta into money. The researchers will develop a Financial literacy desktop application in the Filipino language which called Quarta.

## **CHAPTER II**

### **REVIEW OF RELATED LITERATURE AND STUDIES**

This chapter presents the relevant theories and related literature and studies after the thorough and in-depth search done by the researchers. This includes the synthesis of gathered resources for each variable. Conceptual framework is also illustrated to guide the readers about the approach that was in conducting this study.

#### **Financial Literacy Status in the Philippines**

Financial literacy is defined as the certain comprehension of concepts involving saving, investing and debt that results in an overall state of financial well-being and confidence (McGurran, 2021). In the Philippines, Standard & Poor (S&P) revealed that only 25% of Filipinos in 2016 are financially literate, and over 75 million are illiterate when it comes to the topic of savings accounts, insurance, and other knowledge regarding money. Although the public and private sector make efforts in disseminating information about financial literacy, between 8 to 10 percent only invests. (Laurus Enterprises, 2018).

The Philippines is known to have a developing economy, but the journey to being a financially literate country is yet further away. Before the COVID-19 strikes, the *Bangko Sentral ng Pilipinas* (BSP) conducted a Financial Inclusion Survey (FIS) in 2019 and the results have shown that Filipino adults only got one (1) correct answer out of three (3) questions that constitute 41%. A total of 8% got a perfect score and 24% got no right answers (Manila Standard, 2020). Filipinos with knowledge on inflation constitute 55% while one third of the respondents have knowledge on computing for interests (BSP-CLIA, 2019). This reflects lack of awareness about the effects of inflation, compound interests, and diversification of investments. Many people are clueless when it

comes to their availability and accessibility, and some decided to dismiss their value as coping mechanisms and risk management.

According to NEDA (2018), one prominent Filipino mentality is spending cash upon salaries before saving it. Nothing is left and saved after expending the money. During the pandemic, a total of 48 percent of Filipino adults had their savings, but 68% just put their savings at home. Furthermore, data revealed that Filipino adults constitute merely 23% of Filipinos with bank accounts. Filipino adults that employ electronic payments is merely 4 percent and only 3 percent invest in financial instruments (Agcaoili, 2020). Moreover, only two percent have credit cards, compared to the neighboring countries, which are Vietnam and Malaysia that comprise 20% of their population. It is expected that many Filipinos are dealing with problems about everyday events elsewhere (Sprout Solutions, 2021).

Due to the financial literacy gap, the Department of Education (DepEd) promulgated the Financial Education Policy under DepEd Order No. 022. It seeks to assist students, teachers, and non-teaching personnel to include financial literacy as a substantial part of education (DepEd, 2021).

### **Benefits of Financial Literacy**

According to Zucchi, et al. (2022), Financial literacy is critical not just because it lays the groundwork for making informed financial decisions, but also because financial responsibility is on the rise. Employers used to manage their employees' retirement savings, for example. Self-directed retirement funds allow individuals to take on more of this responsibility today. Furthermore, the range of financial goods has expanded, and credit is more widely available, giving consumers additional options.

Any increase in financial literacy will have a significant impact on people's ability to provide for their families in the future. It's not simple to become financially educated, but once you do, it can take a lot of the stress out of life. With this in mind, they'll be better equipped to manage their money, make wise judgments, and maintain healthy spending and budgeting habits with this information, which will contribute to financial wellness in the long run. The most important benefit of financial literacy is that it equips us with the knowledge and skills we need to effectively manage our money—structured budgeting, effective saving, reduction of expenses, and being equipped to reach financial goals, or, simply put, financial stability (CFI Education Inc., 2022).

Rose (2021) said that financial literacy gives users a basic understanding of financial principles to help them make better financial decisions in the real world. On the other hand, the specific benefits of financial literacy will vary depending on a person's circumstances, but here are a few examples of scenarios where financial knowledge can be beneficial according to Rose (2021):

- Putting money aside for retirement
- Creating and sticking to a budget that is balanced
- Purchasing assets
- Selecting an insurance
- Investing
- Debt management
- Credit cards utilization

## **Literacy Through Digital Information**

Communication is the vital aspect of the process of conveying information. The users must also be knowledgeable in technology to receive literacy through digital information (Western Sydney University, 2020). Acquiring details through digital technology can make communication speeds faster because they can be accessed with one click. Since obtaining information is easier in these modern times, more doors of opportunity in learning can be opened (Goodman, 2022).

One of these learning opportunities is digital financial literacy. This concept is going to become an increasingly significant part of education. Because of the trend of moving from defined-benefit to defined-contribution pension plans, people will have to manage their own retirement savings and pensions more. Understanding of digital financial products and services, awareness of digital financial risks, knowledge of digital financial risk control, and knowledge of consumer rights and redress procedures are all proposed as characteristics of digital financial literacy (Morgan et al., 2019). Technology can be a great help in enhancing financial literacy as it incorporates more financial aspects. With the current financial information and better accessibility to financial literacy resources, people can track and manage their money carefully with secured accounts. This allows people of all ages to have a better understanding of their personal financial conditions by exposing them to technology that increases financial literacy (Impact, 2019).

## **The Usage of Applications in Financial Literacy**

Ever since the advent of application development, educators have utilized mobile apps to supplement and enhance lesson learning. The use of such applications gives users

more flexibility; it gives them the choice of where and when to study (Farrah & Ala Khalid, 2018).

The benefits of mobile applications in learning is evidenced by the development of numerous educational applications. These applications generally range from a more gamified to a more module-like interface.

Some examples of more gamified educational applications include the language learning app Duolingo and programming learning app SoloLearn. These educational platforms and apps incentivize learning by lessons followed by fun gamified features such as progress charts, levels, and points (Pendergrass, 2021). Studies such as those by Hamari & Koivisto (2015a & 2015b), Hamari et al. (2014), and Hanus & Fox (2015), found that mobile applications positively affect an individual's learning outcomes. Gamification triggers behavioral changes that improves learner's motivation (Hamari et al., 2014; Hamari & Koivisto, 2015b). This increase in motivation improves user engagement (Shivnetra, 2017; Kwon et al., 2015) as well as learning effectiveness and efficiency (Bayuk et al., 2019).

These gamified apps incorporate elements which can be classified into three main types: the website, process-related and social-related game components (Gatautis et al., 2016). Website components include the functional aspects of the application, such as the visuals and characters of the app. Duolingo's badges and mascot are examples of website components. Social-related facets refer to the aspects of the app that facilitate interaction between its users. Duolingo's leaderboard feature, which ranks all the users of the app, is an example of a social-related component. The app's process-related components provide users with their progress. This is usually done through a visual progress bar or by

'leveling-up' through the app. Studies such as those of Yang (2020), Bayuk et al. (2019), and deCos (2015) show that finance-related applications can utilize gamified elements to enhance the user's learning experience. In financial literacy applications, website components can include customized player avatars, achievements, badges, and other visual elements (Bayuk et al., 2019). A meta analysis of 24 studies on gamification done by Hamari et al. (2014) found that gamified apps most commonly incorporate points, leaderboards, and badges. Their study also found that the inclusion of social-related components fuel competition among players increasing user motivation.

On the other hand, module-like applications are mini-lectures and discussion points crammed into one app. These apps can be compared to e-books with some basic interactive features. A great example of a module-like application is Khan Academy. Khan Academy requires users to create an account. After creating one, the user selects a course. Like a regular subject a course is subdivided into progressing lessons. Each lesson contains readings, practice exercises, instructional videos, and a personalized learning dashboard that empower learners to study at their own pace in and outside of the classroom (Samonte et al., 2017; Khan Academy, 2021). TedEd is another example of a module-like learning app. The application, in general, is simpler than Khan Academy. After creating a profile, the user can select from among a variety of course choices. Each course then contains a video lesson followed by a short quiz. If the player passes the quiz, they will see any additional recommended resources about the lesson and a discussion forum that enables the user to communicate with other TedEd users (TedEd, 2022).

An example of a Filipino-made financial literacy app is Kashring: A Financial Literacy Microlecture App by Samonte et al. (2017). The app is divided into two main

parts: Learn and Games. The learn part contains readings that can help the users improve their financial literacy. The knowledge learned from the Learn part can then be evaluated during the Games and Activity part which contains six games. Each game begins with instructions. The user then needs to enter their name to start the game. Quiz results are instantly revealed after finishing the game. The Philippines' central bank also recently released a financial literacy app entitled Financial Literacy for the Filipino or Fili. The interface is simple and only has limited features. It has five main components: a Risk Tolerance Calculator, a Cash Flow Tracker, a Portfolio Recommender, a Portfolio Simulator, and Investor Education (Bureau of Treasury, 2022). The features of the app are criticized for being more of financial planning calculators than financial literacy.

With Quarta, the researchers aim to strike a balance between a gamified and module-like interface. The target app will also incorporate tools useful for financial planning, similar to the Bangko Sentral's recently developed Financial Literacy for the Filipino (Fili) app (Bureau of Treasury, 2022). Unlike the other applications mentioned, Quarta will be published in the Filipino language as a study by Curugan et al. (2020) suggests that the use of Filipino in student financial education programs improve learning outcomes and results in a better understanding and grasp of the lesson.

### **Application Development**

A recent review of financial literacy education programs that assessed financial literacy found that experiential learning is an effective method to teach and promote it. People tend to actively participate in the learning process which helps them understand financial concepts and apply them to everyday life. Real-world experiences are used to create relevance and to motivate them. The review also highlighted the importance of

considering one's future goals such as obtaining a college degree, finding a job, starting a business, or obtaining a higher salary (Amagir, et al., 2018). Another review found that content, implementation, and keeping topics focused on age-relevant material are also important factors in effective programs. One of the most common programming languages used is Java (Consumer Financial Protection Bureau, 2019).

According to Pedamkar (2022), Java is the most popular programming language since billions of devices are running on a Java platform; Java possesses every field of development of software. Its features make it the most powerful language in the market of software development. It is an object-oriented language, supports all the features of an object-oriented programming language and is the most secured language in the current world.

Desktop applications can be easily developed using Java wherein different Application Programming Interface (API) like Swing may be used to build these kinds of applications. Swing is a Graphical User Interface (GUI) widget toolkit which uses an Abstract Window Toolkit (AWT). It provides certain advanced components. Swing is totally "java-based" since it uses Swing packages of Java to develop applications. Some examples of desktop GUI applications are Acrobat Reader, ThinkFree, Media Player, Antiviruses, and others (Techvidvan, n.d.).

In order to develop a Filipino-language desktop application named QUARTA, the researchers will use Java Swing. In reference to the study of Amagir, et al., Quarta will use experiential learning in order to maximize and retain the financial concepts of people. Considering one's future goals, this app will feature helpful financial tools such as an expenses calculator, tax calculator, local tax rates, interest calculator, and others. This

will provide a guide and estimation for their calculations. In addition to this, several supplementing knowledge will be provided by this application. There were three lessons and relevant concepts where users learn a lot upon understanding them. In reference to the study of the Consumer Financial Protection Bureau, the listed topics in this application will focus on age-relevant materials.

### **Conceptual Framework**

This part of the research paper presents an outline illustrating the flow of research and how the study will be conducted.

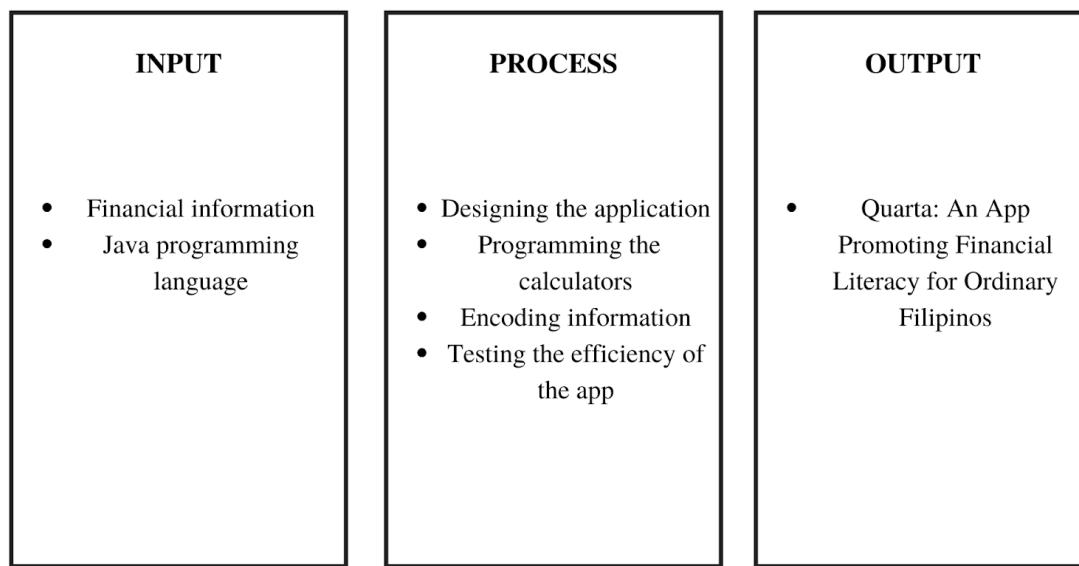


Figure 1. Research Paradigm of the Study

Figure 1 shows the Input-Process-Output model used in designing and creating the application. Included in the input are the financial information which was the content of the application and the programming language that was used, Java. The process part was composed of designing the application, programming the calculators, and encoding the financial information. Additionally, in order to determine whether the Quarta app is efficient, the researchers will conduct tests on its effectiveness. A questionnaire and a 10-item quiz would be given to the respondents. Lastly, after designing and testing, the

output will be the Quarta application that promotes financial literacy for ordinary Filipinos.

### **Hypothesis**

This section contains the hypothesis formulated by the researchers in conducting the study.

1. There is no significant difference between the financial literacy of the respondents before and after using Quarta.

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

This part of the study discussed the methodology and various processes to be done by the research proponents. This section presents the procedures and techniques utilized in making the study possible, including the research design, population and sample of the study, materials and design, the research instrument that was used, data gathering procedures, and the data processing and statistical analysis.

#### **Methods and Techniques of the Study**

The researchers utilized the experimental research approach in conducting the study, which is stated by Harappa (2021) as a scientific approach that seeks to apply the manipulated independent variable to the dependent variable to measure its effect. In relation to the study, quantitative analysis was used to determine the effectiveness of the QUARTA application. According to Bhandari (2020), quantitative analysis is the process of gathering and analyzing numerical data. A Likert scale was utilized in the questionnaire. Based on Vinney (2019), it is a close-ended and forced-choice scale type of questionnaire that provides a series of answers that go from one extreme to another. The pretest posttest design which is defined by Zach (2020) as an experiment where measurements are taken from the participants who underwent both before and after treatment, will also be used to seek relationships and see improvement in the data that will be gathered with regards to the Filipino participants' financial literacy. The study was conducted in an online environment using surveys. The time frame of this research was from March 2022 to June 2022, including the beginning of the research paper writing, experimentation, and revisions.

## **Population and Sample of the Study**

The target population of the study consisted of Filipino citizens of legal age that were literate enough to be a respondent in the scope of the research. A sample size of 30 individuals that were willing to participate was chosen to utilize the QUARTA application. The sampling technique that was used is Convenience Sampling, as the researchers collected participants that were nearest and available to participate in the research study. (Crossman, 2019). The said respondents agreed to the informed consent to be able to engage in the procedures of the study.

## **Materials and Design**

The researchers utilized Java as the programming language in building QUARTA. This language contained the controls and functionalities that are needed by the researchers. The approach in creating the user interface of the program was dashboard design. According to Costa (2020), a dashboard is a part of an application that displays information; it provides the user a global overview, with access to its most important data, functions and controls. From this, QUARTA came with four primary navigations: 1) Home, 2) Calculators, 3) *Aralin* (Lessons), and 4) *Mga Konsepto* (Concepts). Under calculators were basic calculator, discount calculator, tax calculator, interest calculator, and currency converter. Meanwhile, there were three lessons and relevant concepts that expanded the knowledge of the users about financial literacy. A test-run of the application was done by the researchers to identify and fix any error on the program. After the debugging, a beta-test was executed. The final product was an executable jar file (.exe) for the respondents to easily run the program on their own computers. Design and programming of QUARTA approximately took around two months to finish.

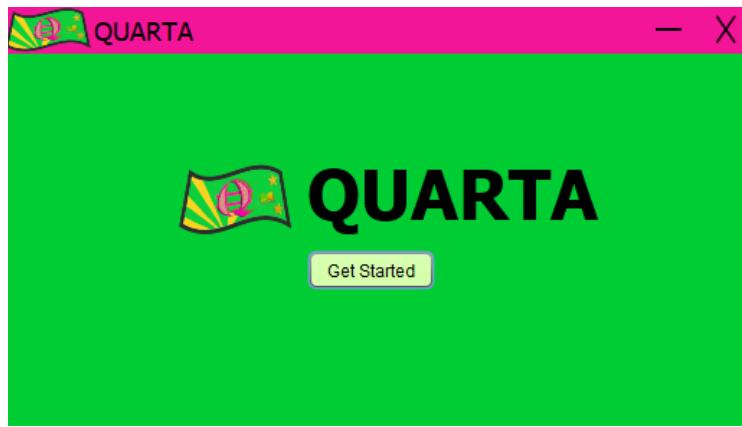


Figure 2.1. The Homepage User Interface

Figure 2.1 shows the homepage of the QUARTA application. This included the title of the application and a get started button that directed to the home of the application.

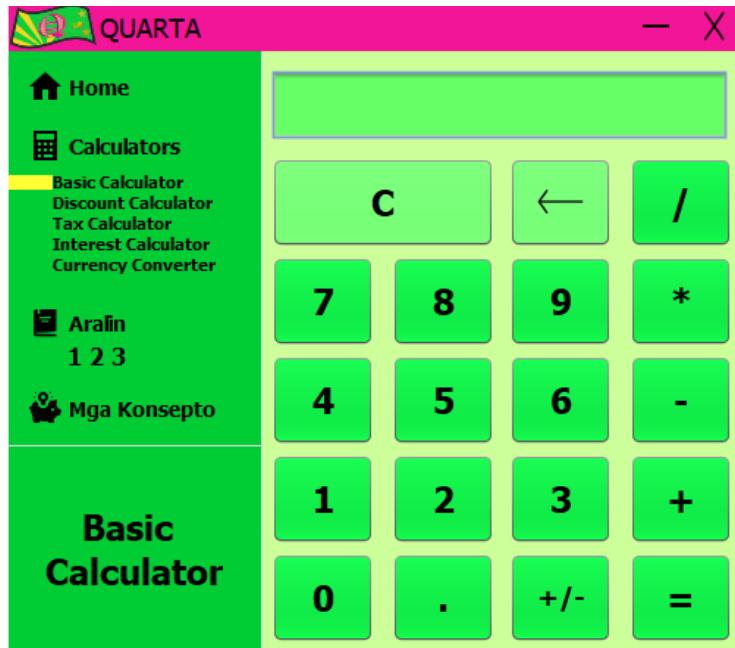


Figure 2.2 The Basic Calculator User Interface

The Figure 2.2 displays the first subsection of the calculators: basic calculator. This calculator could perform simple mathematical operations such as addition, subtraction, multiplication and division.

The screenshot shows the QUARTA mobile application's user interface. The top navigation bar is pink with the QUARTA logo on the left and standard window control buttons on the right. The main content area has a green header titled "Discount Calculator". On the left, there is a sidebar with icons for Home, Calculators (Basic Calculator, Discount Calculator, Tax Calculator, Interest Calculator, Currency Converter), Aralin (1 2 3), and Mga Konsepto. The main panel displays fields for "Orihinal na Presyo" (Original Price) and "Discount" (with a percentage symbol), both with placeholder text "Enter value here". Below these are two buttons: "Kalkulahin" (Calculate) and "Ulitin" (Finish). Further down are fields for "Halagang Natipid" (Original Price) and "Bagong Presyo" (New Price), also with placeholder text "Enter value here".

Figure 2.3 The Discount Calculator User Interface

The Figure 2.3 presents the second subsection of the calculators: discount calculator. This calculator could calculate the saved price and the final price of the product with a discount. The editable text fields above the calculate button should not be blank. Otherwise, a prompt appears stating that the user should enter a value for the price and discount rate. Additionally, the text fields only accept numeric values.

The screenshot shows the QUARTA mobile application's user interface. The top navigation bar is pink with the QUARTA logo on the left and standard window control buttons on the right. The main content area has a green header titled "Income Tax Calculator". On the left, there is a sidebar with icons for Home, Calculators (Basic Calculator, Discount Calculator, Tax Calculator, Interest Calculator, Currency Converter), Aralin (1 2 3), and Mga Konsepto. The main panel displays fields for "Taunang Kita" (Annual Income) and "Buwis" (Deduction), both with placeholder text "Enter value here". Below these are two buttons: "Kalkulahin" (Calculate) and "Ulitin" (Finish). Further down are fields for "Kabuuang Kita" (Remaining Income) and a timestamp "Taong 2022".

Figure 2.4 The Income Tax Calculator User Interface

Figure 2.4 displays the third subsection of the calculators: income tax calculator. This calculator could calculate the tax from an annual income. A prompt appears stating that the user should enter a value for the annual income whenever the first text field is blank. Additionally, the text field only accept numeric values.

Figure 2.5 The Simple Interest Calculator User Interface

Figure 2.5 exhibits the fourth subsection of the calculators: interest calculator. This calculator could solve for the interest and final amount given the principal, rate and time. The editable text fields above the calculate button should not be blank. Otherwise, a prompt appears stating that the user should enter a value for the principal, rate and time. Additionally, the text fields only accept numeric values.

Figure 2.6 The Currency Converter User Interface

Figure 2.6 shows the fifth subsection of the calculators: currency converter. This calculator could convert Philippine Peso to seven currencies such as, British Pounds, Euro, Indonesian Rupiah, Japanese Yen, Saudi Riyal, South Korean Won, and US Dollar.

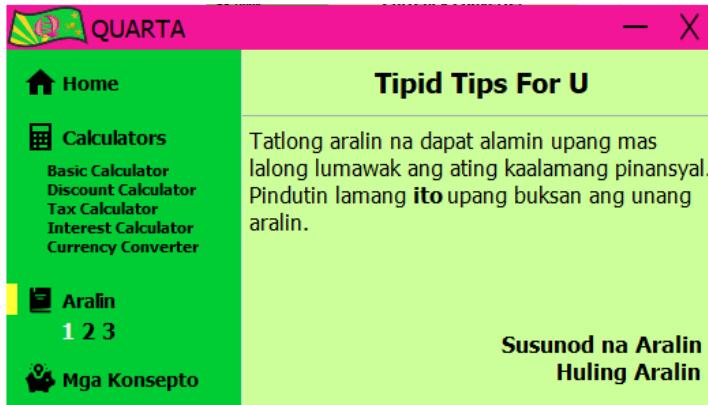


Figure 2.7 The First Lesson User Interface

Figure 2.7 displays the first lesson of the QUARTA application. The title of the lesson is Tipid Tips For U. This tackled the tips on saving money. When *ito* was clicked, it directed to the pdf file of the first lesson.

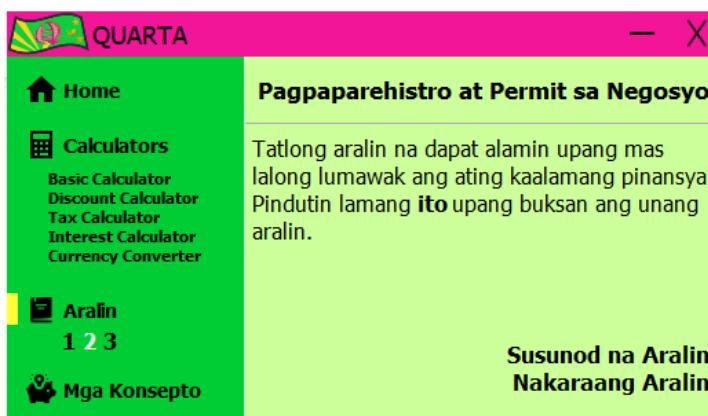


Figure 2.8 The Second Lesson User Interface

Figure 2.8 shows the second lesson of the QUARTA application. The title of the lesson was *Pagpaparehistro at Permit sa Negosyo*. There were several types of business. The steps in registering a permit for each type of business, as well as the links were stated. There were some pictures for the lesson to be more understandable and easy to follow. When *ito* was clicked, it directed to the pdf file of the second lesson. The sources of this lesson were located at the last part of the file.

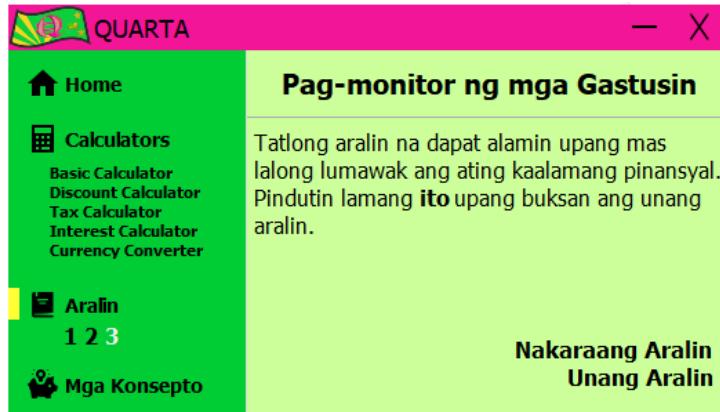


Figure 2.9 The Third Lesson User Interface

Figure 2.9 depicts the second lesson of the QUARTA application. The title of the lesson was *Pag-monitor ng mga Gastusin*. The minimum wage of earners and how to track the expenses were stated. When *ito* was clicked, the third pdf opened. The sources of this lesson were located at the last part of the file.

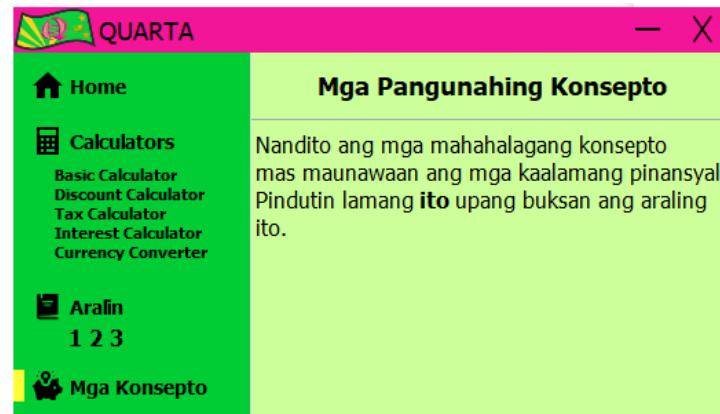


Figure 2.10 The Relevant Concepts User Interface

Figure 2.10 shows the third lesson of the QUARTA application. The title of the lesson is *Mga Pangunahing Konsepto*. This included the taxes, economic concepts, and laws of supply and demand, as well as the shortage and scarcity. When *ito* was clicked, it directed to the pdf file of the relevant concepts. The source of this lesson was located at the last part of the file.

## **Research Instrument**

To determine the capability of QUARTA as a tool to increase a person's financial literacy, the researchers used a semi-structured survey questionnaire that was answered through Google Forms. Likert scale, a commonly used research scale in measuring and gauging opinions, attitudes, and behavior (Bhandari, 2022), was utilized to determine the feedback of the respondents. Questions were formulated to collect data on the functionality, usefulness, user interface, ease of access, and user satisfaction of the QUARTA app, as well as to gather improvements and suggestions for the app. The sample size was 30 individuals that were of legal age and were literate enough to use and assess the Quarta app.

## **Data Gathering Procedure**

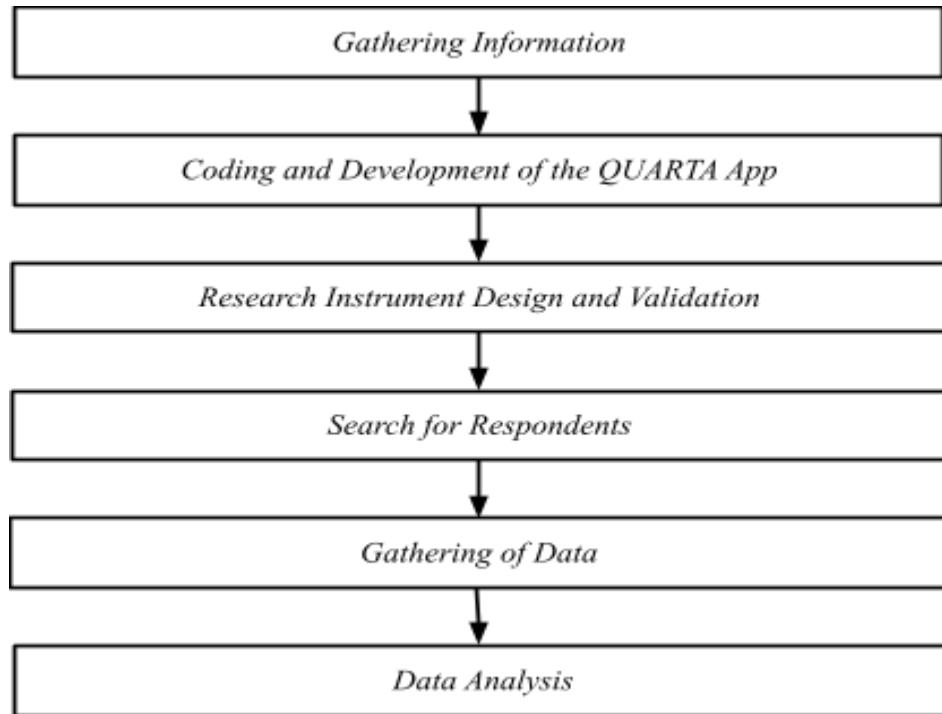


Figure 3. Flowchart of the Study

### *Gathering Information*

The creation of the QUARTA App started with the researchers gathering information about financial literacy, such as computing payments, concepts, lessons, tips, registering permits and many more. Having enough knowledge helped the researchers understand and explore what to put into the app, as it used Filipino language that conveyed details on financial literacy.

### *Coding and Development of the Quarta App*

The app was encoded and created through Java. Java is a simple programming language that is generally used in classes to create and develop apps (Hartman, 2022). Quarta was designed in a dashboard style. This provided an easy navigation and a clear presentation of data for the users (Subotin, n.d.). The app was divided into four sections, mainly:

- **Home** - The main page of the app
- **Calculators** - The different kinds of calculators were found here, such as a basic calculator, discount calculator, tax calculator, interest calculator and currency converter.
- **Aralin (Lesson)** - This section was divided into three subsections, specifically:
  - **Tipid Tips For You** - It tackled tips on how to save money.
  - **Pagpaparehistro at Permit ng Negosyo** - This subsection gave information on how to register permits, especially for businesses.
  - **Pag-monitor sa Gastos** - The user could get details on how to monitor their expenses here.

- ***Mga Pangunahing Konsepto (Relevant Concepts)*** - The relevant concepts about financial literacy that were used to educate the users were located here.

#### *Research Instrument Design and Validation*

The research instrument was in the form of surveys. The researchers formulated, via Google Forms, a series of questions that are inclined by the respondents' feedback in using the app. These questions were further validated by an appropriate professional in order for the researchers to acquire the proper and needed results.

#### *Search for Respondents*

Informed consent was sent to the respondents of the survey. The researchers used the convenience sampling technique. The chosen 30 individuals must be Filipino, of legal age as they were mostly dealing with finances and must have basic knowledge of using an app in order to have smooth access to Quarta.

#### *Gathering of Data*

The study used true experimental design (pretest and posttest) in gathering data. The survey formulated and validated were sent to the respondents. A 10-item quiz was answered before and after they used the app to know their background knowledge about financial literacy and what they learned upon using the application. The scores determined whether the app improved financial literacy among Filipino respondents.

## *Data Analysis*

The data were analyzed by tallying the responses and finding the average. The survey results obtained before and after using the app were compared if there is any improvement. By doing this, it assessed whether the app increased Filipino respondents' financial literacy.

## **Data Processing and Statistical Analysis**

QUARTA was tested through both qualitative and quantitative means. After trying to run the program, survey forms were used for the respondents to rate and comment on the program qualitatively. The researchers then carefully transcribed, coded, and analyzed the responses. Conclusions were then formed to satisfy the research questions. On the other hand, the respondents were asked to rate the program quantitatively through a Likert Scale based on functionality, usefulness, user interface, ease of access, and user satisfaction. The ratings were tallied; the researchers then computed the mean rating for each variable. Before and after running QUARTA, the researchers gave the respondents a 10-item quiz to test their knowledge of financial literacy. To determine whether there was a significant difference in the pretest and posttest results, a paired t-test was used. The paired t-test is a statistical tool used when testing for the difference between two variables for the same group of respondents with the formula as follows:

$$t = \frac{d}{\sqrt{\frac{s^2}{n}}}$$

## CHAPTER IV

### PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

This chapter briefly discusses the presentation, analysis, and interpretation from the gathered data. The results and responses collected during the evaluation of QUARTA are presented in this chapter, as well as the analysis of the data. This chapter also contains hypothesis testing and responses to the questions of the study.

#### **Part I. Level of performance of QUARTA in terms of its Functionality, Usefulness, User Interface, Ease of Access, and User Satisfaction**

The tally, computed mean scores and verbal interpretation of the responses of 30 Filipinos are shown in the tables below. The 4 in their responses corresponds to strongly agree; 1 means strongly disagree.

**Table 1.1 Frequency Distribution of Descriptive Measures of the Validation of QUARTA as Evaluated by the Respondents in Terms of its Functionality**

Items	Responses				Mean	Verbal Interpretation
	4	3	2	1		
<b>1. Functionality</b>						
1.1 QUARTA works well without any malfunctions as a whole application.	20	8	2	0	3.60	Strongly Agree
1.2 The application tabs and buttons in QUARTA are clickable and work properly.	24	5	0	1	3.73	Strongly Agree
1.3 The links provided in the tabs by QUARTA function well.	24	4	1	1	3.70	Strongly Agree
1.4 QUARTA operates well and is compatible with my device.	20	9	0	1	3.60	Strongly Agree
	<b>Sub-Total Mean</b>				3.66	Strongly Agree

As seen on Table 1.1, the response of the students regarding the functionality of QUARTA when they used it. There were twenty (20) students who strongly agreed that they experienced no bugs or malfunctions while using the application as. The same

number also said that QUARTA was compatible and was operational in their device. Twenty-four (24) students also strongly agreed that the applications tabs and buttons worked properly and were clickable. All four questions encountered little disagreement with only two respondents disagreeing with the statements, at most. The first, second, third, and fourth statements gathered a mean of 3.60, 3.73, 3.70, and 3.60 respectively. This data gives us a sub-total mean of 3.66, indicating that the respondents are in strong agreement with the given statements and that the functionality of QUARTA is mostly rated very positively.

**Table 1.2 Frequency Distribution of Descriptive Measures of the Validation of QUARTA as Evaluated by the Respondents in Terms of its Usefulness**

Items	Responses				Mean	Verbal Interpretation
	4	3	2	1		
<b>2. Usefulness</b>						
2.1 QUARTA is an effective financial application in supplementing knowledge in terms of financial management	21	8	0	1	3.63	Strongly Agree
2.2 QUARTA helped me to be financially literate by explaining the necessary concepts and notions.	19	10	0	1	3.57	Strongly Agree
2.3 This application helped me to be guided on the right track financially through the tips and directions provided.	23	6	0	1	3.70	Strongly Agree
2.4 QUARTA helped me to acquire accurate calculations and computations to estimate my financial expenditures.	27	2	0	1	3.83	Strongly Agree
				<b>Sub-Total Mean</b>	3.68	Strongly Agree

Table 1.2 shows the usefulness of the QUARTA app as rated by the student-respondents. There were twenty-one (21) students who strongly agreed that QUARTA supplemented their knowledge on financial management. Meanwhile, nineteen (19) strongly agreed that QUARTA improved their financial literacy through its lessons

on various concepts. On the other hand, twenty-three (23) students strongly agreed that the app helped get them on the right track in terms of financial literacy. Twenty-seven (27) respondents also strongly agreed that QUARTA helped them in correctly calculating financial expenditures. Only four students disagreed on the three statements combined. The first, second, third, and fourth statements gathered a mean of 3.63, 3.57, 3.70, and 3.83 respectively. With all of this data, the respondents, on average, strongly agreed with all of the statements. The responses about the usefulness of this application in Table 1.2 had a sub-total mean of 3.68; that meant the majority of the student-respondents strongly agreed that the QUARTA app serves its purpose.

**Table 1.3 Frequency Distribution of Descriptive Measures of the Validation of QUARTA as Evaluated by the Respondents in Terms of its User Interface**

Items	Responses				Mean	Verbal Interpretation
	4	3	2	1		
<b>3. User Interface</b>						
3.1 QUARTA's design is visually pleasing.	20	5	5	0	3.50	Strongly Agree
3.2 Text and Information are organized and easy to understand.	18	11	1	0	3.53	Strongly Agree
3.3 The colors and elements used in the app are visually appealing.	18	9	3	0	3.50	Strongly Agree
3.4 The app's design is unique compared to other financial applications.	20	6	3	1	3.50	Strongly Agree
	<b>Sub-Total Mean</b>				3.51	Strongly Agree

Table 1.3 describes the response of the students regarding the user interface of the QUARTA app itself. It was found that twenty (20) students strongly agreed that the app's interface is visually pleasing, with the same number also strongly agreeing that QUARTA's design is unique compared to other similar applications. Meanwhile, eighteen (18) students strongly agreed that the app's text and information were organized and

easily understandable. The same number of respondents also rated strong agreement that the app's visual elements are visually appealing. However, some statement encountered minority but significant disagreement with five (5) students disagreeing with the statements, at most. In total the first, second, third, and fourth statements gathered a mean of 3.50, 3.53, 3.50, and 3.50 respectively. These data give a sub-total mean of 3.51, indicating that the student-respondents, on average, have strong positive opinions of the app's interface. It is also notable that the user interface's sub-total mean is the lowest of all tested variables.

**Table 1.4 Frequency Distribution of Descriptive Measures of the Validation of QUARTA as Evaluated by the Respondents in Terms of its Ease of Access**

Items	Responses				Mean	Verbal Interpretation
	4	3	2	1		
<b>4. Ease of Access</b>						
4.1 Loading the QUARTA application only requires a short amount of time.	20	8	2	0	3.60	Strongly Agree
4.2 The tabs' location are not difficult to navigate.	18	11	0	1	3.70	Strongly Agree
4.3 The tabs and buttons are easily clicked.	23	4	3	0	3.67	Strongly Agree
4.4 The QUARTA application is easy to download.	24	5	1	0	3.77	Strongly Agree
	<b>Sub-Total Mean</b>				3.68	Strongly Agree

Table 1.4 presents the ratings given by the student-respondents with regards to the accessibility of the QUARTA app. Out of thirty respondents, twenty (20) strongly agreed that the app loaded quickly. On the other hand, eighteen (18) students strongly agreed that the application's tabs are easy to navigate. Twenty-three (23) respondents strongly agreed

that the app's tabs and buttons are clicked easily. Meanwhile, twenty-four (24) respondents strongly agreed that the QUARTA app is easy to download. Overall, the first, second, third, and fourth statements gathered a mean of 3.60, 3.70, 3.67, and 3.77 respectively. The data gives a sub-total mean of 3.68, indicating that, on average, the student-respondents strongly agreed that the app is easily accessible.

**Table 1.5 Frequency Distribution of Descriptive Measures of the Validation of QUARTA as Evaluated by the Respondents in Terms of its User Satisfaction**

Items	Responses				Mean	Verbal Interpretation
	4	3	2	1		
<b>5. Usefulness</b>						
5.1 QUARTA is user-friendly.	26	3	0	1	3.80	Strongly Agree
5.2 I am satisfied with the usefulness of QUARTA.	20	9	1	0	3.63	Strongly Agree
5.3 QUARTA provided enough supplementing knowledge in financial literacy.	23	5	1	1	3.67	Strongly Agree
5.4 I would recommend QUARTA to other users.	22	6	1	1	3.63	Strongly Agree
				<b>Sub-Total Mean</b>	3.68	Strongly Agree

Table 1.5 summarizes the ratings given by the student-respondents regarding the user satisfaction given by the use of the QUARTA app. Out of the 30 thirty respondents, twenty-six (26) strongly agreed that the app is user-friendly. The developed app should be user-friendly as it gives the users a better impression of the functions of the app (Toshniwal, 2017). Twenty (20) students strongly agreed that they are satisfied by the usefulness of the QUARTA app while twenty-three (23) strongly agreed that the app adequately supplemented their knowledge in financial literacy. Almost all respondents, more specifically, twenty-eight (28) of them, agreed that they will recommend the app to

other users. All statements encountered only minimal disagreement. In total, the first, second, third, and fourth statements gathered averages of 3.80, 3.63, 3.67 and 3.63 respectively. These data indicate that the respondents have strong positive satisfaction with the app, with the sub-total mean being 3.68.

Overall, the QUARTA app's usefulness, ease of access, and user satisfaction were rated the highest with means of 3.68. The app's user interface was rated the lowest at 3.51, which still indicates bare strong agreement. The student-respondents, on average and throughout all the variables, gave strong positive agreement with the positive statements about the app. Thus, we can infer from the tables in Part I that the most student-respondents gave a positive response regarding QUARTA in terms of its functionality, usefulness, user interface, ease of access, and user satisfaction.. The data gathered and its interpretation were positive indications on the effectiveness of QUARTA as a financial literacy application for Filipinos.

## **Part II. Significant Difference Between the Financial Literacy of the Respondents Before and After Using QUARTA**

The mean and the t-value of the scores of the respondents before and after using QUARTA variables are shown below.

**Table 2. T-test Statistic for the Pretest and Posttest Scores of Respondents Upon Using QUARTA**

Variable 1	Variable 2	Mean of Variable 1	Mean of Variable 2	T <sub>crit</sub>	T <sub>stat</sub>
Scores before using QUARTA	Scores after using QUARTA	6.4	9.4	2.04522964	-22.121822

The data in the table above was analyzed using the two-tailed t-test at  $\alpha=0.05$  with a mean performance before and after using the QUARTA App of 6.4 and 9.4 respectively.

The computed  $T_{\text{stat}}$  from the data analysis is an absolute value of -22.12, which is greater than the  $T_{\text{crit}}$  value of 2.04. This means that the null hypothesis is rejected and therefore, there is a significant difference between the financial literacy of the respondents before and after using QUARTA.

### **Part III. User suggestions in enhancing QUARTA as an Application Promoting Financial Literacy**

The frequency and rank of each user suggestion in improving QUARTA were listed in the table below.

**Table 3. Frequency Distribution and Ranking of the User Suggestions by the Respondents**

Suggestions	Frequency	Rank
1. Improve the interface design and over-all appearance of the application.	8	1
2. Increase application size.	4	2
3. Broaden the topics and scope of application for more expanded coverage of lessons.	3	3
4. Make the application more interactive to its users.	1	4.5
5. Proper placement of elements by adding logo in the application's preview in the task bar.	1	4.5

Based on the findings of the study, the first suggestion of the respondents is to improve the interface design and overall appearance of the application, specifically in terms of font and color options. It is the highly recommended suggestion as it has the first rank from a frequency of 8 responses. In addition, the four respondents suggested increasing the application size for better experience. Meanwhile, three responses stated to broaden the topics for a wider coverage of the lessons, thus increasing the effectiveness

rate of QUARTA in terms of inputting necessary information and knowledge to its users in terms of financial management. The privacy features should be enhanced by securing files and limiting access to other users. Lastly, one respondent recommended to develop the interactivity of the application and another one stated that placement of elements need improvement. Particularly, the response pertains to the insertion of the application logo on the preview of the application in the task bar. These suggestions in enhancing the functionality of QUARTA as an IMS should be considered for further studies.

## **CHAPTER V**

### **SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS**

This chapter shows the summary, conclusion, and recommendation of the study. The summary tackles the interpretation of the gathered data. Conclusions and recommendations are obtained and discussed thoroughly.

#### **Summary of Findings**

Three questions were formulated to examine if the QUARTA application can improve the financial literacy of Filipino students. The following were the findings and proceedings of the data from the conducted test of the application.

- 1. How may the validity of the Quarta app be described based on the following criteria; as evaluated by respondents as regard to its:**

**1.1. Functionality**

**1.2. Usefulness**

**1.3. User Interface**

**1.4. Ease of Access**

**1.5. User Satisfaction**

The validity of the QUARTA application was determined based on the following criteria: Functionality, usefulness, user interface, ease of access, and user satisfaction.

- 1.1. In terms of QUARTA's functionality, the sub-total mean from the gathered data is 3.66, meaning that most respondents strongly agree with the given statements that the functionality of QUARTA is rated very positively.**

**1.2.** The sub-total mean from the responses about the usefulness of QUARTA is 3.68, meaning that a large number of the student-respondents strongly agreed that the QUARTA app serves its purpose.

**1.3.** From the evaluated data in terms of the user interface of QUARTA, the sub-total mean of 3.51 indicates that the student-respondents, on average, have strong positive opinions of the application's interface. The user interface's sub-total mean in terms of user interface is the lowest of all tested variables.

**1.4.** In terms of the application's ease of access, a sub-total mean of 3.68 was computed, meaning that, on average, the student-respondents strongly agreed that the app is easily accessible.

**1.5.** The sub-total mean from the responses in terms of the usefulness of QUARTA is 3.68, meaning that the data indicated that the respondents have strong positive satisfaction with the application.

**2. Is there a significant difference between the financial literacy of the respondents before and after using Quarta?**

Based on the computed t-test statistic at  $\alpha=0.05$  and mean performance from pre-and post-assessment of 6.4 and 9.4 respectively, the absolute value of  $T_{\text{stat}}$ , -10.90, is greater than the  $T_{\text{crit}}$  value, 2.01, making the hypothesis rejected. This means that there is a significant difference between the financial literacy of the respondents before and after using QUARTA.

### **3. What other interventions and improvements to the app may be proposed based on the findings of the study?**

After using the QUARTA app, it was found that multiple user suggestions were made. Most respondents suggested improving the interface design and overall appearance and increasing its size. It is also recommended to broaden the topics and scope of application for more expanded coverage of lessons. Some of the respondents suggested other interventions like making the application more interactive to its users and proper placement of elements such as adding a logo of the application in the task bar. The user suggestions made will enhance the functionality of the app and identify possible loopholes in the application.

### **Conclusions**

After interpretation and analysis of the obtained data and findings, the researchers were able to derive the following conclusions:

1. Based on the Likert scale evaluation, Filipino student-respondents strongly agree that the QUARTA application is functional with little to no bugs and errors, that the application is useful in supplementing the financial literacy of users, that the user interface of the application is unique, organized, and pleasing, that the app is easily accessible and is easily downloaded, and that the app gives its users adequate satisfaction. Overall, the student-respondents rated the application's validity very positively.
2. It was found that there is a significant difference between the financial literacy of the student-respondents, based on an assessment crafted by the researchers, before and after the use of the QUARTA application.

3. The vast majority of student-respondents suggested improvements to the QUARTA application's user interface and other visual elements, widening the scope of the lessons, and making it an interactive application.

## **Recommendations**

Given the limited time and resources allotted for the study and the creation of the application, the following recommendations and propositions are presented to enhance and develop the capabilities of the financial literacy app.

1. The application's user interface can be further improved by taking into mimicking modern education app UI and through coding the system with a programming language more advanced than Java.
2. Make the application more accessible to more people through crafting a mobile phone user interface for the app.
3. Expand and enhance the lessons contained in the application by incorporating other topics and enlisting the help of teachers, educators, and financial literacy advisers.
4. The app's usefulness can be extended through adding more financial calculators as well as enhancing the calculators already present. For example, future researchers can improve the tax calculator by adding tax exemptions and benefits into the formula.
5. The application can use *Taglish* as its language rather than pure Filipino to make the content more understandable and casual.
6. Games and quizzes, similar to those of Duolingo and Khan Academy, can be added into the application to enhance learning experience.

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## APPENDICES

### Appendix A

#### Validated Survey Questionnaire for the Respondents



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RESEARCH INSTRUMENT VALIDATION FORM  
(Inquiries, Investigations, and Immersions)

---

I. Research Title: Quarta: An App Promoting Financial Literacy for Ordinary Filipinos

II. Research Proponents: Catherine G. Dalusung, Iver John C. Delos Santos, Faith Anne Mier, Adrian Mendoza, Kimberly A. Padilla, Lorin Angela C. Velasco

III. Research Informants: Senior Highschool Students at the Age of 18

IV. Statement of the Problem: The main purpose of this study is to develop a Filipino language desktop application to improve financial literacy for ordinary Filipinos.

Research Question	Proposed Interview/FGD Question	Revision (if any)
1. How may the validity of the QUARTA app be described based on the following criteria; as evaluated by respondents as regard to its: 1.1. Functionality	1.1 a) QUARTA works well without any malfunctions as a whole application. 1.1 b) The application tabs and buttons in QUARTA are clickable and work properly. 1.1 c) The links provided in the tabs by QUARTA function well. 1.1 d) QUARTA operated well and is compatible with my device.	1.1 a) 1.1 b) 1.1 c) Specify how the link can be considered to <i>function well</i> . 1.1 d)
1.2. Usefulness	1.2 a) QUARTA is an effective financial application in supplementing knowledge in terms of financial management 1.2 b) QUARTA helped me to be financially literate by explaining the necessary concepts and notions. 1.2 c) This application helped me to be guided on the right	1.2 a) 1.2 b) 1.2 c)





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	track financially through the tips and directions provided.  1.2 d) QUARTA helped me to acquire accurate calculations and computations to estimate my financial expenditures.	1.2 d)
1.3 User Interface	1.3 a) QUARTA's design is visually pleasing.  1.3 b) Text and Information are organized and easy to understand.  1.3 c) The colors and elements used in the app are visually appealing.  1.3 d) The app's design is unique compared to other financial applications.	1.3 a)  1.3 b)  1.3 c)  1.3 d)
1.4 Ease of Access	1.4 a) It takes too long to load the QUARTA application.  1.4 b) The tabs' location are not difficult to navigate.  1.4 c) The tabs and buttons are easily clicked.  1.4 d) The QUARTA application is easy to download.	1.4 a) Make this a positive statement for consistency.  1.4 b) The tabs' location are easy to navigate.  1.4 c) Elaborate the statement to differentiate it from 1.1.b.  1.4 d)
1.5 User Satisfaction	1.5 a) QUARTA is user-friendly.  1.5 b) I am satisfied with the usefulness of QUARTA.  1.5 c) QUARTA provided enough supplementing knowledge in financial literacy.	1.5 a)  1.5 b)  1.5 c)





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	1.5 d) I would recommend QUARTA to other users.	1.5 d)
--	---	--------

VALIDATED:

MA. ANGELA BEATRICE C. MATEO

(Signature over printed name)  
Ma. Angela Beatrice C. Mateo  
Instructor – Inquiries, Investigations,  
and Immersion

DATE OF VALIDATION:

06 /09 /2022



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## Appendix B

### QUARTA Evaluation Form

The image shows a screenshot of a mobile application titled "Quarta Evaluation Form". The app has a green header bar with the title and a decorative graphic of a sunburst or flag pattern. Below the header, there are two main sections: "Section 1 of 8" and "Section 2 of 8".

**Section 1 of 8:**

### Quarta Evaluation Form

Thank you for trying the Quarta App. We hope that you find it useful and easy to use! We want to hear your opinions on how the app could be improved further. With that, we request that you answer this form to evaluate our app. Thank you!

The app and this form is administered by Group No Cap of Valenzuela City School of Mathematics and Science's 12 - More composed of Kimberly Padilla, Faith Anne Mier, Lorin Velasco, Catherine Dalusung, Adrian Mendoza, and Iver John C. Delos Santos.

Email \*

Valid email

This form is collecting emails. [Change settings](#)

**Data Privacy Clause**

Description (optional)

Sa pagpapatuloy, pumapayag kang ibigay ang iyong personal na impormasyon. Ang lahat ng mga data na kokolektahan at iproproseso ay mananatili lamang sa loob ng Pangkat NoCap. Lahat ng data ay iproproseso sang-ayon sa lahat ng mga batas na umiiral ukol sa personal privacy.

Yes, I agree

Other...

After section 1 Continue to next section ▾

**Section 2 of 8:**

### Personal Information

Pagkakakilanlan

Name \*

Pangalan (Ex. Juan D.S. Dela Cruz)

Age \*

Edad

Short answer text

Have you used the Quarta App? \*

Nagamit mo na ba ang Quarta App? (Before proceeding to the next page, make sure that you have already acquainted yourself with the app.)

Yes

No (Install first at <https://bit.ly/3ztFHna>)

After section 2 Continue to next section

Section 3 of 8

## Usefulness

From 1 to 4, state your level of agreement with the following statements. (Mula 1-4, gaano ka sumasang-ayon sa mga sumusunod na mga pahayag.)

QUARTA is an effective financial application in supplementing knowledge in terms of financial management as a whole.

Epektibo ang QUARTA sa pagdaragdag sa aking kaalaman kaugnay ng financial literacy.

1

2

3

4

Strongly Disagree



Strongly Agree

QUARTA helped me to be financially literate by explaining the necessary concepts and notions.

Nakatulong ang QUARTA sa aking financial literacy sa pamamagitan ng pagpapaliwanag sa akin ng mga importanteng konsepto't aralin.

1

2

3

4

Strongly Disagree



Strongly Agree

QUARTA helped me to be guided on the right track financially through the tips and directions provided.

Nakatulong ang QUARTA na bigyan ako ng tamang mga tips upang mapabuti ang aking financial literacy.

\*\*\*  
QUARTA helped me to acquire accurate calculations and computations to estimate my financial expenditures. \*

Nakatulong ang QUARTA upang makuha ako ang mga wastong kalkulasyon upang matantiya ang aking mga gastusin.

1      2      3      4

Strongly Disagree                              Strongly Agree

After section 3 Continue to next section ▾

#### Section 4 of 8

## Functionality



From 1 to 4, state your level of agreement with the following statements. (Mula 1-4, gaano ka sumasang-ayon sa mga sumusunod na mga pahayag.)

QUARTA works well without any malfunctions as a whole application. \*

Gumagana nang maayos ang QUARTA nang walang anumang mga depekto bilang isang buong aplikasyon.

1      2      3      4

Strongly Disagree                              Strongly Agree

The links provided in the tabs by QUARTA function well as it redirects you to the appropriate \* tab and/or location accordingly.

Ang mga link na ibinigay sa mga tab ng QUARTA ay nabubusan nang maayos.

1      2      3      4

Strongly Disagree                              Strongly Agree

QUARTA operated well and is compatible with my device. \*

Ang QUARTA ay gumana nang maayos at tugma sa aking device.

1      2      3      4

Strongly Disagree                              Strongly Agree

## Ease of Access



From 1 to 4, state your level of agreement with the following statements. (Mula 1-4, gaano ka sumasang-ayon sa mga sumusunod na mga pahayag.)

Loading the QUARTA application only requires a short amount of time. \*

Mabilis gumana ang QUARTA application.

1      2      3      4

Strongly Disagree

Strongly Agree

The tabs' location are easy to navigate. \*

Ang mga lokasyon ng tabs ay hindi mahirap makita.

1      2      3      4

Strongly Disagree

Strongly Agree

The tabs and buttons are easily clicked, has no latency delays and visible enough for the users. \*

Ang mga tabs at buttons ay mabilis na napipindot, hindi naaantala, at mabilis makita.

1      2      3      4

Strongly Disagree

Strongly Agree

The QUARTA application is easy to download. \*

Ang QUARTA application ay mabilis na ma-download.

1      2      3      4

Strongly Disagree

Strongly Agree

## User Satisfaction

X ::

From 1 to 4, state your level of agreement with the following statements. (Mula 1-4, gaano ka sumasang-ayon sa mga sumusunod na mga pahayag.)

QUARTA is user-friendly. \*

Ang QUARTA ay madaling gamitin.

1                  2                  3                  4

Strongly Disagree

Strongly Agree

I am satisfied with the usefulness of QUARTA. \*

Ako ay kuntento sa kapakinabangan ng QUARTA.

1                  2                  3                  4

Strongly Disagree

Strongly Agree

QUARTA provided enough supplementing knowledge in financial literacy. \*

I would recommend QUARTA to other users. \*

Aking irerekомenda sa iba ang QUARTA.

1

2

3

4

Strongly Disagree

Strongly Agree

After section 6 Continue to next section



Section 7 of 8

## User Interface



From 1 to 4, state your level of agreement with the following statements. (Mula 1-4, gaano ka sumasang-ayon sa mga sumusunod na mga pahayag.)

QUARTA's design is visually pleasing \*

Ang disenyo ng aplikasyong QUARTA ay kaaya-aya tingnan.

1

2

3

4

Strongly Disagree

Strongly Agree

Text and Information are organized and easy to understand. \*

Ang mga salita't impormasyon ay maayos at madaling maunawaan.

1

2

3

4

Strongly Disagree

Strongly Agree

The colors and elements used in the app are visually appealing. \*

Ang mga kulay at elementong ginamit ay nakaaakit.

1

2

3

4

Strongly Disagree

Strongly Agree

The app's design is unique compared to other financial applications. \*

Ang disenyo ng QUARTA ay natatangi kumpara sa ibang aplikasyon.

1

2

3

4

Strongly Disagree

Strongly Agree

After section 7 Continue to next section



Section 8 of 8

## User Suggestions



Description (optional)

What other interventions and improvements to the app can you suggest?

Long answer text

## Appendix C

### Respondents' Pre Assessment and Post Assessment Scores

#### PRE-ASSESSMENT

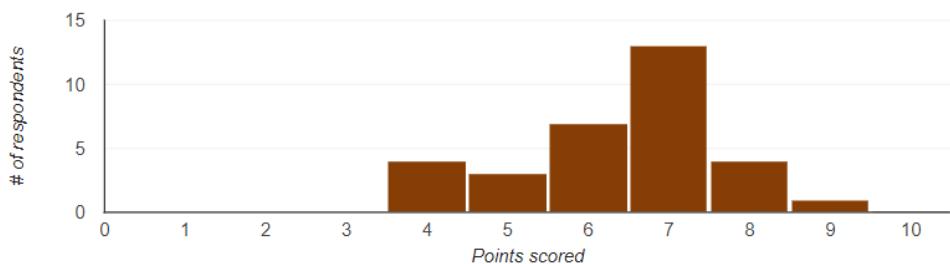
##### Insights

Average  
6.41 / 10 points

Median  
7 / 10 points

Range  
4 - 9 points

Total points distribution



#### POST ASSESSMENT

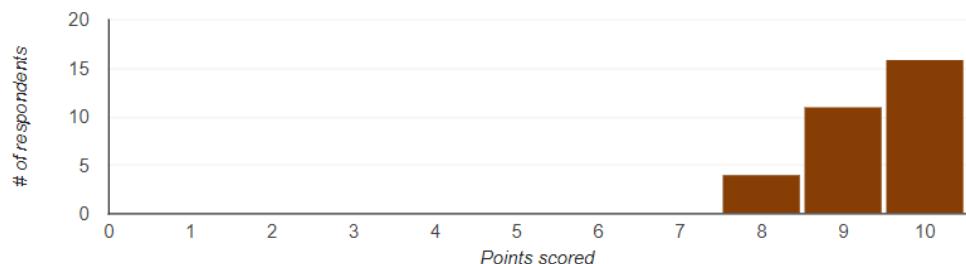
##### Insights

Average  
9.39 / 10 points

Median  
10 / 10 points

Range  
8 - 10 points

Total points distribution



## Appendix D

### Signed Consent Forms



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#### REQUEST FOR RESPONDENT'S APPROVAL

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June 1, 2022

Dear Respondents,

Good day!

As part of the requirements in the subject Capstone (Quantitative Research), we are conducting an innovative research study entitled ***QUARTA: An App Promoting Financial Literacy for Ordinary Filipinos.***

The objective of our study is to develop an effective Filipino language desktop application named QUARTA to enhance the financial literacy of Filipinos not under the age of 18 who are eligible enough to gain essential understanding on the utilization of the application.

With this, we are asking for your precious time to participate as our respondent and fill in all the necessary information regarding the validity of the application upon utilization, which are indicated in our questionnaire that is significant in the completion of our study.

Rest assured that all data and/or personal information gathered will be kept confidential.

May this request merit your kind consideration and approval.

Thank you very much.

Respectfully,

**FAITH ANNE MIER**  
Research Group Leader (12-More),  
Valenzuela City School of Mathematics and Science

Noted:

**MARY ANN V. DAYRIT**  
Teacher/Adviser, Capstone

**JAIME S. DE VERA JR.**  
Principal III

Approved:

**ROMEO-JEREMAEAH L. ABELLERA**  
Respondent



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Research Group Leader (12-More),  
Valenzuela City School of Mathematics and Science

Noted:

**MARY ANN V. DAYRIT**  
Teacher/Adviser, Capstone

**JAIME S. DE VERA JR.**  
Principal III

Approved:

**JOHN FELIX SYMON S. AMBONG**  
Respondent



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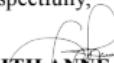
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**FAITH ANNE MIER**  
Research Group Leader (12-More),  
Valenzuela City School of Mathematics and Science

Noted:

**MARY ANN V. DAYRIT**  
Teacher/Adviser, Capstone

**JAIME S. DE VERA JR.**  
Principal III

Approved:

  
**MARYAM LOUISE A. BALABAG**  
Respondent



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Respectfully,

  
**FAITH ANNE MIER**  
Research Group Leader (12-More),  
Valenzuela City School of Mathematics and Science

Noted:

**MARY ANN V. DAYRIT**  
Teacher/Adviser, Capstone

**JAIME S. DE VERA JR.**  
Principal III

Approved:

  
**NAOMIE G. BELLO**  
Respondent



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REQUEST FOR RESPONDENT'S APPROVAL

---

June 1, 2022

Dear Respondents,

Good day!

As part of the requirements in the subject Capstone (Quantitative Research), we are conducting an innovative research study entitled ***QUARTA: An App Promoting Financial Literacy for Ordinary Filipinos.***

The objective of our study is to develop an effective Filipino language desktop application named QUARTA to enhance the financial literacy of Filipinos not under the age of 18 who are eligible enough to gain essential understanding on the utilization of the application.

With this, we are asking for your precious time to participate as our respondent and fill in all the necessary information regarding the validity of the application upon utilization, which are indicated in our questionnaire that is significant in the completion of our study.

Rest assured that all data and/or personal information gathered will be kept confidential.

May this request merit your kind consideration and approval.

Thank you very much.

Respectfully,

**FAITH ANNE MIER**  
Research Group Leader (12-More),  
Valenzuela City School of Mathematics and Science

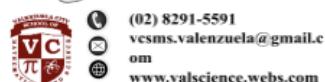
Noted:

**MARY ANN V. DAYRIT**  
Teacher/Adviser, Capstone

**JAIME S. DE VERA JR.**  
Principal III

Approved:

**SAMANTHA T. CALMA**  
Respondent



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vesms.valenzuela@gmail.com  
www.valscience.webs.com



**Republic of the Philippines**  
**Department of Education**  
National Capital Region Division of City Schools - Valenzuela  
Valenzuela City School of Mathematics and Science  
A. Pablo St., Malinta, Valenzuela City

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**FAITH ANNE MIER**  
Research Group Leader (12-More),  
Valenzuela City School of Mathematics and Science

Noted:

**MARY ANN V. DAYRIT**  
Teacher/Adviser, Capstone

**JAIME S. DE VERA JR.**  
Principal III

Approved:

  
**GIAN RAPHAEL B. CASTRO**  
Respondent



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om  
www.valscience.webs.com



Republic of the Philippines  
Department of Education  
National Capital Region Division  
of City Schools - Valenzuela  
Valenzuela City School of Mathematics and Science  
A. Pablo St., Malinta, Valenzuela City

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May this request merit your kind consideration and approval.

Thank you very much.

Respectfully,

**FAITH ANNE MIER**  
Research Group Leader (12-More),  
Valenzuela City School of Mathematics and Science

Noted:

**MARY ANN V. DAYRIT**  
Teacher/Adviser, Capstone

**JAIME S. DE VERA JR.**  
Principal III

Approved:

**WILLIANNE LORRAINE M. DONAYRE**  
Respondent



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www.valscience.webs.com



**Republic of the Philippines**  
**Department of Education**  
**National Capital Region Division of City Schools - Valenzuela**  
**Valenzuela City School of Mathematics and Science**  
A. Pablo St., Malinta, Valenzuela City

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**REQUEST FOR RESPONDENT'S APPROVAL**

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June 1, 2022

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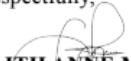
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Rest assured that all data and/or personal information gathered will be kept confidential.

May this request merit your kind consideration and approval.

Thank you very much.

Respectfully,

  
**FAITH ANNE MIER**  
Research Group Leader (12-More),  
Valenzuela City School of Mathematics and Science

Noted:

**MARY ANN V. DAYRIT**  
Teacher/Adviser, Capstone

**JAIME S. DE VERA JR.**  
Principal III

Approved:

  
**RYAN V. GARCIA**  
Respondent



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www.valscience.webs.com



**Republic of the Philippines**  
**Department of Education**  
National Capital Region Division  
of City Schools - Valenzuela  
Valenzuela City School of Mathematics and Science  
A. Pablo St., Malinta, Valenzuela City

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**REQUEST FOR RESPONDENT'S APPROVAL**

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June 1, 2022

Dear Respondents,

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Rest assured that all data and/or personal information gathered will be kept confidential.

May this request merit your kind consideration and approval.

Thank you very much.

Respectfully,

  
**FAITH ANNE MIER**  
Research Group Leader (12-More),  
Valenzuela City School of Mathematics and Science

Noted:

**MARY ANN V. DAYRIT**  
Teacher/Adviser, Capstone

**JAIME S. DE VERA JR.**  
Principal III

Approved:

  
**CHRISTIAN DAYNE R. MENDERICO**  
Respondent



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www.valscience.webs.com

## Appendix E

**Table 1**

**Table 1.1 Frequency Distribution of Descriptive Measures of the Validation of QUARTA as Evaluated by the Respondents in Terms of its Functionality**

Items	Responses				Mean	Verbal Interpretation
	4	3	2	1		
<b>1. Functionality</b>						
1.1 QUARTA works well without any malfunctions as a whole application.	20	8	2	0	3.60	Strongly Agree
1.2 The application tabs and buttons in QUARTA are clickable and work properly.	24	5	0	1	3.73	Strongly Agree
1.3 The links provided in the tabs by QUARTA function well.	24	4	1	1	3.70	Strongly Agree
1.4 QUARTA operates well and is compatible with my device.	20	9	0	1	3.60	Strongly Agree
	<b>Sub-Total Mean</b>			3.66	Strongly Agree	

**Table 1.2 Frequency Distribution of Descriptive Measures of the Validation of QUARTA as Evaluated by the Respondents in Terms of its Usefulness**

Items	Responses				Mean	Verbal Interpretation
	4	3	2	1		
<b>2. Usefulness</b>						
2.1 QUARTA is an effective financial application in supplementing knowledge in terms of financial management	21	8	0	1	3.63	Strongly Agree
2.2 QUARTA helped me to be financially literate by explaining the necessary concepts and notions.	19	10	0	1	3.57	Strongly Agree
2.3 This application helped me to be guided on the right track financially through the tips and directions provided.	23	6	0	1	3.70	Strongly Agree
2.4 QUARTA helped me to acquire accurate calculations and computations to estimate my financial expenditures.	27	2	0	1	3.83	Strongly Agree
	<b>Sub-Total Mean</b>			3.68	Strongly Agree	

**Table 1.3 Frequency Distribution of Descriptive Measures of the Validation of QUARTA as Evaluated by the Respondents in Terms of its User Interface**

Items	Responses				Mean	Verbal Interpretation
	4	3	2	1		
<b>3. User Interface</b>						
3.1 QUARTA's design is visually pleasing.	20	5	5	0	3.50	Strongly Agree
3.2 Text and Information are organized and easy to understand.	18	11	1	0	3.53	Strongly Agree
3.3 The colors and elements used in the app are visually appealing.	18	9	3	0	3.50	Strongly Agree
3.4 The app's design is unique compared to other financial applications.	20	6	3	1	3.50	Strongly Agree
	<b>Sub-Total Mean</b>				3.51	Strongly Agree

**Table 1.4 Frequency Distribution of Descriptive Measures of the Validation of QUARTA as Evaluated by the Respondents in Terms of its Ease of Access**

Items	Responses				Mean	Verbal Interpretation
	4	3	2	1		
<b>4. Ease of Access</b>						
4.1 Loading the QUARTA application only requires a short amount of time.	20	8	2	0	3.60	Strongly Agree
4.2 The tabs' location are not difficult to navigate.	18	11	0	1	3.70	Strongly Agree
4.3 The tabs and buttons are easily clicked.	23	4	3	0	3.67	Strongly Agree
4.4 The QUARTA application is easy to download.	24	5	1	0	3.77	Strongly Agree
	<b>Sub-Total Mean</b>				3.68	Strongly Agree

**Table 1.5 Frequency Distribution of Descriptive Measures of the Validation of QUARTA as Evaluated by the Respondents in Terms of its User Satisfaction**

Items	Responses				Mean	Verbal Interpretation
	4	3	2	1		
<b>5. Usefulness</b>						
5.1 QUARTA is user-friendly.	26	3	0	1	3.80	Strongly Agree
5.2 I am satisfied with the usefulness of QUARTA.	20	9	1	0	3.63	Strongly Agree
5.3 QUARTA provided enough supplementing knowledge in financial literacy.	23	5	1	1	3.67	Strongly Agree
5.4 I would recommend QUARTA to other users.	22	6	1	1	3.63	Strongly Agree
				<b>Sub-Total Mean</b>	3.68	Strongly Agree

## Appendix F

**Table 2 T-Test Computation**

	A	B	C	D	E	F	G
1	6	10		t-Test: Paired Two Sample for Means			
2	5	10					
3	7	9					
4	6	9					
5	7	8					
6	7	10					
7	6	10					
8	7	10					
9	5	8					
10	7	10					
11	7	9					
12	7	9					
13	9	10					
14	5	10					
15	6	10					
16	7	10					
17	8	8					
18	4	8					
19	6	9					
20	7	10					
21	7	9					
22	8	10					
23	7	9					
24	7	9					
25	8	10					
26	8	10					
27	4	10					
28	4	9					
29	6	10					
30	4	9					

Sheet1

## **Appendix G**

**Table 3**

**Table 3. Frequency Distribution and Ranking of the User Suggestions by the Respondents**

<b>Suggestions</b>	<b>Frequency</b>	<b>Rank</b>
1. Improve the interface design and over-all appearance of the application.	8	1
2. Increase application size.	4	2
3. Broaden the topics and scope of application for more expanded coverage of lessons.	3	3
4. Make the application more interactive to its users.	1	4.5
5. Proper placement of elements by adding logo in the application's preview in the task bar.	1	4.5

## Appendix H

### QUARTA Codes

Quarta - NetBeans IDE 8.2

```

import java.awt.Color;

/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */

/**
 *
 * @author kimbe
 */
public class calculator extends javax.swing.JFrame {

    /**
     * Creates new form calculator
     */
    double firstnum;
    double secondnum;
    double result;
    String operations;
    public calculator() {
        initComponents();
    }

    /**
     * This method is called from within the constructor to initialize the form.
     */
    @Override
    protected void initComponents() {
        // TODO add your handling code here:
    }

    /**
     * This method is called from within the constructor to initialize the form.
     */
    @Override
    public void actionPerformed(ActionEvent evt) {
        // TODO add your handling code here:
        if (evt.getSource() == seven) {
            display.setText(display.getText() + "7");
        }
        else if (evt.getSource() == eight) {
            display.setText(display.getText() + "8");
        }
        else if (evt.getSource() == nine) {
            display.setText(display.getText() + "9");
        }
        else if (evt.getSource() == backspace) {
            display.setText(display.getText().substring(0, display.getText().length() - 1));
        }
        else if (evt.getSource() == point) {
            display.setText(display.getText() + ".");
        }
        else if (evt.getSource() == zero) {
            display.setText(display.getText() + "0");
        }
        else if (evt.getSource() == plus) {
            operations = "+";
            firstnum = Double.parseDouble(display.getText());
            display.setText("");
        }
        else if (evt.getSource() == minus) {
            operations = "-";
            firstnum = Double.parseDouble(display.getText());
            display.setText("");
        }
        else if (evt.getSource() == multiply) {
            operations = "*";
            firstnum = Double.parseDouble(display.getText());
            display.setText("");
        }
        else if (evt.getSource() == divide) {
            operations = "/";
            firstnum = Double.parseDouble(display.getText());
            display.setText("");
        }
        else if (evt.getSource() == decimal) {
            operations = ".";
            firstnum = Double.parseDouble(display.getText());
            display.setText("");
        }
        else if (evt.getSource() == equals) {
            secondnum = Double.parseDouble(display.getText());
            if (operations.equals("+")) {
                result = firstnum + secondnum;
            }
            else if (operations.equals("-")) {
                result = firstnum - secondnum;
            }
            else if (operations.equals("*")) {
                result = firstnum * secondnum;
            }
            else if (operations.equals("/")) {
                result = firstnum / secondnum;
            }
            display.setText(result + "");
        }
    }
}

```

Quarta - NetBeans IDE 8.2

```

private void backActionPerformed(java.awt.event.ActionEvent evt) {
    // TODO add your handling code here:
    String backspace=null;
    if(display.getText().length()>0){
        StringBuilder strB = new StringBuilder(display.getText());
        strB.deleteCharAt(display.getText().length()-1);
        backspace = strB.toString();
        display.setText(backspace);
    }
}

private void nineActionPerformed(java.awt.event.ActionEvent evt) {
    // TODO add your handling code here:
    String EnterNumber = display.getText();
    if (EnterNumber == "") {
    }
    else {
        EnterNumber = display.getText() + nine.getText();
        display.setText(EnterNumber);
    }
}

private void sevenActionPerformed(java.awt.event.ActionEvent evt) {
    // TODO add your handling code here:
    if(EnterNumber == "") {
    }
}

```

Quarta - NetBeans IDE 8.2

File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help

calculator.java currency.java discounts.java home.java homepage.java laws.java simple.java

Source Design History

```
1  /*
2   * To change this license header, choose License Headers in Project Properties.
3   * To change this template file, choose Tools | Templates
4   * and open the template in the editor.
5   */
6  import java.awt.Color;
7  import java.awt.event.KeyEvent;
8  import java.text.NumberFormat;
9  import javax.swing.JOptionPane;
10 /*
11 *
12 * @author kimbe
13 */
14 public class currency extends javax.swing.JFrame {
15     double US_Dollar= 0.0189;
16     double European_Union = 0.0176;
17     double British_Pound = 0.0150;
18     double Indonesian_Rupiah = 273.9809;
19     double Japanese_Yen = 2.5337;
20     double SouthKorean_Won= 23.7235;
21     double Saudi_Riyal= 0.0708;
22
23
24
25     String[] currencyUnits = {
26         "units",
27         "British Pound (GBP)",
28         "Euro (EUR)",
29         "Indonesian Rupiah (IDR)",
30         "Japanese Yen (JPY)",
31         "South Korean Won"
32     };
33 }
```

Activate Windows  
Go to Settings to activate Windows.

Output

Type here to search

Quarta - NetBeans IDE 8.2

File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help

calculator.java currency.java discounts.java home.java homepage.java laws.java simple.java

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```
1  /*
2   * To change this license header, choose License Headers in Project Properties.
3   * To change this template file, choose Tools | Templates
4   * and open the template in the editor.
5   */
6  import java.awt.Color;
7  import java.awt.event.KeyEvent;
8  import java.text.NumberFormat;
9  import javax.swing.JOptionPane;
10 /*
11 *
12 * @author kimbe
13 */
14 public class discounts extends javax.swing.JFrame {
15
16     /*
17      * Creates new form simple
18      */
19     public discounts() {
20         initComponents();
21     }
22
23
24     /*
25      * This method is called from within the constructor to initialize the form.
26      * WARNING: Do NOT modify this code. The content of this method is always
27      * regenerated by the Form Editor.
28      */
29     @SuppressWarnings("unchecked")
30     Generated Code
```

Activate Windows  
Go to Settings to activate Windows.

Output

Type here to search

Quarta - NetBeans IDE 8.2

File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help

calculator.java currency.java discounts.java home.java homepage.java laws.java simple.java...

Source Design History

```
1 import java.awt.Color;
2 import java.awt.Desktop;
3 import java.io.IOException;
4 import java.net.URI;
5 import java.net.URISyntaxException;
6 import java.net.URL;
7
8 /*
9  * To change this license header, choose License Headers in Project Properties.
10 * To change this template file, choose Tools | Templates
11 * and open the template in the editor.
12 */
13
14 /**
15  * 
16  * @author kimbe
17  */
18 public class home extends javax.swing.JFrame {
19
20     /**
21      * Creates new form home
22      */
23
24     public home() {
25         initComponents();
26     }
27
28     /**
29      * This method is called from within the constructor to initialize the form.
30      */
31 }
```

Activate Windows  
Go to Settings to activate Windows.

Quarta - NetBeans IDE 8.2

File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help

calculator.java currency.java discounts.java homepage.java laws.java simple.java...

Source Design History

```
1 import java.awt.Color;
2 import javax.swing.ImageIcon;
3
4 /*
5  * To change this license header, choose License Headers in Project Properties.
6  * To change this template file, choose Tools | Templates
7  * and open the template in the editor.
8 */
9
10 /**
11  *
12  *
13  * @author kimbe
14 */
15 public class homepage extends javax.swing.JFrame {
16
17     /**
18      * Creates new form homepage
19      */
20     public homepage() {
21         initComponents();
22     }
23
24
25     /**
26      * This method is called from within the constructor to initialize the form.
27      * WARNING: Do NOT modify this code. The content of this method is always
28      * regenerated by the Form Editor.
29     */
30 }
```

Activate Windows  
Go to Settings to activate Windows.

homepage >

Output

Type here to search

29°C 9:01 PM 6/11/2022

## Appendix I

### Statistician Certification



**Republic of the Philippines**  
**Department of Education**

National Capital Region  
Division of City Schools - Valenzuela  
Valenzuela City School of Mathematics and Science  
A. Pablo St., Malinta, Valenzuela City

---

---

#### REQUEST FOR STATISTICAL REVIEW OF DATA ANALYSIS

---

June 12, 2022

**ROMEO M. MICLAT**

Teacher I – BS Civil Engineering  
Bachelor of Secondary Education  
Valenzuela City School of Mathematics and Science  
A. Pablo St., Malinta, Valenzuela City

Dear Sir,

As part of the requirements in the subject Capstone (Quantitative Research), we are conducting a research study entitled *Quarta: An App Promoting Financial Literacy for Ordinary Filipinos*.

In view of this, we would like to seek your expertise in validating our statistical approach in analyzing our collected data.

Herewith is the accomplished data analysis for your perusal and comment.

May this request merit your kind consideration and approval.

Thank you very much.

Respectfully,

**FAITH ANNE MIER**

Research Group Leader (12 – More),  
Valenzuela City School of Mathematics and Science

Noted by:

**MARY ANN V. DAYRIT**  
Teacher/Adviser, Capstone

**JAIME S. DE VERA JR.**  
Principal III, VCSMS

Approved by:

**ROMEO M. MICLAT**  
Teacher I - BS Civil Engineering



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## Appendix J

### Grammarians Certification



#### Republic of the Philippines Department of Education

National Capital Region  
Division of City Schools - Valenzuela  
Valenzuela City School of Mathematics and Science  
A. Pablo St., Malinta, Valenzuela City

---

#### REQUEST FOR GRAMMARIAN REVIEW OF RESEARCH PAPER

---

June 12, 2022

**LEINETH FEDILO ARROYO**  
AB English or Bachelor of Arts  
National College of Business and Arts  
Quezon City

Dear Madam,

As part of the requirements in the subject Capstone, we are conducting a research study entitled *Quarta: An App Promoting Financial Literacy for Ordinary Filipinos*.

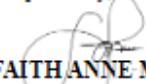
In view of this, we would like to seek your expertise in reviewing and proofreading our research paper.

Herewith is the accomplished research paper for your perusal and comment.

May this request merit your kind consideration and approval.

Thank you very much.

Respectfully,

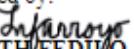
  
**FAITH ANNE MIER**  
Research Group Leader (12 – More),  
Valenzuela City School of Mathematics and Science

Noted by:

**MARY ANN V. DAYRIT**  
Teacher/Adviser, Capstone

**JAIME S. DE VERA JR.**  
Principal III, VCSMS

Approved by:

  
**LEINETH FEDILO ARROYO**  
AB English or Bachelor of Arts



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## Appendix K

### Plagiarism Test Report

#### Plagiarism Scan Report

Report Generated on: Jun 12,2022



#### Content Checked for Plagiarism

##### CHAPTER I

##### THE PROBLEM AND ITS BACKGROUND

###### Introduction

Financial literacy is the capacity to comprehend and effectively employ one's financial skills, including personal financial management, budgeting, and investing (Fernando, 2021). Being financially literate implies that a person is familiar with personal finance capable of applying such knowledge in dealing with their finances; as such, it is an essential skill in today's modern economy (NEDA-CARAGA, 2018). A local study also found a significant relationship between financial literacy and financial behavior, indicating that those who have inadequate financial literacy are more likely to commit bad and risky financial decisions (Castro, Salamat & Tabor, 2020). As investors and financial managers say, ignorance is the greatest risk in managing one's finances (Tilan & Cabal, 2021).

Despite its necessity, a study by the World Bank in 2015 found that only 25% of Filipino adults are financially literate, a far cry from 59 percent in Singapore, 52 percent in Myanmar, and 36 percent in Malaysia (Villanueva, 2021). Out of seven financial literacy questions, the average Filipino only managed to correctly answer three. Most also have little knowledge of financial concepts like inflation, investment risks, and returns (Agcaoili, 2021). This lack of financial literacy has made Filipinos more susceptible to investment scams and at risk of mismanaging credit. For example, data from the Bangko Sentral suggest that 1 in every 100 Filipinos has been a victim of investment scams leading to an economic loss of PhP 25 billion (Villanueva, 2021). The World Bank's findings are also supported by local research into the topic of financial literacy. A study by Castro, Salamat, and Tabor (2020) found that among young professionals, only 35% have adequate financial literacy. The country's financial indicators also reinforce these findings. For example, a study by the Bangko Sentral ng Pilipinas (2019) found that although formal account ownership increased, it remained at a relatively low 29%. The report also found that only 47% of Filipinos have enough savings.

The lackluster level of national financial literacy has led the government to push to improve it by introducing a range of programs and policies (Hani, 2021). For example, the Department of Education has embarked upon a program to expand financial education in the country's educational curriculum. This program entails the inclusion of key financial skills such as earning, saving, spending, budgeting, donating, investing, planning, consumer protection, and entrepreneurship into the curriculum (Department of Education, 2021). However, this effort is hampered by the inadequacy of financial literacy among Filipino teachers as suggested by multiple local studies (Tilan & Cabal, 2021; Jaber & Delayco, 2021).

To help meet the problem, the researchers will aim to develop a Filipino language desktop application that is aimed at improving financial literacy for ordinary Filipinos. It can also serve as a supplementary learning material in the Department of Education's drive to improve financial literacy among Filipino students. The app will contain various pieces of information essential for financial literacy, such as tips on how to save money, financial institutions in the country, etc. It will also feature helpful financial tools such as a basic calculator, tax calculator, currency converter, interest calculator, real-time stock prices, among others. The study will use a mixed-method, utilizing qualitative feedback and quantitative data to evaluate the app's usefulness.

###### Statement of the Problem

The main purpose of this study was to develop a Filipino language desktop application to improve financial literacy for ordinary Filipinos. It aimed to answer these research questions:

How may the validity of the Quarta app be described based on the following criteria; as evaluated by respondents as regard to its:

Functionality

Usefulness

User Interface

Ease of Access

User Satisfaction

Is there a significant difference between the financial literacy of the respondents before and after using Quarta?

What other interventions and improvements to the app may be proposed based on the findings of the study?

**Significance of the Study**

This study aimed to develop a Filipino-language desktop application that helped ordinary Filipinos to improve their financial literacy. This research specifically aimed to benefit the following:

Local Consumers. Ordinary Filipino residents benefited from the application in terms of budgeting, spending control, and making smarter lending and investment selections.

Entrepreneurs. This would be beneficial to local vendors and merchants who are just getting started with their business and commercial financing.

Students. As a starting point, the study expanded their perspective about finances and broadened the learners' understanding of economic principles as it prepared them to be financially literate.

Teachers. This research could be utilized as a supplementary learning material for financial education and enhance knowledge.

Financial Advocates and Social Welfare System. Quarta helped financial organizations to lessen their financial stress and anxiety in terms of budget structuring and money allotment.

Future Researchers. This study may be used by future researchers in the same field because it provides data that can serve as a framework for research-related studies.

**Scope and Limitations**

This study covered the design and development of a Filipino-language desktop application for financial skill improvement and smart money management purposes that was tested by employing the computer. The program included three main categories or tabs. Each tab provided organized contents and information in relevance to its functions such as various pointers on how to manage a budget, handle finances right, etc. The calculator was subcategorized according to purpose in order to provide a well-rounded application.

The researchers aimed to test the application through desktop/laptops only because of limited resources. The application was limited to people who know the Filipino language considering that Quarta is a Filipino-language desktop application. Additionally, the researchers were in contact virtually due to the pandemic, limiting various strategies to be performed in conducting the study.

#### Financial Literacy Definition - Investopedia

- Financial literacy is the ability to understand and effectively use various financial skills, including personal financial management, budgeting, and investing. Financial literacy is the foundation...

<https://www.investopedia.com/terms/f/financial-literacy.asp>

78%

#### Stimulating Willingness to Communicate for Learners of English

It aimed to answer these research questions:

<https://5dok.org/document/4zp27m4y-stimulating-willingness-communicate-literature-possibilities-facilitating-willingness-communicate.html>

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#### Definition of Terms

This part of the research paper contains relevant terms used by the researchers in the study. For the readers of this paper to understand better, the conceptual and operational contexts specified show the use and purpose of the words.

**Filipinos.** According to Merriam-Webster, Filipinos are the citizens of the Republic of the Philippines.

Filipinos are the only qualified respondents and their financial literacy is the main focus of this study.

**Finance.** Corporate Finance Institute defines finance as the management of money and is composed of investing, borrowing, lending, budgeting, saving, and forecasting. Finances of Filipinos will also be observed when conducting this study.

**Financial Education.** According to Sudheer (2018), it is the ability to understand how money works. The application that will be developed by the researchers can serve as a supplementary learning material to expand the financial education among Filipino students.

**Financial Literacy.** It refers to the knowledge about finances and financial behavior (Lusardi, 2019). One of the aims of this study is to improve the financial literacy of Filipinos by using this application.

**Quarta.** Philippine Languages translates kwarta into money. The researchers will develop a Financial literacy desktop application in the Filipino language which called Quarta.



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#### CHAPTER II

##### REVIEW OF RELATED LITERATURE AND STUDIES

This chapter presents the relevant theories and related literature and studies after the thorough and in-depth search done by the researchers. This includes the synthesis of gathered resources for each variable. Conceptual framework is also illustrated to guide the readers about the approach that was in conducting this study.

###### Financial Literacy Status in the Philippines

Financial literacy is defined as the certain comprehension of concepts involving saving, investing and debt that results in an overall state of financial well-being and confidence (McGurran, 2021). In the Philippines, Standard & Poor (S&P) revealed that only 25% of Filipinos in 2016 are financially literate, and over 75 million are illiterate when it comes to the topic of savings accounts, insurance, and other knowledge regarding money. Although the public and private sector make efforts in disseminating information about financial literacy, between 8 to 10 percent only invests. (Laurus Enterprises, 2018). The Philippines is known to have a developing economy, but the journey to being a financially literate country is yet further away. Before the COVID-19 strikes, the Bangko Sentral ng Pilipinas (BSP) conducted a Financial Inclusion Survey (FIS) in 2019 and the results have shown that Filipino adults only got one (1) correct answer out of three (3) questions that constitute 41%. A total of 8% got a perfect score and 24% got no right answers (Manila Standard, 2020). Filipinos with knowledge on inflation constitute 55% while one third of the respondents have knowledge on computing for interests (BSP-CLIA, 2019). This reflects lack of awareness about the effects of inflation, compound interests, and diversification of investments. Many people are clueless when it comes to their availability and accessibility, and some decided to dismiss their value as coping mechanisms and risk management. According to NEDA (2018), one prominent Filipino mentality is spending cash upon salaries before saving it. Nothing is left and saved after expending the money. During the pandemic, a total of 48 percent of Filipino adults had their savings, but 68% just put their savings at home. Furthermore, data revealed that Filipino adults constitute merely 23% of Filipinos with bank accounts. Filipino adults that employ electronic payments is merely 4 percent and only 3 percent invest in financial instruments (Agcaolli, 2020). Moreover, only two percent have credit cards, compared to the neighboring countries, which are Vietnam and Malaysia that comprise 20% of their population. It is expected that many Filipinos are dealing with problems about everyday events elsewhere (Sprout Solutions, 2021). Due to the financial literacy gap, the Department of Education (DepEd) promulgated the Financial Education Policy under DepEd Order No. 022. It seeks to assist students, teachers, and non-teaching personnel to include financial literacy as a substantial part of education (DepEd, 2021).

According to Zucchi, et al. (2022), Financial literacy is critical not just because it lays the groundwork for making informed financial decisions, but also because financial responsibility is on the rise. Employers used to manage their employees' retirement savings, for example. Self-directed retirement funds allow judgments, and maintain healthy spending and budgeting habits with this information, which will contribute to financial wellness in the long run. The most important benefit of financial literacy is that it equips us with the knowledge and skills we need to effectively manage our money—structured budgeting, effective saving, reduction of expenses, and being equipped to reach financial goals, or, simply put, financial stability (CFI Education Inc., 2022).

Rose (2021) said that financial literacy gives users a basic understanding of financial principles to help them make better financial decisions in the real world. On the other hand, the specific benefits of financial literacy will vary depending on a person's circumstances, but here are a few examples of scenarios where financial knowledge can be beneficial according to Rose (2021):

- Putting money aside for retirement
- Creating and sticking to a budget that is balanced
- Purchasing assets
- Selecting an insurance
- Investing
- Debt management
- Credit cards utilization

#### Literacy Through Digital Information

Communication is the vital aspect of the process of conveying information. The users must also be knowledgeable in technology to receive literacy through digital information (Western Sydney University, 2020). Acquiring details through digital technology can make communication speeds faster because they can be accessed with one click. Since obtaining information is easier in these modern times, more doors of opportunity in learning can be opened (Goodman, 2022).

One of these learning opportunities is digital financial literacy. This concept is going to become an increasingly significant part of education. Because of the trend of moving from defined-benefit to defined-contribution pension plans, people will have to manage their own retirement savings and pensions more. Understanding of digital financial products and services, awareness of digital financial risks, knowledge of digital financial risk control, and knowledge of consumer rights and redress procedures are all proposed as characteristics of digital financial literacy (Morgan et al., 2019).

Technology can be a great help in enhancing financial literacy as it incorporates more financial aspects. With the current financial information and better accessibility to financial literacy resources, people can track and manage their money carefully with secured accounts. This allows people of all ages to have a better understanding of their personal financial conditions by exposing them to technology that increases financial literacy (Impact, 2019).

FINANCIAL LITERACY.edited.docx - Running head - Course ...6.docx - What Is Financial Literacy? Financial literacy is the ...

Employers used to manage their employees' retirement savings, for example.  
<https://www.coursehero.com/file/149570806/FINANCIAL-LITERACYediteddocx/>

100%

#### Financial Education Knowledge Websites In the US

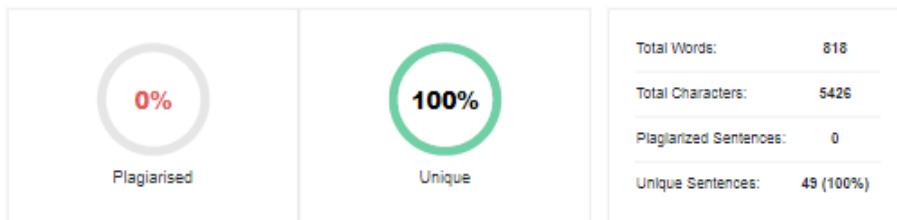
Any increase in financial literacy will have a significant impact on people's ability to provide for their families in the future.

<https://www.stockhastix.com/finance/financial-education-knowledge-websites-in-the-us/>

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### The Usage of Applications in Financial Literacy

Ever since the advent of application development, educators have utilized mobile apps to supplement and enhance lesson learning. The use of such applications gives users more flexibility; it gives them the choice of where and when to study (Farrah & Ala Khalid, 2018).

The benefits of mobile applications in learning is evidenced by the development of numerous educational applications. These applications generally range from a more gamified to a more module-like interface. Some examples of more gamified educational applications include the language learning app Duolingo and programming learning app SoloLearn. These educational platforms and apps incentivize learning by lessons followed by fun gamified features such as progress charts, levels, and points (Pendergrass, 2021). Studies such as those by Hamari & Koivisto (2015a & 2015b), Hamari et al. (2014), and Hanus & Fox (2015), found that mobile applications positively affect an individual's learning outcomes. Gamification triggers behavioral changes that improves learner's motivation (Hamari et al., 2014; Hamari & Koivisto, 2015b). This increase in motivation improves user engagement (Shivneta, 2017; Kwon et al., 2015) as well as learning effectiveness and efficiency (Bayuk et al., 2019).

These gamified apps incorporate elements which can be classified into three main types: the website, process-related and social-related game components (Gatautis et al., 2016). Website components include the functional aspects of the application, such as the visuals and characters of the app. Duolingo's badges and mascot are examples of website components. Social-related facets refer to the aspects of the app that facilitate interaction between its users. Duolingo's leaderboard feature, which ranks all the users of the app, is an example of a social-related component. The app's process-related components provide users with their progress. This is usually done through a visual progress bar or by 'leveling-up' through the app. Studies such as those of Yang (2020), Bayuk et al. (2019), and deCos (2015) show that finance-related applications can utilize gamified elements to enhance the user's learning experience. In financial literacy applications, website components can include customized player avatars, achievements, badges, and other visual elements (Bayuk et al., 2019). A meta analysis of 24 studies on gamification done by Hamari et al. (2014) found that gamified apps most commonly incorporate points, leaderboards, and badges. Their study also found that the inclusion of social-related components fuel competition among players increasing user motivation.

On the other hand, module-like applications are mini-lectures and discussion points crammed into one app. These apps can be compared to e-books with some basic interactive features. A great example of a module-like application is Khan Academy. Khan Academy requires users to create an account. After creating one, the user selects a course. Like a regular subject a course is subdivided into progressing lessons. Each lesson contains readings, practice exercises, instructional videos, and a personalized learning dashboard that empower learners to study at their own pace in and outside of the classroom (Samonte et al., 2017; Khan Academy, 2021). TedEd is another example of a module-like learning app. The application, in general, is simpler than Khan Academy. After creating a profile, the user can select from among a variety of course choices. Each course then contains a video lesson followed by a short quiz. If the player passes the quiz, they will see any additional recommended resources about the lesson and a discussion forum that enables the user to communicate with other TedEd users (TedEd, 2022).

An example of a Filipino-made financial literacy app is Kashring: A Financial Literacy Microlecture App by Samonte et al. (2017). The app is divided into two main parts: Learn and Games. The learn part contains readings that can help the users improve their financial literacy. The knowledge learned from the Learn part can then be evaluated during the Games and Activity part which contains six games. Each game

begins with instructions. The user then needs to enter their name to start the game. Quiz results are instantly revealed after finishing the game. The Philippines' central bank also recently released a financial literacy app entitled Financial Literacy for the Filipino or Fili. The interface is simple and only has limited features. It has five main components: a Risk Tolerance Calculator, a Cash Flow Tracker, a Portfolio Recommender, a Portfolio Simulator, and Investor Education (Bureau of Treasury, 2022). The features of the app are criticized for being more of financial planning calculators than financial literacy.

With Quarta, the researchers aim to strike a balance between a gamified and module-like interface. The target app will also incorporate tools useful for financial planning, similar to the Bangko Sentral's recently developed Financial Literacy for the Filipino (Fili) app (Bureau of Treasury, 2022). Unlike the other applications mentioned, Quarta will be published in the Filipino language as a study by Curugan et al. (2020) suggests that the use of Filipino in student financial education programs improve learning outcomes and results in a better understanding and grasp of the lesson.



No Plagiarism Found

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Plagiarised

100%

Unique

Total Words: 559

Total Characters: 3796

Plagiarized Sentences: 0

Unique Sentences: 29 (100%)

### Content Checked for Plagiarism

#### Application Development

A recent review of financial literacy education programs that assessed financial literacy found that experiential learning is an effective method to teach and promote it. People tend to actively participate in the learning process which helps them understand financial concepts and apply them to everyday life. Real-world experiences are used to create relevance and to motivate them. The review also highlighted the importance of considering one's future goals such as obtaining a college degree, finding a job, starting a business, or obtaining a higher salary (Amagir, et al., 2018). Another review found that content, implementation, and keeping topics focused on age-relevant material are also important factors in effective programs. One of the most common programming languages used is Java (Consumer Financial Protection Bureau, 2019).

According to Pedamkar (2022), Java is the most popular programming language since billions of devices are running on a Java platform; Java possesses every field of development of software. Its features make it the most powerful language in the market of software development. It is an object-oriented language, supports all the features of an object-oriented programming language and is the most secured language in the current world.

Desktop applications can be easily developed using Java wherein different Application Programming Interface (API) like Swing may be used to build these kinds of applications. Swing is a Graphical User Interface (GUI) widget toolkit which uses an Abstract Window Toolkit (AWT). It provides certain advanced components. Swing is totally "java-based" since it uses Swing packages of Java to develop applications. Some examples of desktop GUI applications are Acrobat Reader, ThinkFree, Media Player, Antiviruses, and others (Techvidvan, n.d.).

In order to develop a Filipino-language desktop application named QUARTA, the researchers will use Java Swing. In reference to the study of Amagir, et al., Quarta will use experiential learning in order to maximize and retain the financial concepts of people. Considering one's future goals, this app will feature helpful financial tools such as an expenses calculator, tax calculator, local tax rates, interest calculator, and others. This will provide a guide and estimation for their calculations. In addition to this, several supplementing knowledge will be provided by this application. There were three lessons and relevant concepts where users learn a lot upon understanding them. In reference to the study of the Consumer Financial Protection Bureau, the listed topics in this application will focus on age-relevant materials.

#### Conceptual Framework

This part of the research paper presents an outline illustrating the flow of research and how the study will be conducted.

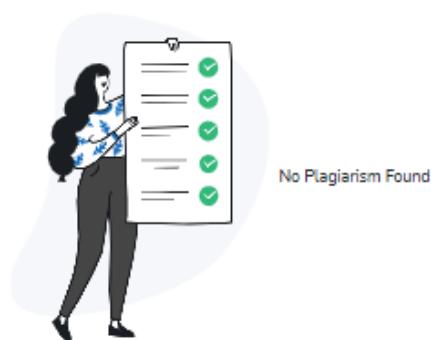
Figure 1.Research Paradigm of the Study

Figure 1 shows the Input-Process-Output model used in designing and creating the application. Included

in the input are the financial information which was the content of the application and the programming language that was used, Java. The process part was composed of designing the application, programming the calculators, and encoding the financial information. Additionally, in order to determine whether the Quarta app is efficient, the researchers will conduct tests on its effectiveness. A questionnaire and a 10-item quiz would be given to the respondents. Lastly, after designing and testing, the output will be the Quarta application that promotes financial literacy for ordinary Filipinos.

#### Hypothesis

This section contains the hypothesis formulated by the researchers in conducting the study. There is no significant difference between the financial literacy of the respondents before and after using Quarta.



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#### CHAPTER III

##### RESEARCH METHODOLOGY

This part of the study discussed the methodology and various processes to be done by the research proponents. This section presents the procedures and techniques utilized in making the study possible, including the research design, population and sample of the study, materials and design, the research instrument that was used, data gathering procedures, and the data processing and statistical analysis.

##### Methods and Techniques of the Study

The researchers utilized the experimental research approach in conducting the study, which is stated by Harappa (2021) as a scientific approach that seeks to apply the manipulated independent variable to the dependent variable to measure its effect. In relation to the study, quantitative analysis was used to determine the effectiveness of the QUARTA application. According to Bhandari (2020), quantitative analysis is the process of gathering and analyzing numerical data. A Likert scale was utilized in the questionnaire. Based on Vinney (2019), it is a close-ended and forced-choice scale type of questionnaire that provides a series of answers that go from one extreme to another. The pretest posttest design which is defined by Zach (2020) as an experiment where measurements are taken from the participants who underwent both before and after treatment, will also be used to seek relationships and see improvement in the data that will be gathered with regards to the Filipino participants' financial literacy. The study was conducted in an online environment using surveys. The time frame of this research was from March 2022 to June 2022, including the beginning of the research paper writing, experimentation, and revisions.

##### Population and Sample of the Study

The target population of the study consisted of Filipino citizens of legal age that were literate enough to be a respondent in the scope of the research. A sample size of 30 individuals that are willing to participate was chosen to utilize the QUARTA application. The sampling technique that was used is Convenience Sampling, as the researchers collected participants that are nearest and available to participate in the research study. (Crossman, 2019). The said respondents agreed to the informed consent to be able to engage in the procedures of the study.

##### Materials and Design

The researchers utilized Java as the programming language in building QUARTA. This language contained the controls and functionalities that are needed by the researchers. The approach in creating the user interface of the program was dashboard design. According to Costa (2020), a dashboard is a part of an application that displays information; it provides the user a global overview, with access to its most important data, functions and controls. From this, QUARTA came with four primary navigations: 1) Home, 2) Calculators, 3) Aralin (Lessons), and 4) Mga Konsepto (Concepts). Under calculators were basic calculator, discount calculator, tax calculator, interest calculator, and currency converter. Meanwhile, there were three lessons and relevant concepts that expanded the knowledge of the users about financial literacy. A test-run of the application was done by the researchers to identify and fix any error on the program. After the debugging, a beta-test was executed. The final product was an executable jar file (.exe) for the respondents to easily run the program on their own computers. Design and programming of QUARTA approximately took around two months to finish.

Figure 2.1. The Homepage User Interface

Figure 2.1 shows the homepage of the QUARTA application. This included the title of the application

and a get started button that directed to the home of the application.

**Figure 2.2 The Basic Calculator User Interface**

The Figure 2.2 displays the first subsection of the calculators: basic calculator. This calculator could perform simple mathematical operations.

**Figure 2.3 The Discount Calculator User Interface**

The Figure 2.3 presents the second subsection of the calculators: discount calculator. This calculator could calculate the saved price and the final price of the product with a discount.

**Figure 2.4 The Income Tax Calculator User Interface**

Figure 2.4 displays the third subsection of the calculators: basic calculator. This calculator could perform simple mathematical operations.

**Figure 2.5 The Simple Interest Calculator User Interface**

Figure 2.5 exhibits the fourth subsection of the calculators: interest calculator. This calculator could solve for the interest and final amount given the principal, rate and time.

**Figure 2.6 The Currency Converter User Interface**

Figure 2.6 shows the fifth subsection of the calculators: currency converter. This calculator could convert Philippine Peso to seven currencies such as, British Pounds, Euro, Indonesian Rupiah, Japanese Yen, Saudi Riyal, South Korean Won, and US Dollar.

**Figure 2.7 The First Lesson User Interface**

Figure 2.7 displays the first lesson of the QUARTA application. The title of the lesson is Tipid Tips For U. When ito was clicked, it directed to the pdf file of the first lesson.

**Figure 2.8 The Second Lesson User Interface**

Figure 2.8 shows the second lesson of the QUARTA application. The title of the lesson was Pagpaparehistro at Permit sa Negosyo. When ito was clicked, it directed to the pdf file of the second lesson.

**Figure 2.9 The ThirdLesson User Interface**

Figure 2.9 depicts the second lesson of the QUARTA application. The title of the lesson was Pag-monitor ng mga Gastusin. When ito was clicked, the third pdf opened.

**Figure 2.10 The Relevant Concepts User Interface**

Figure 2.10 shows the third lesson of the QUARTA application. The title of the lesson is Mga Pangunahing Konsepto. When ito was clicked, it directed to the pdf file of the relevant concepts. Research Instrument

**Qualitative Risk Analysis & Risk Response Planning For ...**

For some of the subsequent questions a Likert scale was utilized in the questionnaire containing various statements and answer.

<https://jcrt.org/download.php?file=JCRT2104257.pdf>

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To determine the capability of QUARTA as a tool to increase a person's financial literacy, the researchers used a semi-structured survey questionnaire that was answered through Google Forms. Likert scale, a commonly used research scale in measuring and gauging opinions, attitudes, and behavior (Bhandari, 2022), was utilized to determine the feedback of the respondents. Questions were formulated to collect data on the functionality, usefulness, user interface, ease of access, and user satisfaction of the QUARTA app, as well as to gather improvements and suggestions for the app. The sample size was 30 individuals that are of legal age and were literate enough to use and assess the Quarta app.

Data Gathering Procedure

Figure 2

Flowchart of the Study

Gathering Information

The creation of the QUARTA App started with the researchers gathering information about financial literacy, such as computing payments, concepts, lessons, tips, registering permits and many more.

Having enough knowledge helped the researchers understand and explore what to put into the app, as it used Filipino language that conveyed details on financial literacy.

Coding and Development of the Quarta App

The app was encoded and created through Java. Java is a simple programming language that is generally used in classes to create and develop apps (Hartman, 2022). Quarta was designed in a dashboard style. This provided an easy navigation and a clear presentation of data for the users (Subotin, n.d.). The app was divided into four sections, mainly:

Home - The main page of the app

Calculators - The different kinds of calculators were found here, such as a basic calculator, discount calculator, tax calculator, interest calculator and currency converter.

Aralin (Lesson) - This section was divided into three subsections, specifically:

Tipid Tips For You - It tackled tips on how to save money.

Pagpaparehistro at Permit ng Negosyo - This subsection gave information on how to register permits, especially for businesses.

Pag-monitor sa Gastos - The user could get details on how to monitor their expenses here.

Mga Pangunahing Konsepto (Relevant Concepts) - The relevant concepts about financial literacy that were used to educate the users will be located here.

Research Instrument Design and Validation

The research instrument was in the form of surveys. The researchers formulated, via Google Forms, a series of questions that are inclined by the respondents' feedback in using the app. These questions were further validated by an appropriate professional in order for the researchers to acquire the proper and needed results.

Search for Respondents

Informed consent was sent to the respondents of the survey. The researchers used the convenience sampling technique. The chosen 30 individuals must be Filipino, of legal age as they were mostly dealing with finances and must have basic knowledge of using an app in order to have smooth access to Quarta.

Gathering of Data

The study used true experimental design (pretest and posttest) in gathering data. The survey formulated and validated were sent to the respondents. A 10-item quiz was answered before and after they used

the app to know their background knowledge about financial literacy and what they learned upon using the application. The scores determined whether the app improved financial literacy among Filipino respondents.

#### Data Analysis

The data were analyzed by tallying the responses and finding the average. The survey results obtained before and after using the app were compared if there is any improvement. By doing this, it assessed whether the app increased Filipino respondents' financial literacy.

#### Data Processing and Statistical Analysis

QUARTA was tested through both qualitative and quantitative means. After trying to run the program, survey forms were used for the respondents to rate and comment on the program qualitatively. The researchers then carefully transcribed, coded, and analyzed the responses. Conclusions were then formed to satisfy the research questions. On the other hand, the respondents were asked to rate the program quantitatively through a Likert Scale based on functionality, usefulness, user interface, ease of access, and user satisfaction. The ratings were tallied; the researchers then computed the mean rating for each variable. Before and after running QUARTA, the researchers gave the respondents a 10-item quiz to test their knowledge of financial literacy. To determine whether there was a significant difference in the pretest and posttest results, a paired t-test was used. The paired t-test is a statistical tool used when testing for the difference between two variables for the same group of respondents with the formula as follows:

$$t = \frac{d}{s\sqrt{2/n}}$$

5 tips and tricks to get the most out of YouTube Music - CNET

Home - The main page of the app

<https://www.cnet.com/tech/mobile/tips-and-tricks-for-youtube-music/>

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### CHAPTER IV

#### PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

This chapter briefly discusses the presentation, analysis, and interpretation from the gathered data. The results and responses collected during the evaluation of QUARTA are presented in this chapter, as well as the analysis of the data. This chapter also contains hypothesis testing and responses to the questions of the study.

Part I. Level of performance of QUARTA in terms of its Functionality, Usefulness, User Interface, Ease of Access, and User Satisfaction

The tally, computed mean scores and verbal interpretation of the responses of 30 Filipinos are shown in the tables below. The 4 in their responses corresponds to strongly agree; 1 means strongly disagree.

Table 1.1 Frequency Distribution of Descriptive Measures of the Validation of QUARTA as Evaluated by the Respondents in Terms of its Functionality

Items

Responses

Mean

Verbal Interpretation

4

3

2

1

#### 1. Functionality

1.1 QUARTA works well without any malfunctions as a whole application.

20

8

2

0

3.60

Strongly Agree

1.2 The application tabs and buttons in QUARTA are clickable and work properly.

24

5

0

1

3.73

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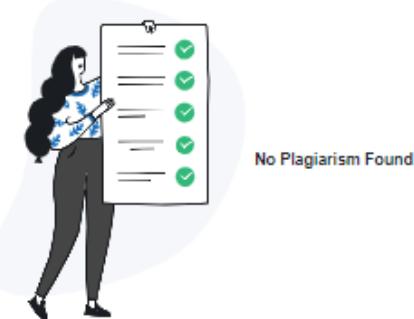
### Content Checked for Plagiarism

20  
8  
2  
0  
3.60  
Strongly Agree  
4.2 The tabs' location are not difficult to navigate.  
18  
11  
0  
1  
3.70  
Strongly Agree  
4.3 The tabs and buttons are easily clicked.  
23  
4  
3  
0  
3.67  
Strongly Agree  
4.4 The QUARTA application is easy to download.  
24  
5  
1  
0  
3.77  
Strongly Agree  
  
Sub-Total Mean  
3.68  
Strongly Agree

Table 1.4 presents the ratings given by the student-respondents with regards to the accessibility of the QUARTA app. Out of thirty respondents, twenty (20) strongly agreed that the app loaded quickly. On the other hand, eighteen (18) students strongly agreed that the application's tabs are easy to navigate. Twenty-three (23) respondents strongly agreed that the app's tabs and buttons are clicked easily. Meanwhile, twenty-four (24) respondents strongly agreed that the QUARTA app is easy to download. Overall, the first, second, third, and fourth statements gathered a mean of 3.60, 3.70, 3.67, and 3.77 respectively. The data gives a sub-total mean of 3.68, indicating that, on average, the student-respondents strongly agreed that the app is easily accessible.

Table 1.5 Frequency Distribution of Descriptive Measures of the Validation of QUARTA as Evaluated by the Respondents in Terms of its User Satisfaction Items

financial management. The privacy features should be enhanced by securing files and limiting access to other users. Lastly, one respondent recommended to develop the interactivity of the application and another one stated that placement of elements need improvement. Particularly, the response pertains to the insertion of the application logo on the preview of the application in the task bar. These suggestions in enhancing the functionality of QUARTA as an IMS should be considered for further studies.



## Plagiarism Scan Report

Report Generated on: Jun 12,2022

2%

Plagiarised

98%

Unique

Total Words: 840

Total Characters: 5578

Plagiarized Sentences: 0.72

Unique Sentences: 35.28 (98%)

## Content Checked for Plagiarism

### CHAPTER V

#### SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

This chapter shows the summary, conclusion, and recommendation of the study. The summary tackles the interpretation of the gathered data. Conclusions and recommendations are obtained and discussed thoroughly.

##### Summary of Findings

Three questions were formulated to examine if the QUARTA application can improve the financial literacy of Filipino students. The following were the findings and proceedings of the data from the conducted test of the application.

How may the validity of the Quarta app be described based on the following criteria; as evaluated by respondents as regard to its:

- 1.1. Functionality
- 1.2. Usefulness
- 1.3. User Interface
- 1.4. Ease of Access
- 1.5. User Satisfaction

The validity of the QUARTA application was determined based on the following criteria: Functionality, usefulness, user interface, ease of access, and user satisfaction.

1.1. In terms of QUARTA's functionality, the sub-total mean from the gathered data is 3.66, meaning that most respondents strongly agree with the given statements that the functionality of QUARTA is rated very positively.

1.2. The sub-total mean from the responses about the usefulness of QUARTA is 3.68, meaning that a large number of the student-respondents strongly agreed that the QUARTA app serves its purpose.

1.3. From the evaluated data in terms of the user interface of QUARTA, the sub-total mean of 3.51 indicates that the student-respondents, on average, have strong positive opinions of the application's interface. The user interface's sub-total mean in terms of user interface is the lowest of all tested variables.

1.4. In terms of the application's ease of access, a sub-total mean of 3.68 was computed, meaning that, on average, the student-respondents strongly agreed that the app is easily accessible.

1.5. The sub-total mean from the responses in terms of the usefulness of QUARTA is 3.68, meaning that the data indicated that the respondents have strong positive satisfaction with the application.

Is there a significant difference between the financial literacy of the respondents before and after using Quarta?

Based on the computed t-test statistic at  $\alpha=0.05$  and mean performance from pre- and post-assessment of 6.4 and 9.4 respectively, the absolute value of Tstat, -10.90, is greater than the Tcrit value, 2.01, making the hypothesis rejected. This means that there is a significant difference between the financial literacy of the respondents before and after using QUARTA.

3. What other interventions and improvements to the app may be proposed based on the findings of the study?

After using the QUARTA app, it was found that multiple user suggestions were made. Most respondents suggested improving the interface design and overall appearance and increasing its size. It is also recommended to broaden the topics and scope of application for more expanded coverage of lessons.

Some of the respondents suggested other interventions like making the application more interactive to its users and proper placement of elements such as adding a logo of the application in the task bar. The user suggestions made will enhance the functionality of the app and identify possible loopholes in the application.

#### Conclusions

After interpretation and analysis of the obtained data and findings, the researchers were able to derive the following conclusions:

Based on the Likert scale evaluation, Filipino student-respondents strongly agree that the QUARTA application is functional with little to no bugs and errors, that the application is useful in supplementing the financial literacy of users, that the user interface of the application is unique, organized, and pleasing, that the app is easily accessible and is easily downloaded, and that the app gives its users adequate satisfaction. Overall, the student-respondents rated the application's validity very positively.

It was found that there is a significant difference between the financial literacy of the student-respondents, based on an assessment crafted by the researchers, before and after the use of the QUARTA application.

The vast majority of student-respondents suggested improvements to the QUARTA application's user interface and other visual elements, widening the scope of the lessons, and making it an interactive application.

#### Recommendations

Given the limited time and resources allotted for the study and the creation of the application, the following recommendations and propositions are presented to enhance and develop the capabilities of the financial literacy app.

The application's user interface can be further improved by taking into mimicking modern education app UI and through coding the system with a programming language more advanced than Java.

Make the application more accessible to more people through crafting a mobile phone user interface for the app.

Expand and enhance the lessons contained in the application by incorporating other topics and enlisting the help of teachers, educators, and financial literacy advisers.

The app's usefulness can be extended through adding more financial calculators as well as enhancing the calculators already present. For example, future researchers can improve the tax calculator by adding tax exemptions and benefits into the formula.

The application can use Taglish as its language rather than pure Filipino to make the content more understandable and casual.

Games and quizzes, similar to those of Duolingo and Khan Academy, can be added into the application to enhance learning experience.

# CURRICULUM VITAE

## FAITH ANNE MIER R E S E A R C H E R



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*"The same boiling water can harden the egg, and  
soften the potato. Life is all about perspective."*

## P E R S O N A L I N F O R M A T I O N

Date of birth: October 29, 2003

Age: 18

Height: 1.55 meters

Weight: 40 kilograms

Mother's name: Mary Ann Mier

Occupation: Businesswoman

Father's name: Glenn Jonathan D. Lim

Occupation: Liaison officer

## E D U C A T I O N

**PRIMARY SCHOOL**  
Doña Ata Elementary School  
2010-2016

**SECONDARY SCHOOL**  
Valenzuela City School of  
Mathematics and Science  
2016-present

## A C T I V I T I E S & I N T E R E S T S

Reading books  
Dancing  
Listening to good music  
Watching films and series  
Playing instruments

## K E Y A T T R I B U T E S

- Leadership - initiative to handle and guide the direction of the group for the progress of endeavors
- Objective - focus on the rationality and effectiveness to achieve the primary end goal
- Coordinated - prefer structures and organizations to manage and sort out things to prevent small details being missed out

# KIMBERLY A. PADILLA

R E S E A R C H E R



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## EDUCATION

### PRIMARY SCHOOL

Colegio de Sta. Cecilia  
2010-2016

### SECONDARY SCHOOL

Valenzuela City School of  
Mathematics and Science  
2016-present

## ACTIVITIES & INTERESTS

Sleeping

Playing online games

*"Keep your face to the sunshine, and you  
cannot see the shadows."*

## PERSONAL INFORMATION

Date of birth: September 28, 2003

Age: 18

Height: 1.54 meters

Weight: 43.5 kilograms

Mother's name: Avie Padilla

Occupation: Housewife

Father's name: Daniel Padilla Jr.

Occupation: Businessman

## KEY ATTRIBUTES

- Logical skills - ability to solve problems and generate creative ideas
- Computer skills - knows how to operate Microsoft Office applications

# CATHERINE G. DALUSUNG

R E S E A R C H E R



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Valenzuela City

## EDUCATION

### PRIMARY SCHOOL

St. Mary's Academy of Caloocan City  
2010-2016

### SECONDARY SCHOOL

Valenzuela City School of  
Mathematics and Science  
2016-present

## ACTIVITIES & INTERESTS

Swimming  
Biking  
Fangirling  
Watching Shows

*"Life is not about speed but direction."*

## PERSONAL INFORMATION

Date of birth: October 27, 2003

Age: 18

Height: 1.55 meters

Weight: 47 kilograms

Mother's name: Arlene G. Dalusung

Occupation: Employee

Father's name: Judeo D. Dalusung

Occupation: Househusband

## KEY ATTRIBUTES

- Goal-oriented and has willpower - the ability to set things into focus and concentrate.
- Critical and detailed - tend to notice tiny details for more great work.
- Computer literate - have a basic knowledge of technology

# LORIN ANGELA C. VELASCO

R E S E A R C H E R



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Villa, Valenzuela City

## EDUCATION

### PRIMARY SCHOOL

Nuestra Señora De Guia Academy  
2010-2016

### SECONDARY SCHOOL

Valenzuela City School of  
Mathematics and Science  
2016-present

## ACTIVITIES & INTERESTS

Reading/watching

Playing music

Making arts

*"We are who we choose to be."*

## PERSONAL INFORMATION

Date of birth: June 22, 2004

Age: 17

Height: 1.58 meters

Weight: 47 kilograms

Mother's name: Rusielle C. Velasco

Occupation: House Wife

Father's name: Dexter C. Velasco

Occupation: Laborer

## KEY ATTRIBUTES

- Agility and adaptability - Handle situations well.
- Curiosity and imagination - expects and anticipates new ideas.
- Effective written communication - writes clearly and concisely.

# ADRIAN M. MENDOZA

R E S E A R C H E R



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## EDUCATION

### PRIMARY SCHOOL

Santiago A. De Guzman ES  
2010-2016

### SECONDARY SCHOOL

Valenzuela City School of Mathematics and Science  
2016-present

## ACTIVITIES & INTERESTS

Watching

Listening to music especially K-pop

*"Just be you and let the universe decide."*

## PERSONAL INFORMATION

Date of birth: December 3, 2004

Age: 17

Height: 1.68 meters

Weight: 51 kilograms

Mother's name: Jofelyn Mendoza

Occupation:

Father's name: Edgar Mendoza

Occupation:

## KEY ATTRIBUTES

- Effective writing, presentation skills, and analytical skills
- Strong Sense of Integrity and Professionalism
- Ability to work independently without significant oversight
- Good oral communication skills and a pleasing personality

# IVER JOHN C. DELOS SANTOS

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Dalandanan, Valenzuela City

## EDUCATION

### PRIMARY SCHOOL

Malinta Elementary School – SSEC  
2009-2016

### SECONDARY SCHOOL

Valenzuela City School of  
Mathematics and Science  
2016-present

## ACTIVITIES & INTERESTS

History

Studying

*"With great power comes with great responsibility"*

## PERSONAL INFORMATION

Date of birth: December 17, 2004

Age: 17

Height: 1.69 meters

Weight: 50 kilograms

Mother's name: Jecela L. Cariso

Occupation: Sari-Sari Store Owner

Father's name: Oliver Q. Delos Santos

Occupation: Accountant

## KEY ATTRIBUTES

- Problem solving - capable of coming up with a quick and effective solutions
- Communication - being able to communicate effectively
- Critical thinking - having smart ways to work